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PROJECT Nº: AAL-2011-4- 027

D23 – Final User Acceptance Tests Report

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Glossary

Acronym	Meaning
AT	Assistive Technology
ATC	Assistive Technology for Cognition
CG	Caregiver
CG App	Caregiver mobile phone appplication
FC	Facilitating Conditions
FCG	Formal Caregiver
ICG	Informal Caregiver
IS	Information System
MCI	Mild Cognitive Impairments
MG	MyGuardian
PcPM	Percentage of Positive acceptance Markers
PEOU	Perceived Ease Of Use
PU	Perceived Usefulness
QoL	Quality of Life
Senior App	Senior mobile phone application

References

Allen, R. E., Wiles, J. L. (2014). Receiving support when older: what makes it ok? *The Gerontologist*. 54(4):670-82. doi: 10.1093/geront/gnt047

DeSanctis, G., Poole, M. S. (1994). Capturing the complexity in advanced technology use : adaptive structuration theory. *Organization Science*. 5:2, 121-147

Fine, M., & Glendinning, C. (2005). Dependence, independence or inter-dependence? Revisiting the concepts of and. *Ageing & Society*, *25*(04), 601–621. http://doi.org/10.1017/S0144686X05003600

Korall, A. M. B., Feldman, F., Scott, V. J., Wasdell, M., Gillan, R., Ross, D., … Lin, L. (2015). Facilitators of and Barriers to Hip Protector Acceptance and Adherence in Long-term Care Facilities: A Systematic Review. *Journal of the American Medical Directors Association*, *16*(3), 185–193. http://doi.org/10.1016/j.jamda.2014.12.004

Laurent, G., Amara, W., Mansourati, J., Bizeau, O., Couderc, P., Delarche, N., … EDUCAT registry investigators. (2014). Role of patient education in the perception and acceptance of home monitoring after recent implantation of cardioverter defibrillators: the EDUCAT study. *Archives of Cardiovascular Diseases,* 107(10), 508–518. doi:10.1016/j.acvd.2014.06.009

Orlikwski, W., Robey, D. (1991). Information technology and the structuring of organizations. *Information systems research*. 2:2, 143-169

Peek, S. T. M., Wouters, E. J. M., van Hoof, J., Luijkx, K. G., Boeije, H. R., & Vrijhoef, H. J. M. (2014). Factors influencing acceptance of technology for aging in place: A systematic review. *International Journal of Medical Informatics*, *83*(4), 235–248. http://doi.org/10.1016/j.ijmedinf.2014.01.004

Vaujauny, F. X. (2006). Pour une théorie de l'appropriation des outils de gestion : vers un dépassement de l'opposition conception-usage. *Revue Management et Avenir.* 9, 109-126.

Wettstein, M., Wahl, H.-W., Shoval, N., Auslander, G., Oswald, F., & Heinik, J. (2014). Cognitive status moderates the relationship between out-of-home behavior (OOHB), environmental mastery and affect. *Archives of Gerontology and Geriatrics*, *59*(1), 113–121. http://doi.org/10.1016/j.archger.2014.03.015

1. Introduction

1.1. Purpose and aim of this deliverable

The present deliverable is part of the WP5 which addresses the validation of MyGuardian (MG) and the final user services. This document is the continuation of the D22 (Preliminary User Acceptance Report). The aim of this deliverable is to assess:

- User acceptance in connection with MG global care system concept
- User acceptance in connection with the concrete assistive acts of MG
    - in pre-implementation stage (when MG has not been used yet)
    - during use
    - in post-implementation stage (when users have used and experienced MG)

1.2. Summary of the literature on assistive technology acceptance

MyGuardian technology aims to reduce the impact Mild Cognitive Impairments (MCI) have on MCI peoples' daily life, with a focus on outdoor life and mobility, and also considering their caregivers. Indeed, the moderating effect of the cognitive status on the relationship between out-of-home behavior, oneself sensation of environmental mastery and affect (see Annex 1) has been well demonstrated in the study of Wettstein and collaborators (2014). By reducing this impact, MyGuardian technology aims to improve the quality of life (QoL) of the users (see MG Deliverable 22, section 1., 1.1.).

The acceptance is a major issue to overcome in the assistive technology usage process. Indeed, a great amount of studies demonstrated a low clinical value for assistive devices despite the fact that these devices have had already been robustly evaluated as efficient and useful. The acceptance level of these devices, expression of the resistances in connection with the "need" to be helped, appears to be in cause [Korall & al., 2015]. Indeed, this acceptance is a dynamic, fluctuating and multifactorial process requiring the acknowledgement of the acquired vulnerability [Peeks & al., 2014] as well as a permissive social influence [Korall & al., 2015]. Bypassing the cared person's resistance toward the assistance seems to rely on key concepts like collaboration and interdependency [Allen & Willes, 2014; Fine & Glendinning, 2005]. The users' comprehension of the device is central as well [Laurent & al., 2014]. Moreover, in Information System (IS, term used to qualify the actual academic study of the field), a device appropriation, as a part of the acceptance process, is by definition based on two aspects. The first one is the fact that the technology can facilitate or constrain individual action [DeSanctis & Poole, 1994; Orlikowski & Robey, 1991]. The second one is that the meaning and the aims of the technology will be differently interpreted across the different users [Vaujauny, 1999]. How the technology will be accepted is therefore difficult to anticipate. As a consequence, the assessment of an assistive technology acceptance requires a methodology to control all this various and dynamic acceptance factors without constraining the participants' use and judgment of MG.

1.3. Overview of the deliverable

This deliverable describes all the work that was conducted in the Netherlands, in Spain and in France by end-users partners to evaluate the acceptance of MG. All end-users partners performed the same protocol in their different countries. As introduced in the previous sections, acceptance is a complex issue that covers many dimensions. In this deliverable, with reference to the ALMERE model (see D22), the focus is on the attitude toward MG as well as on the comprehension, the perceived usefulness (PU) and the perceived ease of use (PEOU) of MG. In the context of healthcare, the factors PU, PEOU, Social Influence (SI) and Facilitating

Conditions (FC); and the moderating factors Gender, Age, Experience and Voluntariness of Use explain all together 70% of an individual's intention to use a technology [Venkatesh, Morris, Davis & Davis, 2003 as cited in Peek & al., 2014]. It remains unclear if the intention to use a technology can or cannot predict its actual use [respectively Turner & al., 2010 and Wu & Du, 2012 as cited in Peek & al., 2014]. Considering TEMSED approach (see D22), we can say that the work presented here is related to the Technological and the Ergonomics dimensions of the TEMSED approach, i.e. on the technology reliability and the technology usability. These dimensions were assessed with end-users which are elders with MCI (called *seniors* in this document) and their careers. The technology being insufficiently developed/reliable to be left in the end-users hands for a long period of use, the TEMSED Medical dimension (i.e. impact on QoL) was not assessed in this protocol. Finally, the evaluation work done is formative: the objective is to improve the current prototype. All this approach is in coherence with the stage of development of MyGuardian technology, as the current tests are conducted with the third version of the prototype. Therefore, the results that are presented in this deliverable give an overview of MG global concept and MG mobile and web applications acceptance.

The next section presents a summary of the protocol that was conducted in the Netherlands (CAREYN), in France (AGIM) and in Spain (CETIEX).

2. Protocol summary

2.1. General information

2.1.1. In France

- Promoter: **Université Joseph Fourier (UJF), Grenoble**
- Project manager: **Laboratoire AGIM (Age, Imagerie, Modélisation) FRE3405 CNRS/Université Joseph Fourier**
- Research manager: **Vincent Rialle, PhD, MCU-PH, Laboratoire AGIM / CHU de Grenoble**
- Coordinating investigator: **Jérémy Bauchet, PhD**
- Investigators: **Agathe Morin, M.Sc., Laetitia Courbet, M. Sc**
- Co- Investigators: **Dr. Matthieu Debray, Chef de pôle Gériatrie, Centre Hospitalier Annecy Genevois** et **Dr. Serge Payraud, Chef de pôle Gériatrie, Hôpitaux du Pays du Mont-Blanc.**
- Research location : **Centres de Consultation Mémoire Centre Hospitalier Annecy, Hôpitaux du Pays du Mont-Blanc, European Scientific Institute (Archamps Technopole), domicile des participants (Haute-Savoie)**

2.1.2. In the Netherlands

- Promoter : **Technische Universiteit Delft (TU Delft), Delft**
- Project manager: **Careyn**
- Research manager: **Peter Hermans, Luc van den Heuvel**
- Coordinating investigator: **Stella Boes, Dr. Dipl. Des**
- Investigators: **Janna Alberts, Geertje Hofstee, Karen Thomson, Paulien Verlaan, Stella Boess, Peter Hermans**
- Research location : **Seniors' home**

2.1.3. In Spain

- Promoter : **Fundación Centro Tecnológico Industrial de Extremadura , CETIEX**
- Project manager: **Ruben Ossorio Izquierdo**
- Research manager: **Ruben Ossorio Izquierdo**
- Coordinating investigator: **Ruben Ossorio Izquierdo**
- Investigators: **Ruben Ossorio Izquierdo, Jose Antonio Perez Díaz, Sergio Gonzalez Ballester, Jesus Montero León, Elisabet Venegas Villafaina**
- Co- Investigators: **Jose Antonio Perez Díaz, Sergio Gonzalez Ballester, Jesus Montero León, Elisabet Venegas Villafaina**
- Research location : **Los Santos de Maimona , Badajoz**

2.2. General description of the protocol

2.2.1. Abstract

Based on the current knowledge regarding the assistive technologies acceptance, the protocol is materialized in two encounters. The first one gathers investigators and potential end-users around a pro-participatory support contributing to the optimization of the comprehension of MG as well as the sharing of the end-users' expertise and opinions. The second one is an organized MG use session in an ecological context that is the senior's home and neighborhood.

The population studied in this work is elders with MCI and their careers.

2.2.2. Objectives and hypothesis

Objectives

- Validate the functional definition of the technological means the removal of the brakes that limit the minimal mobility for a satisfying social life.
- Identify and eliminate the main brakes that limit MG usability, from an ergonomics and technological perspectives.
- Identify the level of acceptance of MG

Main hypothesis

- There is a correlation between a senior's mobility and the confidence he has toward himself and toward how he interacts with his environment

Secondary hypotheses

- Bypassing the cared person's resistance toward the assistance rely on key concepts like collaboration and interdependency [Allen & Willes, 2014; Fine & Glendinning, 2005].
- The acceptance of an assistance by a person with an acquired vulnerability is optimized her close relationships presence, participation and support [Chan & al., 2000, Tavener-Smith K ., De Vet G., 2006, Honkanen & al., 2007, O'Halloran & al., 2005 as cited in Korall & al., 2015].
- The acceptance is optimized by the persons' comprehensions of the device [Laurent et al., 2014].

- The optimization of the acceptance factors dynamic results in the optimization of the quality and the quantity of the out comings approvals, rejections and (un)ease of use markers and therefore on a more reliable and rich evaluation.

Research questions

- What are the effects on the users of introducing MG into the context? Does it increase mobility and safety?
- How do the functionalities of MG match with the desired value for the care organization?
- What is the influence of MG on the self-esteem and freedom of the senior?

2.2.3. Conception of the research

The methodology was inspired by the participatory design paradigm. Indeed, including de potential end-users to the evaluation process offers a certain guarantee regarding the MG usability and acceptance assessment. This methodology consists in:

- A first encounter: care network interview and open discussion on the assistive acts proposed by MG to assess the acceptance markers contained in the participants' speech. The discussion is supported by a participatory board game.
- A second encounter in an ecological situation to: (1) assess the reliability of MG during real use; (2) assess the ergonomics of MG; (3) Assess the acceptance markers.
- Questionnaires hetero- and auto-administered, some before and some after the protocol to assess: (1) the current mobility level of the senior and the aged CGs; (2) the participants' attitude toward MG; (3) the satisfaction toward MG.

The two encounters must be rather close chronologically (no more than one month between the two encounters). They both last from 1:30 to 2:00 hours.

The full protocol can be found in Annex 5.2

2.2.4. Material

2.2.4.1. *For the first encounter*

- Notice of information
- Consent form
- Participant sheet
- Life Space Assessment
- Board game and related material
- One voice or video recorder

2.2.4.2. *For the second encounter*

- Attitude
- Satisfaction (with MG) questionnaire
- Attitude (toward MG) questionnaire
- Two voice or video recorders

2.2.5. Encounters organization

Each encounter lasted 1h30.

2.2.5.1. *In France*

The first encounters were taking place at the European Scientific Institute (ESI, Archamps Technopole) in a private workshop room. A private vehicle was available for the participants to make them travel between their home and the ESI in pleasant conditions. The trip costs were taken in charge by AGIM partner. Second encounters took place at the seniors' home.

2.2.5.2. *In the Netherlands*

The first and second encounters both took place at the homes of the participants. For the first encounter, the senior's home as research location was chosen for two reasons. The first reason was practical, to lower the barrier for seniors to participate in the research. The TU Delft team assumed that at home the senior was more likely to feel comfortable. Secondly, it was anticipated that showing and testing MG in a familiar and realistic context would facilitate the senior's understanding of it.

2.2.5.3. *In Spain*

The encounters took place in the following places:

- CETIEX premises in Badajoz
- "Puente Real" Nursing Home in Badajoz
- Nursing Home in Santos de Maimona (Badajoz)
- "Sierra Pinar" Nursing Home in Zafra (Badajoz)
- Seniors' homes

2.2.6. Ethical issues

2.2.6.1. *In France*

The study is not interventional. The interventions are limited to verbal exchanges addressing the care system proposed by MG and real usage sessions of MG. This research does not impact the physical and moral integrity of the participants. An administrative procedure was lead with the French ethical authority: the Comité de Protection des Personnes SUD-EST II (CPP SUD-EST II). The document attesting that this protocol is not interventional and is therefore not concerned by the law of august 9th 2004 is to be found in Annex 5.3.

2.2.6.2. *In the Netherlands*

Ethical issues were not present during the research. Before the visits the participants were given all the important information and after it was talked through again during the first visit, the participants signed a consent form giving their permission to use the results in the form of writing, voice and video recordings.

2.2.6.3. *In Spain*

Ethical issues were not present during the investigation. Before the visits the participants were given all relevant information and participants gave their consent to use the results in writing recordings.

2.3. The set up across End User partner

In general, the set up for the Final User Acceptance Test in the different countries was similar. All of them used the same protocol document [Annex 2] as a basis for the Final User acceptance test. The main difference was the location of the first encounter.

In the Netherlands the researchers visited the care networks at the senior's home. The senior's home as research location was chosen for two reasons. The first reason was practical, to lower the barrier for seniors to participate in the research. The TU Delft team assumed that at home the senior was more likely to feel comfortable. Secondly, it was anticipated that showing and testing MG in a familiar and realistic context would facilitate the senior's understanding of it.

A neutral space was chosen in France to perform the research with the care network. The room used for the encounters is a workshop room, designed to facilitate interactions during workshops.

In Spain the research was conducted in in a rural setting, Senior´s was interviewed in their homes and the nursing home. The acceptance of application MyGuardian by Senior´s lived in nursing home in less that Senior´s lived in home with caregiver.

3. Results

3.1. Introduction

For the Final User Acceptance test, it was performed both a qualitative and quantitative analysis based on the data from care networks in the Netherlands, France and Spain.

For the Final User Acceptance test, the caregivers and the senior were introduced to MG. This document represents the qualitative part as well as the quantitative outcomes of the Final User Acceptance test conducted with the final prototype of the MG product-service system.

3.1.1. Approach: why qualitative and quantitative research?

A qualitative approach was selected in order to gather in-depth information about the underlying thoughts, motivations, wishes and needs of the seniors and caregivers (CGs), as well as understand the context in which MG would be used. In addition to researching selected isolated variables, the qualitative research looked at a broad range of interconnected processes, causes and impediments of acceptance of MG. Qualitative approach provides the quantitative analysis with additional interpretation material as well as a basis for MG optimization proposals.

The data used for the qualitative analysis consisted of:

- Notes based on the observations during the first encounter
- Notes based on the observations during the second encounter
- Film material of the three different care networks (1st and 2nd encounter)
- Note sheet with qualitative markers from France

The data was qualitatively analyzed by:

- Watching the footage of the films individually and filling in the qualitative note sheet
- In a team data analysis session (see Figure 1), combining results from different care networks
- Categorizing the results in themes corresponding to the research questions that were set up at the start of this project.

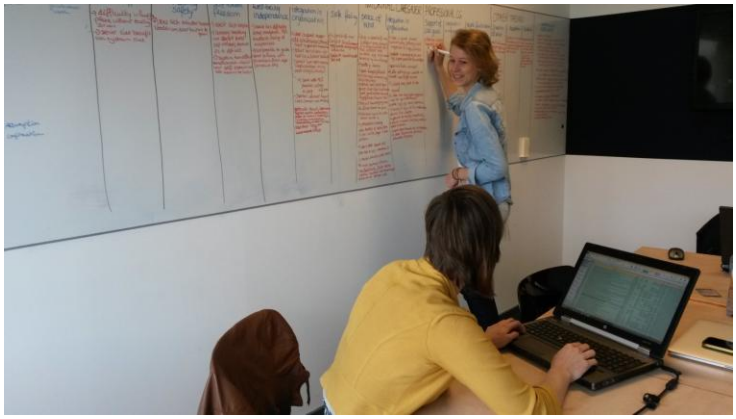


Figure 1: Two research assistants categorizing the quotes from the participants in themes corresponding to the research questions.

3.1.2. Raw data first treatment for quantitative analysis

All investigators have extracted from their participants' speech all comments in connection with MyGuardian (global concept, devices, processes, functionalities, applications, *etc…*). All behaviors in connection with MG, or events related to the MG usability and reliability, observed by investigators were extracted as well. This extraction output displays the participants' speech, behavior and interactions with MG devices during encounters 1 and 2 (T1 and T2). Therefore, the output contains a large panel of acceptance markers. The nature (judged positive or negative by the interviewers) of these markers has been extracted and specified/coted as positive or negative. Moreover, the markers related to MG usability and reliability, whether or not the usability/reliability event was noticed by participants, has been specified as such. Each encounter lasts 1h30 which corresponds to 4h30 of recordings to transcribe for each care network included in the study. These extractions have been reported in English in a shared Microsoft Excel© document. Analysis

3.1.3. Descriptive statistics

3.1.3.1. *Population characteristics*

On an overall number of 12 groups (61 stakeholders) included in the study, AGIM, CAREYN and CETIEX respectively recruited 3 (8 stakeholders), 3 (9 stakeholders) and 6 (44 stakeholders) groups. Consistently, population sample is constituted by 8 French, 9 Dutch and 44 Spanish participants.

For AGIM and CAREYN stakeholders, each care network was composed of, at least, one informal CG (ICG) and one senior. For CAREYN, the ICGs varied from son/daughter to an elderly partner. For AGIM, ICGs were son/daughter or consort. Each care network was encountered in isolation. Dutch care networks were recruited by case-managers from CAREYN and French care networks were recruited by geriatrician. Two seniors were litghtly demented and one was at a severe stage of dementia.

Moreover, CETIEX recruited groups that were composed both of only seniors (2 groups) and of actual care networks with formal CG (FCG), ICG and seniors. Care networks were encountered jointly, with an average number of seniors per workshop of 4,5. Formal caregivers were people with related care senior's studies. Informal caregivers were seniors' close relationships, such as children or consort. Twenty seniors were with little cognitive impairments, 5 were lightly demented and 4 were from moderate to severe stage of dementia.

3.1.3.1.1. Age distribution depending on the participants' status

	Participant's status	Number of participants	95% Confidence interval for Mean Age	Minimum	Maximum
Participant Age	FCG	7	38,2 - 59,2	32	61
	ICG	22	43,7 - 59,5	28	81
	Senior	32	77,4 - 83,8	58	95

Table 1: Participants' age considering their status in the care network

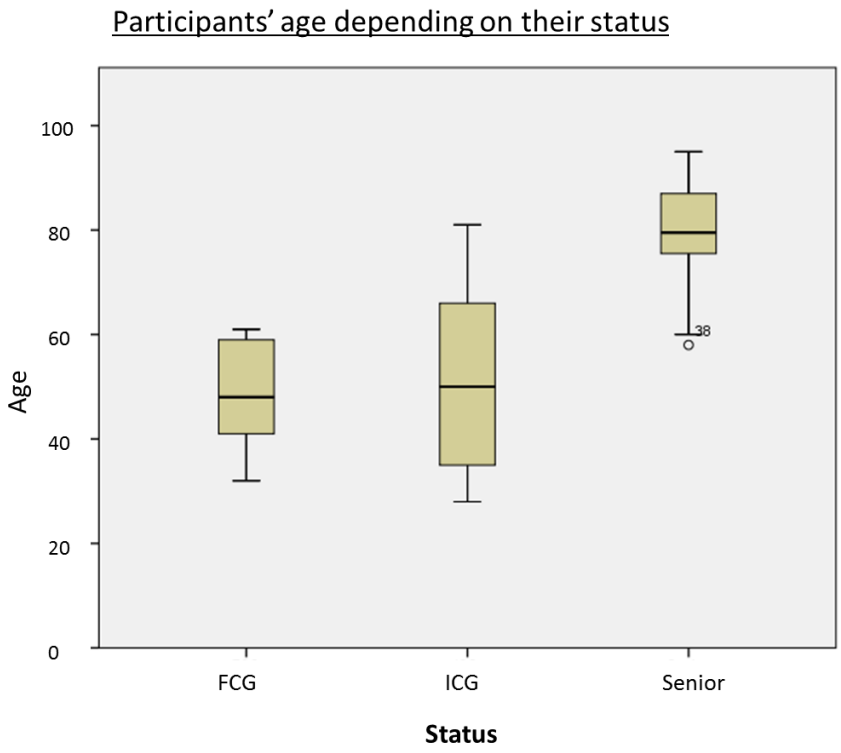


Figure 2: box plots displaying stakeholders age characteristics (median, homogeneity, minimum and maximum) depending on their status in the care network.

We observe that ICGs' is quite a heterogeneous population regarding stakeholders' ages.

3.1.3.1.2. Participants' gender and status crosstab

		Participant's gender		Total
		Man	Woman	
Participant's status	FCG	4	3	7
	ICG	12	10	22
	Senior	11	21	32
Total		27	34	61

Table 2: participants' gender and status in the care network crosstab

3.1.3.1.3. Participant socio-professional level

	Number of stakeholders	Percent

Administrative	1	1.6
Armed forces occupations	2	3.3
Clerical support worker	10	16.4
Craft and related trades workers	4	6.6
Elementary occupations	15	24.6
Managers	8	13.1
Plant and machine operators, and assemblers	1	1.6
Professionals	4	6.6
Service and sales workers	10	16.4
Skilled agricultural workers	1	1.6
Technicians and associate professionals	5	8.2
Total	61	100.0

Table 3: Socio-professional levels of population included in the study

3.1.3.1.4. Devices ownership

		Owns a computer	**Owns a tablet**	**Owns a mobile phone**	**Owns a smartphone**
Participant's status	FCG	7	3	2	7
	ICG	20	12	10	15
	Senior	5	4	18	3
Total		32	19	30	25

Table 4: number of various devices ownership

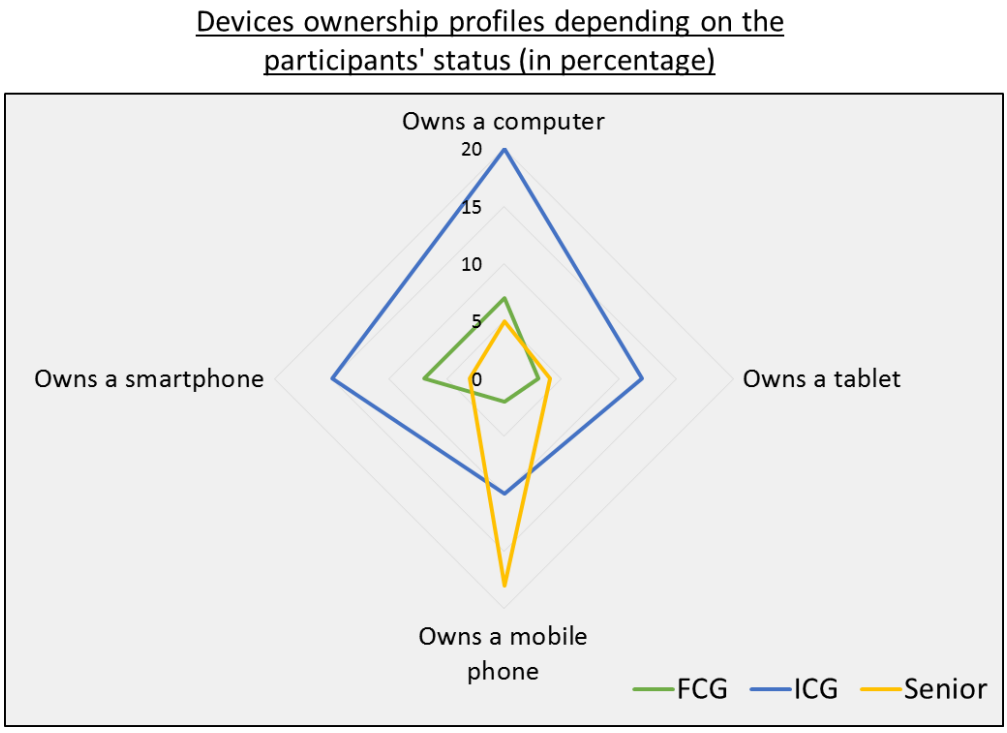


Figure 3: number of stakeholders owning different types of devices, depending on Status (ownership profiles overview).

3.1.3.2. *Data characteristics*

3.1.3.2.1. Dependent variables

The dependent variables are:

- Percentage of Positive acceptance Markers (PcPM)[1]
- Scores obtained at
  - 'Satisfaction with MG Questionnaire'
  - 'Attitude toward MG Questionnaire'

3.1.3.2.2. Dependent variables across C-EU

	France-AGIM	the Netherlands-CAREYN	Spain-CETIEX	Total
Number of participant included in study	8	9	44	61
Overall number of markers collected	278	169	630	1077
Mean number of markers collected per participant (qualitative indicator)	37.5 (± 2,03)	17,22 (± 1.91)	12.5 (± 0.86)	22.4 (± 13.3)

Table 5: data characteristics across End-User partners

3.1.4. MyGuardian acceptance analysis

3.1.4.1. *Global acceptation of MyGuardian*

3.1.4.1.1. Differences related to Countries/End-User partner in charge (C-EU)

A one-way analysis of variance performed on the overall percentage of positive acceptance markers (PcPM) collected at T1 and T2 for each participant revealed significant differences between the C-EU: $F(3,8) = 9.00, p < .05$.

A one-way analysis of variance performed on the overall scores obtained with the 'Attitude toward MyGuardian Questionnaire' revealed significant differences between the C-EU: $F(2,624) = 43.390, p < .000$. C-EU explains a moderate proportion of variance in regards to scores (medium size effect): $\eta^2 = 0.122$.

A one-way analysis of variance performed on the overall scores obtained with the 'Satisfaction with MyGuardian Questionnaire' revealed significant differences between the C-EU: $F(2,440) = 36.685, p < .000$. C-EU explains a moderate proportion of variance in regards to scores (medium size effect): $\eta^2 = 0.143$.

The means and standard deviations are presented in Table 6 and Figure 4 a), b) and c) displays the Box Plots.

	C-EU		
	France-	the Netherlands-	Spain-

[1] The nature of acceptance markers is fully described in chapter 3.1.2

		AGIM	CAREYN	CETIEX
PcPM	Mean	58.5	26.2	51.3
	Std. deviation	11.5	10.9	20.2
Attitude toward MG	Mean	3.53	2.54	3.77
	Std. deviation	0.13	0.13	0.04
Satisfaction with MG	Mean	4.152	2.786	4.268
	Std. deviation	0.13	0.17	0.05

Table 6: Average percentage of positive markers (PcPM) and questionnaire scores obtained across End-user partners (C-EU)

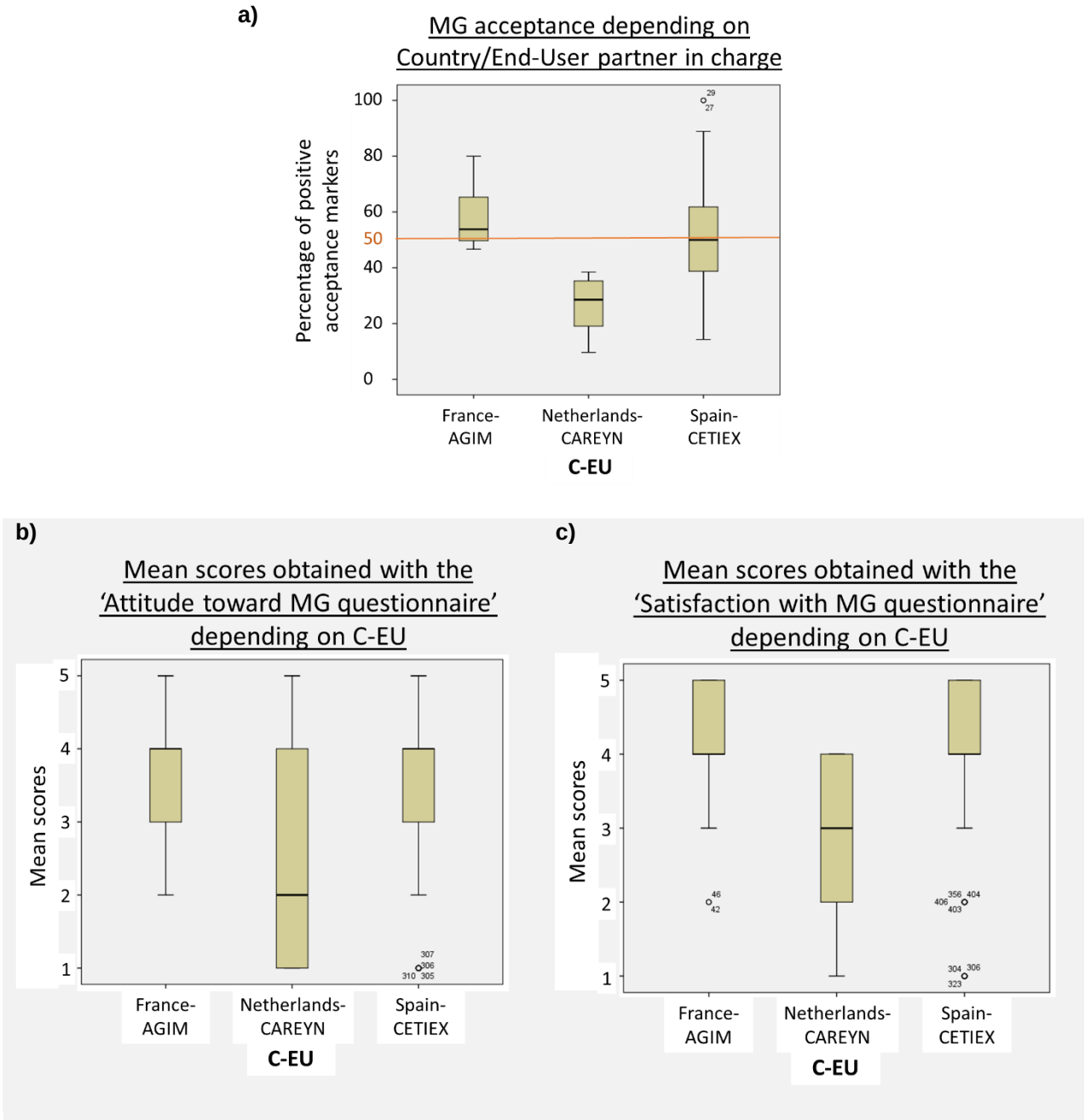


Figure 4 a), b) and c): respectively median values, data homogeneity and minimum, maximum values across End-User partners (C-EU) for Percentage of Positive Markers, and mean scores obtained with questionnaires

This variation in outcome is likely to be the cumulative effect of:

- Stakeholders' nationality and co-variables (e.g: cultural effect, *etc*…)
- Context and environment within the interviews took place
- The End-User partner researcher in charge of the interviews and of the transcription of the interviews

Moreover, the little sample of participant in France-AGIM and the Netherlands-CAREYN as well as the little number of markers extracted in Spain-CETIEX does not permit to consider the data of each C-EU to be representative of respective countries. Consistently, and in order to minimize C-EU effect on PcPM during analyzes, the variance analyzes described in the following chapters where performed with C-EU included a Random Factor.

3.1.4.1.2. Differences related to participants' characteristics

3.1.4.1.2.1. In the percentage of positive acceptance markers expressed

A one-way ANOVA of Status yielded no significant differences between Seniors, ICG and FCG in regard to overall PcPM: $F(2{,}53) = 0.993, \text{ns}$.

A one-way ANOVA of Gender yielded no significant differences between Men and Women in regard to overall PcPM: $F(1{,}55) = 0.726, \text{ns}$.

A one-way ANOVA of SPL yielded no significant differences between the eight socio-professional groups in regard to overall PcPM: $F(10{,}42) = 0.543, \text{ns}$.

The means and standard errors for Status, Gender and SPL are presented in Table 7.

Four one-way ANOVA of devices ownership (computer, tablet, smartphone and mobile phone) yielded no significant differences between 'Yes' or 'No' answers groups in regard to overall PcPM.

The participants' Age did not correlate significantly with the PcPM, $r = -0.036, \text{n} = 61, \text{ns}, \text{two tails}$.

The participants' ILSL did not correlate significantly with the PcPM, $r = -0.019, \text{n} = 61, \text{ns}, \text{two tails}$.

In conclusion, none of the participants' characteristics explains the overall acceptance of MG.

		PcPM	
		Mean	Std. error
Status	FCG	43.0 [a]	7.9
	ICG	44.1	4.6
	Senior	43.7	5.3
Gender	Man	44.3	4.8
	Woman	46.6	4.6
SPL	Administrative	28.6 [a]	19.1
	Armed forces occupations	50.0 [a]	13.5
	Clerical support worker	52.5 [a]	10.1
	Craft and related trades workers	44.3 [a]	11.0
	Elementary occupations	59.3 [a]	9.9
	Managers	60.2 [a]	7.0
	Plant and machine operators, and assemblers	41.7 [a]	19.1

	Professionals	40.4 [a]	9.6
	Service and sales workers	50.9	8.2
	Skilled agricultural workers	84.6 [a]	19.1
	Technicians and associate professionals	46.1	9.7

Table 7: Means and standard errors for Status, Gender and Socio-professional levels effects on Percentage of positive acceptance markers.

[a] Based on modified population marginal mean.

3.1.4.1.2.2. In the participants' attitude toward MyGuardian

The Likert scale for Attitude toward MG (Att) was processed as an ordinal variable. The five scales were coded as follow:

- Strongly disagree = 1
- Disagree = 2
- Neither agree or disagree = 3
- Agree = 4
- Strongly agree = 5

Since the Attitude questionnaire presents a great internal consistency ($\alpha = 0.83, \mathrm{n} = 10$), the following variances analyzes assess overall scores (all items merged). Moreover, the variance analyzes described in this chapter where performed with C-EU and participants' ID included a Random Factors.

A one-way analysis of variance revealed that ICGs' attitude toward MyGuardian was significantly less positive than FCGs' and Seniors' attitude toward MyGuardian: $F(2{,}561) = 4.991, p = .007$. Yet, the Status explains a small proportion of variance in regards to scores (small size effect): $\eta^2 = .017$.

A one-way analysis of variance revealed that women's attitude toward MyGuardian was significantly less positive than men's: $F(1{,}561) = 4.525, p = .017$. Yet, the Gender explains a negligible proportion of variance in regards to scores (very small size effect): $\eta^2 = .010$.

Four one-way ANOVA of devices ownership (computer, tablet, smartphone and mobile phone) yielded no significant differences between 'Yes' (ownership) or 'No' (no ownership) answers groups in regard to overall Attitude scores.

The means and standard deviations for Status and Gender are presented in Table 8.

Neither the participants' Age nor their ILSL did correlate significantly with the Attitude toward MG, respectively $r = -0.030, \mathrm{n} = 627, \mathrm{ns}, \text{two tails}$, and $r = -0.021, \mathrm{n} = 627, \mathrm{ns}, \text{two tails}$.

		Scores on Attitude toward MG questionnaire	
		Mean	Std. deviation
Status	FCG	3.786[a]	.097
	ICG	3.485[a]	.059
	Senior	3.689[a]	.050
Gender	Man	3.724[a]	.054
	Woman	3.553[a]	.047

Table 8: Means and standard errors for Status and Gender effects on scores obtained at the 'Attitude toward MG' questionnaire.

[a] Based on modified population marginal mean.

3.1.4.1.2.3. In the participants' satisfaction with MyGuardian

The Likert scale for Satisfaction with MG (Satisf) was processed as an ordinal variable. The five scales were coded as follow:

- Strongly disagree = 1
- Disagree = 2
- Neither agree or disagree = 3
- Agree = 4
- Strongly agree = 5

Since the Satisfaction questionnaire presents a great internal consistency ($\alpha = 0.778, \mathrm{n} = 6$), the following variances analyzes assess overall scores (all items merged).

Consistently with attitude toward MG outcomes, a one-way analysis of variance revealed that ICGs' satisfaction with MG was significantly less positive than FCGs' and Seniors' satisfaction with MG: $F(2{,}376) = 9.985, p < .000$. Yet, Status explains a small proportion of variance in regards to scores (small size effect): $\eta^2 = .050$

Again consistently with attitude toward MG outcomes, a one-way analysis of variance revealed that women's satisfaction with MG was significantly less positive than men's: $F(1{,}376) = 6.003, p = .015$. Yet, the Gender explains a small proportion of variance in regards to scores (small size effect): $\eta^2 = .016$.

Three one-way ANOVA of devices ownership (computer, tablet and smartphone) yielded no significant differences between 'Yes' (ownership) or 'No' (no ownership) answers groups in regard to overall Satisfaction scores. But one-way ANOVA performed on Mobile Phone Ownership (MPO) showed a significant greater satisfaction with MG when participants already owned a mobile phone *versus* didn't owned one: $F(1{,}376) = 4.150, p = .042$. Yet, the MPO explains a negligible proportion of variance in regards to scores (small size effect): $\eta^2 = .011$.

The means and standard deviations for Status, Gender and MPO are presented in Table 9.

Neither the participants' Age nor their ILSL did correlate significantly with the Satisfaction with MG, respectively $r = -0.004, \mathrm{n} = 443, \mathrm{ns}, \text{two tails}$, and $r = -0.006, \mathrm{n} = 443, \mathrm{ns}, \text{two tails}$.

		Scores on Satisfaction with MG questionnaire	
		Mean	Std. deviation
Status	FCG	4.294 [a]	.098
	ICG	3.883 [a]	.062
	Senior	4.197 [a]	.050
Gender	Man	4.196 [a]	.054
	Woman	4.018 [a]	.049
MPO	Yes	4.029 [a]	.049
	No	4.177 [a]	.053

Table 9: Means and standard errors for Status, Gender and Mobile Phone Ownership (MPO) effects on scores obtained at the 'Satisfaction with MG' questionnaire.
[a] Based on modified population marginal mean.

The Figure 5 displays the mean scores obtained for each item in the Satisfaction with MG questionnaire.

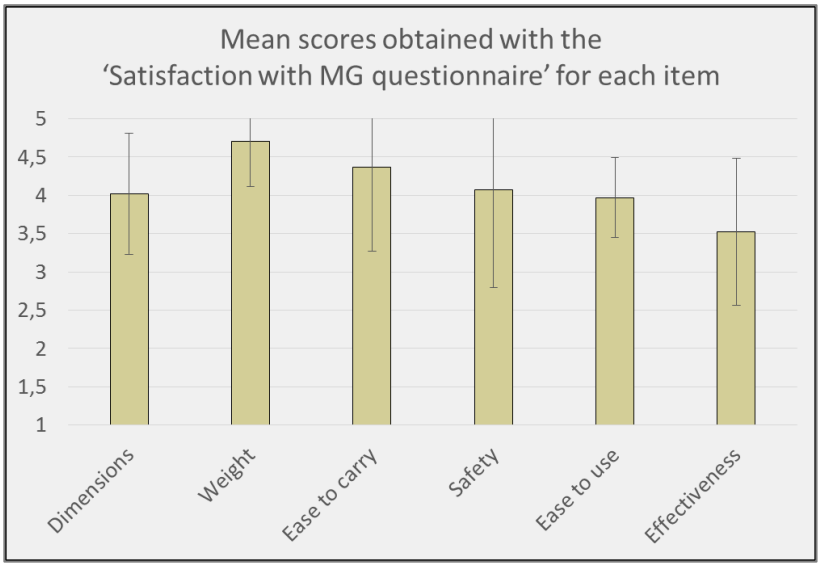


Figure 5: average scores obtained for each item of the 'Satisfaction with MG questionnaire'.

This outcome shows a rather positive satisfaction with MG global features and services. Nevertheless, this outcome appears to be partly inconsistent with what has been observed during encounters by End User partners. Therefore, this outcome must be interpreted cautiously, and with reference to chapter 3.1.5.1

3.1.4.2. *Acceptability of MyGuardian different applications and functionalities*

3.1.4.2.1. Acceptability of MG applications

The factor Application contains 4 modalities: (i) Caregiver application (CG App); (ii) Senior application (Senior App) and (iii) MyGuardian general concept. A 'Other' label was associated to markers unrelated to the 3 previous modalities. This fourth modality contains various markers, such as comments regarding MG functionalities or topics unspecific to MG. Therefore, 'Other' corresponds to comments that are unspecifically related to MG applications or general concept, but remains related to MyGuardian and to assistive technologies and interactions with assistive technologies. Although 'Other ' is difficult to interpret, it remains an interesting category.

A two-way ANOVA of Application (App) and Status yielded no significant differences between the different MG applications discussed and the different participants' status in regard to overall PcPM. Nevertheless, the analysis revealed that Application-Status interaction had a significant effect: $F(6,39) = 2.636, p = .030$ (see Figure 7). Pairwise comparisons showed no specific differences between cross-modalities Application and Status interaction explains a large proportion of variance in regards to scores (large size effect): $\eta^2 = .284$.

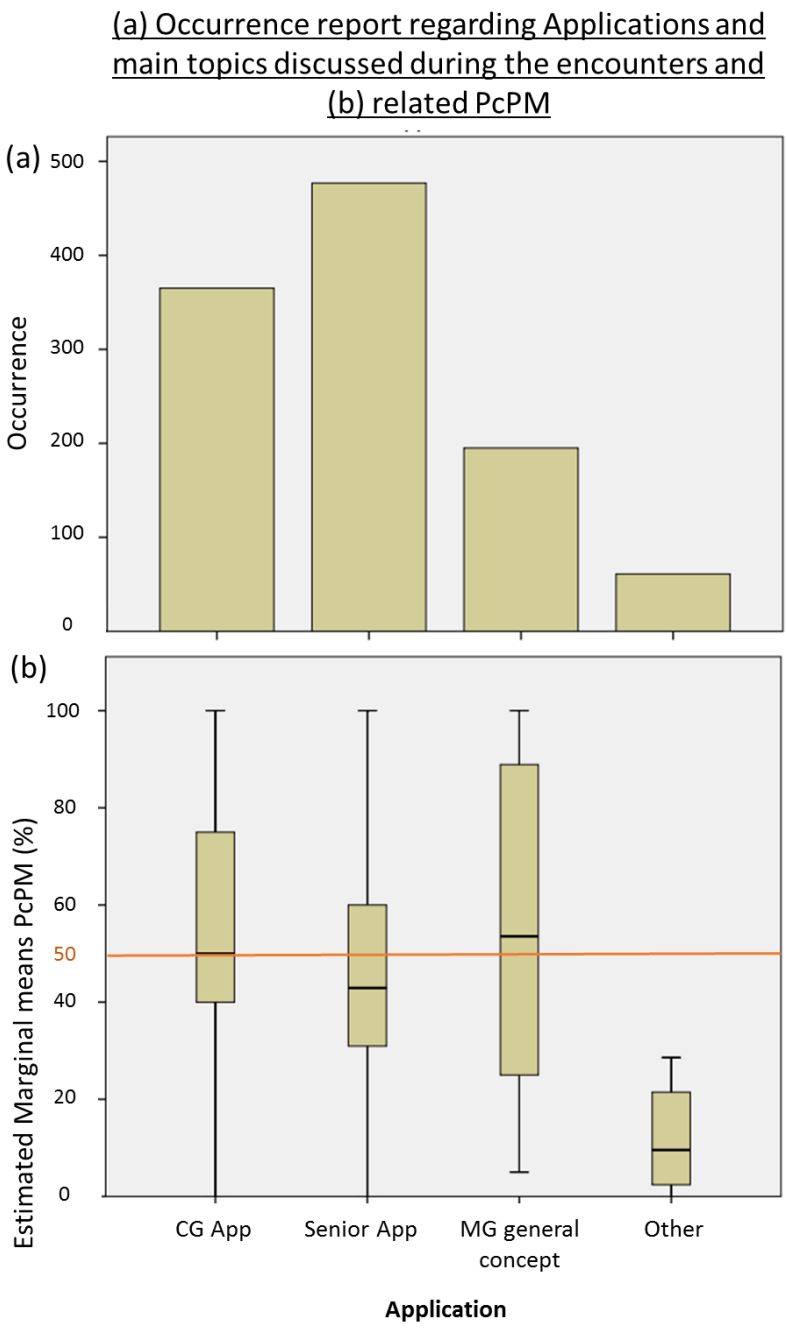


Figure 6: (a) number of markers regarding the caregiver application, the senior application and MyGuardian general concept collected during encounter 1 and 2; (b) and related Percentage of positive acceptance markers (based on estimated marginal means for C-EU as the random factor).

A two-way ANOVA of Application and ILSL yielded no significant differences between the different MG applications discussed and the different participants' ILSL in regard to overall PcPM. Nevertheless, a one-way analysis of variance revealed that Application-ILSL interaction had a very significant effect: $F(8,16) = 8.769, p = .000$. Application and Status interaction explains a large proportion of variance in regards to scores (large size effect): $\eta^2 = .807$ (see Figure 7).

- Regarding CG App, a correlation for the data revealed that PcPM and ILSL were significantly negatively correlated: $r = -433, \mathrm{N} = 33, p = .012$. (See Figure 8)

- Regarding Senior App, a correlation for the data only revealed a positive correlation tendency between these two factors: $r = 242, \mathrm{N} = 51, p = .087$. (see Figure 8)

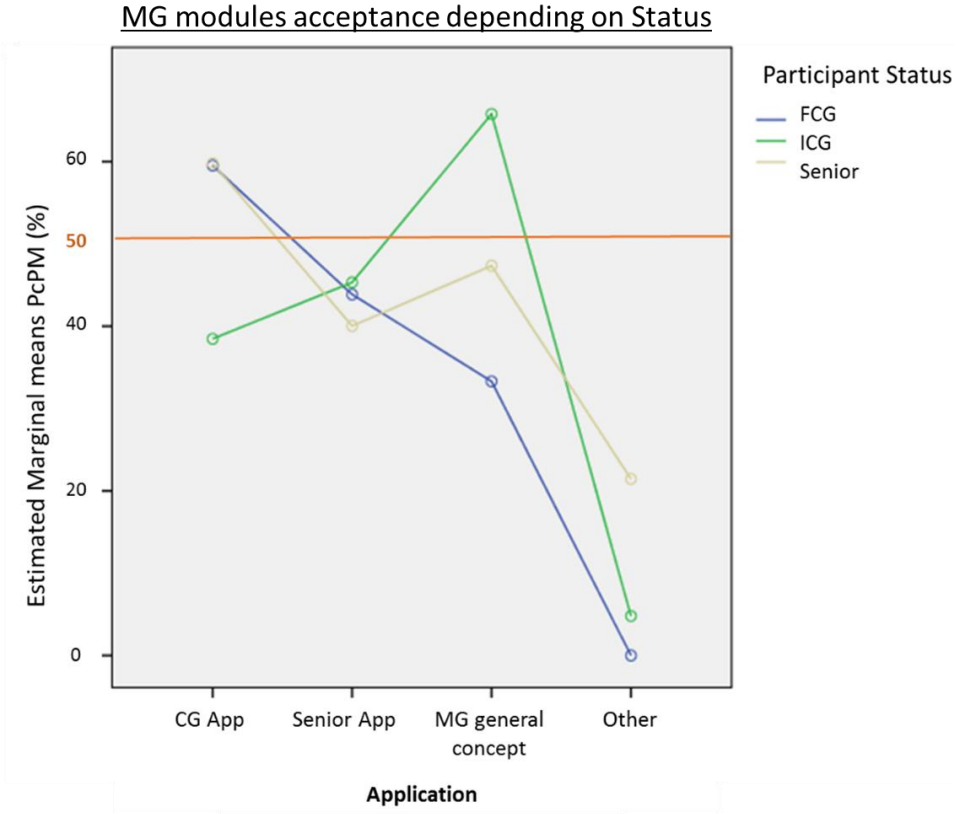


Figure 7: Percentage of Positive Markers (based on estimated marginal means for C-EU as the random factor) regarding the caregiver application, the senior application and MyGuardian general concept (at T1 and T2) depending on the stakeholders' status.

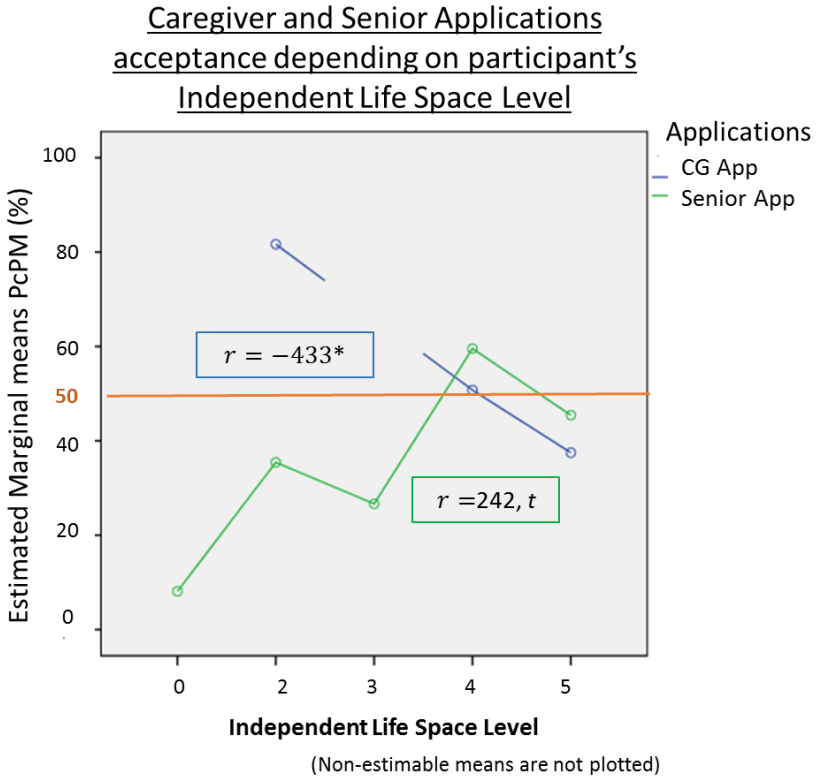


Figure 8: correlation coefficients related to linear relationships between the stakeholders independent life space level and the Percentage of positive acceptance markers regarding senior and caregiver application.

In conclusion, there is no significant difference between the overall acceptance of caregiver and senior applications. The overall acceptance of MG general concept is quite equivalent to CG and Senior Applications acceptance. Moreover, we observe no significant difference in ICGs', FCGs' or seniors' acceptance of MG.

Nevertheless, we observe that Senior Application acceptance tends to increases with participants' independency level (ILSL).

We also observe that the more participants' have a low independency level, the more they show acceptance for CG Application.

These outcomes can be related to disease insight and denial process regarding independency loses (see chapter 3.1.5.3).

3.1.4.2.2. Acceptability of MG functionalities

The factor Functionality contains 10 modalities:

i. Call: all comments regarding phone calls
ii. SMS: all comments regarding text messages
iii. Phone: all comments regarding the smartphone (touch screen, (un)lock procedure, *etc*…)
iv. Comfort zone: all comment regarding comfort zone (zones, alarms, ***etc***…)
v. Location: all comments regarding seniors' geolocation
vi. Battery: all comments regarding battery display (senior status, battery alarms, ***etc***…)
vii. Historic: all comments regarding historic display
viii. Interface: all comments related to interface
ix. Notification: all comments related to notifications display
x. Other: comments that are unspecifically related to MG previous functionalities although they are related to MyGuardian and to assistive technologies and interactions with assistive technologies. Although 'Other' is difficult to interpret, it remains an interesting category.

3.1.4.2.2.1. Global

A one-way ANOVA of Functionality (Fx) revealed that Phone acceptance (PcPM) is lower than for four other MG functionalities (Battery, Comfort zone, Interface, Notifications): $F(1{,}106) = 5;469, p = .000$. The others functionalities acceptances does not significantly differ from each other. Functionality explains a large proportion of variance in regards to scores (large size effect): $\eta^2 = .340$ (see Figure 9).

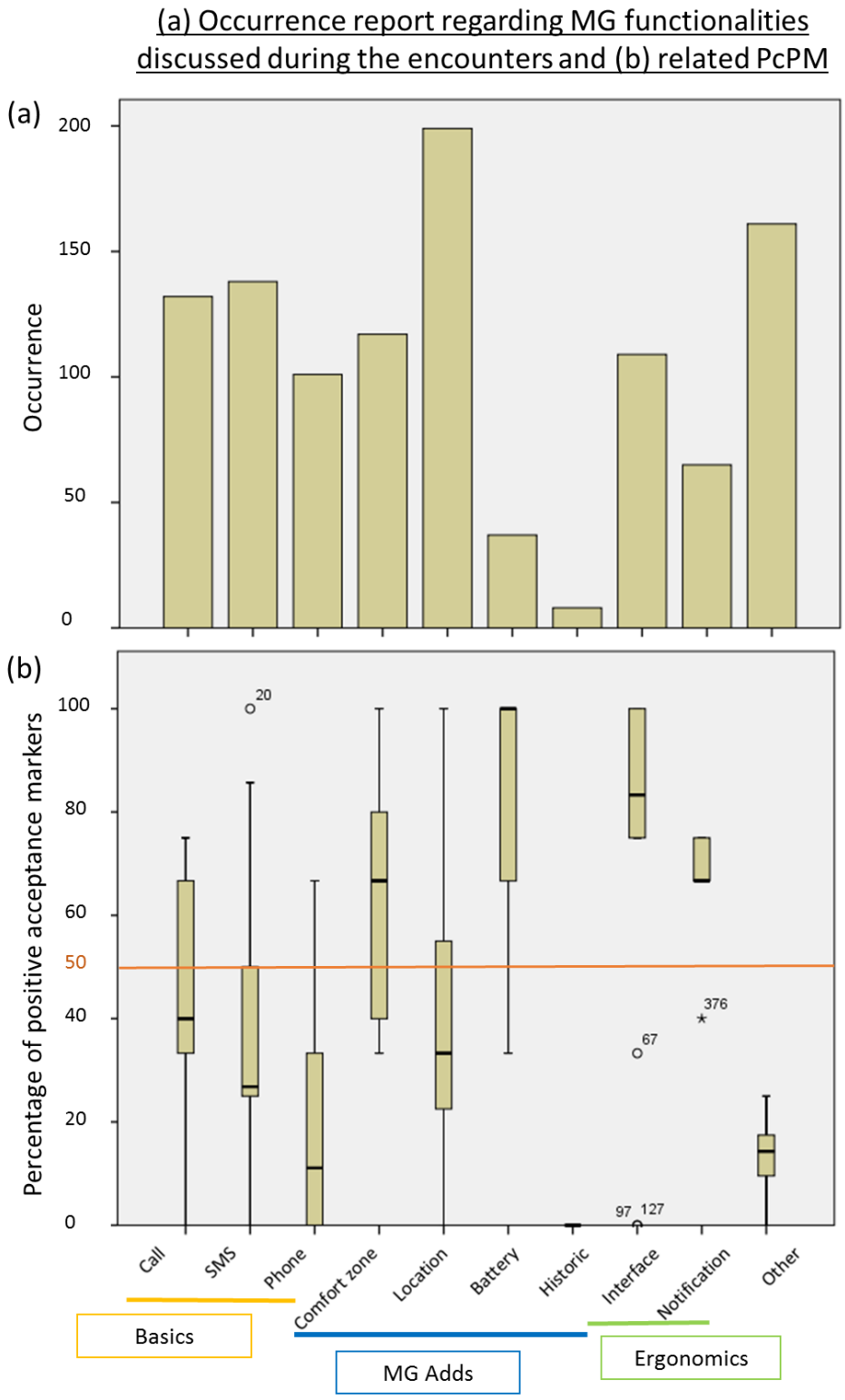


Figure 9: (a) number of markers regarding each MyGuardian functionalities collected during encounter 1 and 2; (b) and related Percentage of positive acceptance markers (based on estimated marginal means for C-EU as the random factor).

3.1.4.2.2.2. Specific to Location and Comfort Zone

In this section, the variable Fx has been truncated (FxTr): only markers related to Location and Comfort Zone have been processed.

A two-way ANOVA of FxTr and Status yielded no significant differences between the two functionalities and the different participants' status in regard to overall PcPM. Nevertheless, Post hoc comparisons using the Bonferroni test revealed that FCG showed a better acceptance of Location than ICG and Senior (respectively $p = .014$ and $p = .056$) although ICG, FCG and Senior all showed a rather great acceptance of Comfort Zone (see Figure 10).

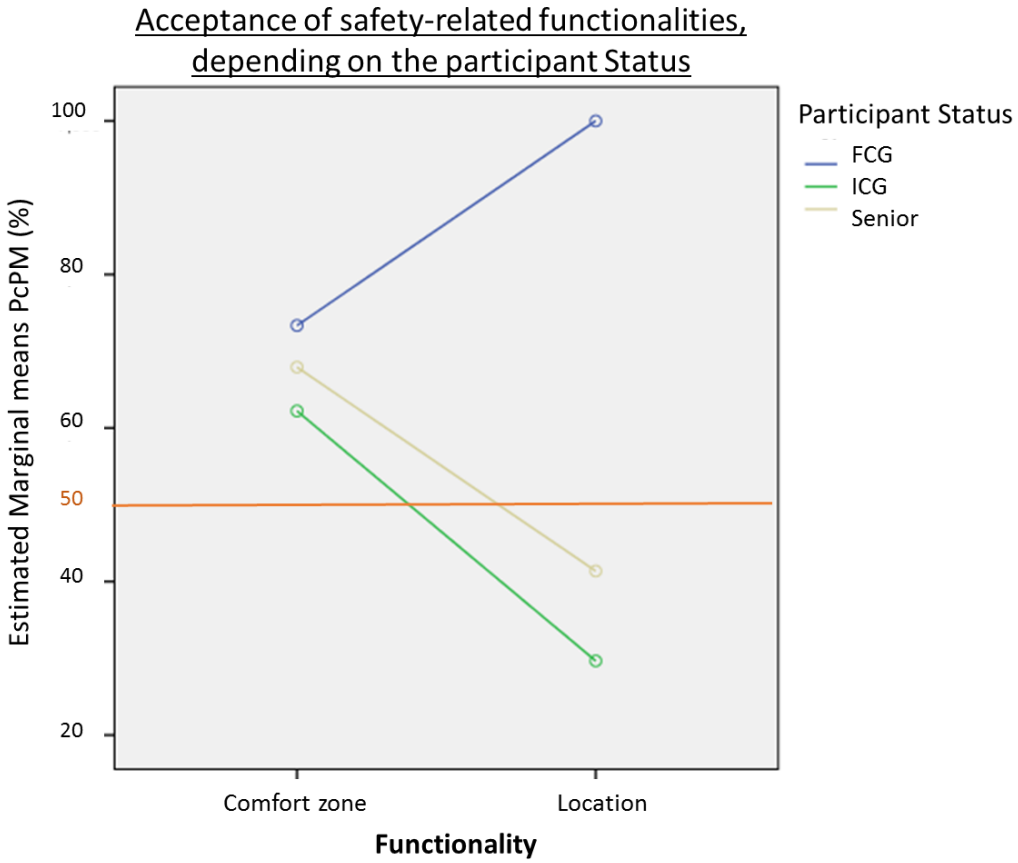


Figure 10: variation of Percentage of Positive Markers (based on estimated marginal means for C-EU as the random factor) of Comfort Zone and Location functionalities depending on stakeholders' status.

Comfort zone and Location alarms are functionalities that have been developed to give a safety-related service to care networks. Therefore, they are more or less invasive or intrusive and can understandably be unacceptable. Location is a functionality providing to CGs a continuous tracking of seniors when Comfort zone remains more a vigilance functionality, going off only in case of need. We observe that the latest divide widely seniors and ICG from FCG, when the first makes positive consensus in care networks. This outcome can be interpreted in regard with chapter **3.1.5.2.2.1** and **3.1.5.2.2.2**.

3.1.4.3. *Usability of MyGuardian*

3.1.4.3.1. Occurrence of markers related to MG usability

The Figures 11 and 12 display the occurrence of markers related to MG prototype usability and reliability, respectively regarding mobile applications and functionalities.

3.1.4.3.2. Applications

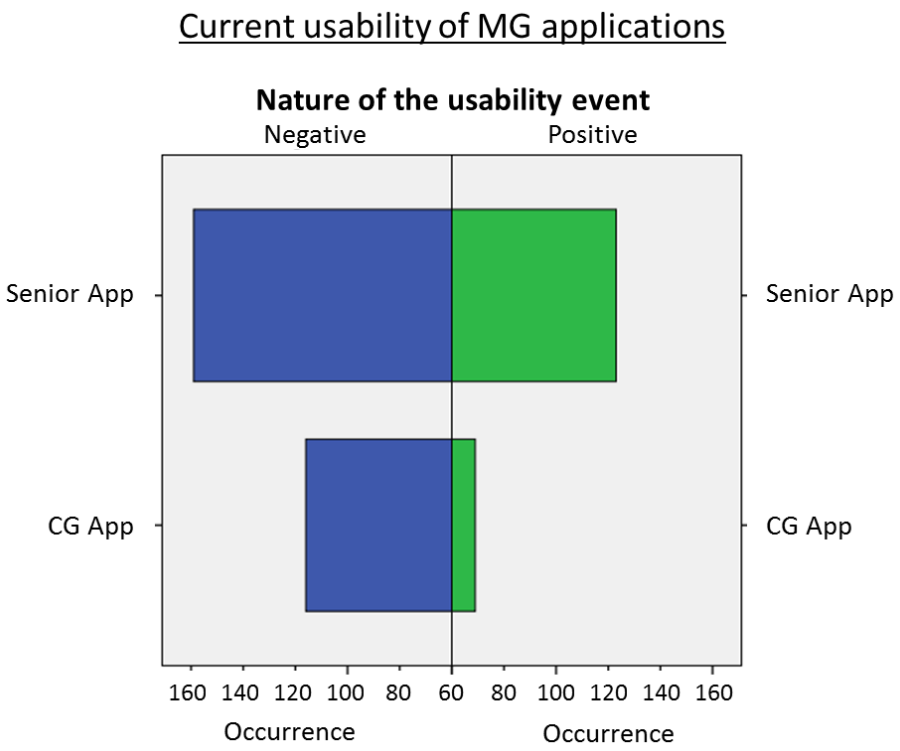


Figure 11: Number of usability and reliability events regarding MyGuardian mobile applications that occurred during the encounters.

3.1.4.3.3. *Functionalities*

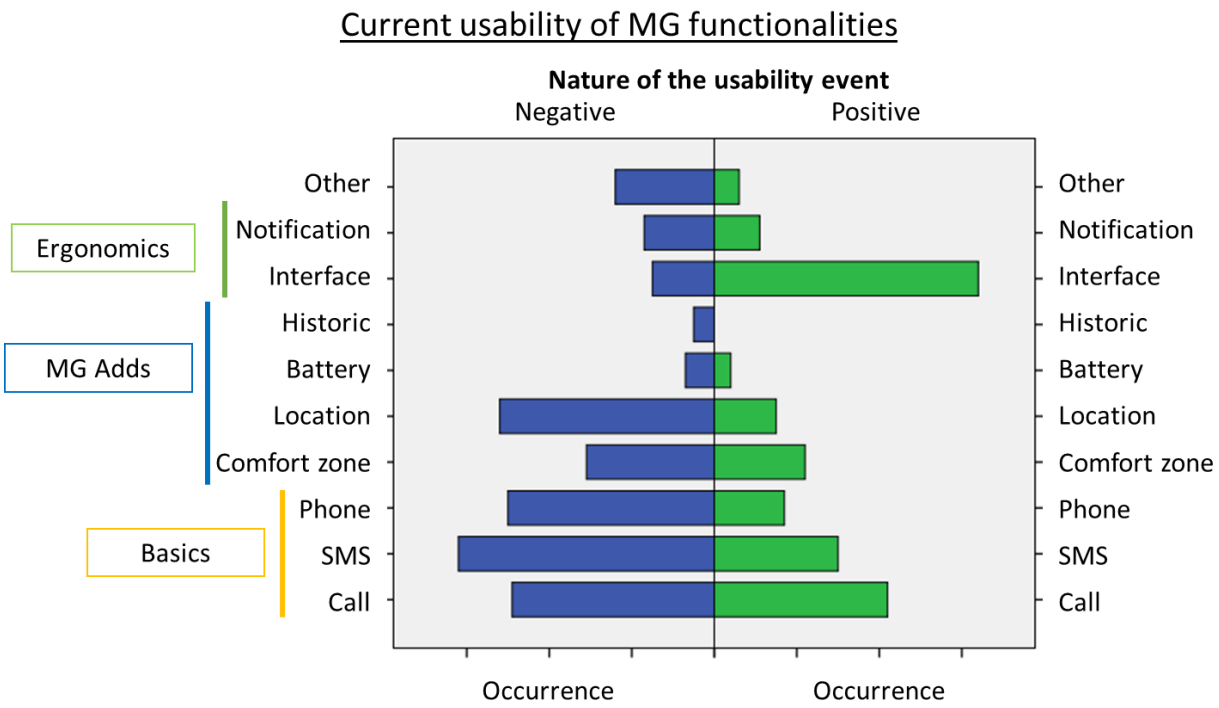


Figure 12: Number of usability and reliability events regarding the functionalities of MyGuardian mobile applications that occurred during the encounters.

3.1.4.4. *Influence of MG usability on MG acceptance*

Since MG is discussed during encounter N°1 (T1) and used during encounter N°2 (T2), the comparison of PcPM at T1 and T2 should give information on how MG usage influences MG acceptance.

A one-way ANOVA of Time revealed that MG acceptance (PcPM) is lower at T2 than T1: $F(1,113) = 3.977, p = .049$. Time explains a moderate proportion of variance in regards to scores (medium size effect): $\eta^2 = .034$ (see Figure 13). Therefore, MyGuardian usage has a negative influence on MyGuardian acceptance.

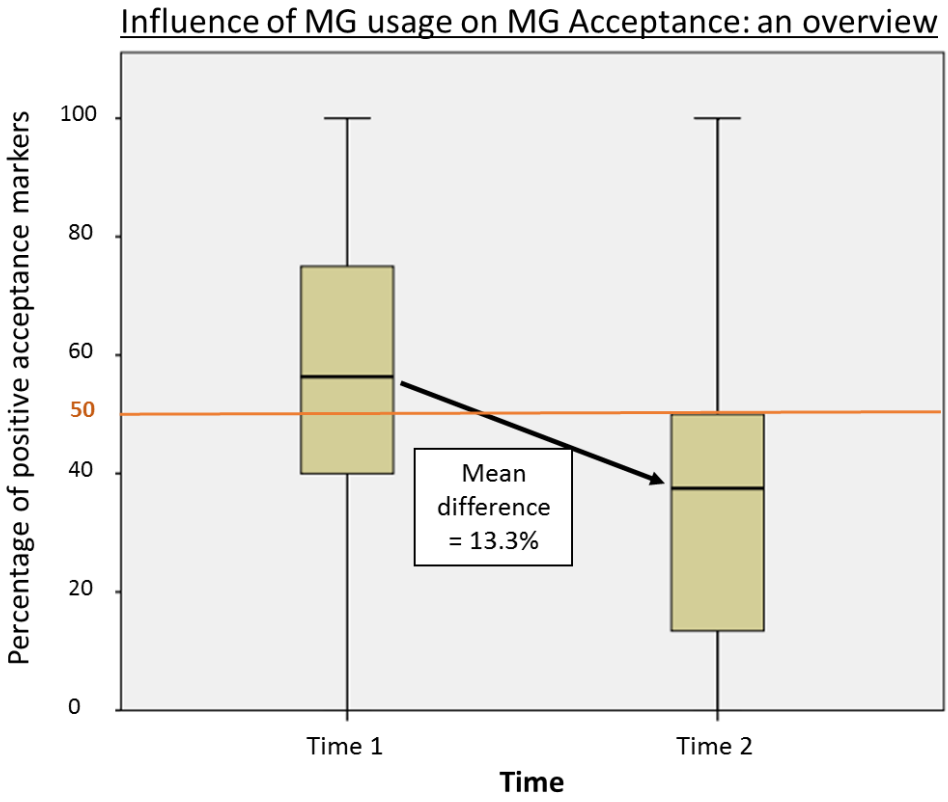


Figure 13: median values, data homogeneity, maximum and minimum values of the Percentage of Positive Markers obtained at T1 (no Mg usage by the stakeholders) *versus* at T2 (MG usage).

A two-way ANOVA revealed a significant interaction between Time and C-EU: $F(2,113) = 3.464, p = .035$. Post hoc comparisons using the Bonferroni test confirmed the lower PcPM mean for the Netherlands-CAREYN compared to France-AGIM and Spain-CETIEX at T1 (respectively $p = .002$ and $p = .001$) but not at T2 (see Figure 14b). Time and C-EU interaction explains a moderate proportion of variance in regards to scores (medium size effect): $\eta^2 = .058$. This outcome illustrates the fading of social and human factors (C-EU) influencing participants' global acceptance of MG, for the profit of MG current prototype acceptance (moderate but significant impact of reliability and usability). MyGuardian acceptance assessed at T2 is related to:

- Participants' attitude toward technology
- MG
    - efficiency
    - reliability
    - ergonomics
    - ease of use
    - smartphone characteristics (weight, size, touch screen…)

Figure 15a displays the nature of the acceptance markers collected during T1 and T2 that is:

- markers related or not to a usability or reliability event
- markers positive or negative

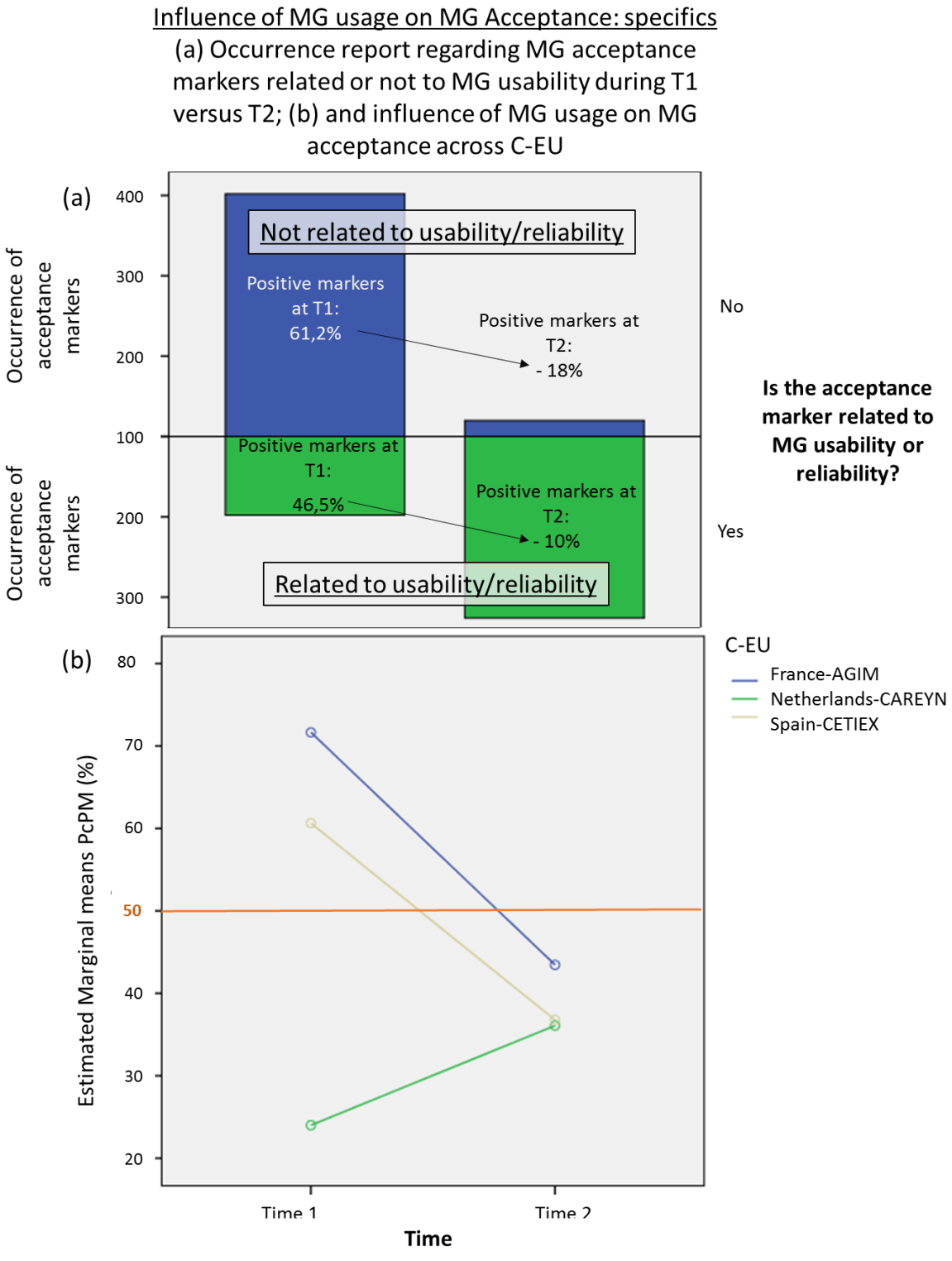


Figure 14 a) and b): a display of the specific links and causality mechanisms that might have influenced the Percentage of Positive Markers (based on estimated marginal means for C-EU as the random factor) collected at T1 *versus* T2 across End-User partners.

3.1.5. Qualitative approach and MG acceptance analysis in regard to research questions

3.1.5.1. What are the effects on the users of introducing MG into the context? Does it increase mobility and safety?

Understanding the overall concept of MG proved to be quite difficult the care networks, which led to confusion during the use. The feeling of safety is therefore not reached during the test, since the seniors do not understand the principle. In some cases the senior even got anxious when the alarm went off.

However, the seniors with MCI were more willing to leave the house knowing they have the MG phone with them. They perceived the phone to be quite easy to operate during the second encounter and thus were able to make a call easily. These seniors would be more inclined to go outside and feel safer when leaving the house. The idea of a comfort zone helps to increase this feeling of safety since the senior knows he/she would receive help when he/she would be lost. Conversely, seniors with a more severe form of dementia were not able to interact with the phone and had difficulties understanding it. The interaction issues causing difficulty were, for example handling the phone without touching the screen, but also unlocking the phone and calling a CG. Next to these differences caused by the different states of dementia, the chance of the senior remembering to take the phone with him was also judged as improbable. The chance of the senior remembering to take the phone with him was also judged as improbable by the CG.

"You could go anywhere safely"	CG - Q 171
Difficult to manipulate the phone without touching the screen	S - O 42
"I cannot make anything out of it!"	S - Q 137
" But then she (senior) needs to take the phone with her. She is not used to that, so she will never remember taking the phone with her."	CG - Q12

Conclusion

The mild cognitive seniors are able to interact with the MG phone application at first instance and with a **simplified** application and thus feel more mobile. In the case of seniors with a more severe form of dementia, it will not increase their mobility or safety because they would not know how to interact or respond to it. Not only interacting with the phone is a big issue but also taking the phone with them, due to the severe dementia. It is difficult to learn something new and therefore there is also a high risk of forgetting the phone.

3.1.5.2. How do the functionalities of MG match with the desired value for the care organization?

3.1.5.2.1. What are the effects of MG on the senior? Does MG give the senior a safe feeling?

The complexity of the application does not enhance the feeling of safety of the senior when he/she is using the MG application. One of the functions that was perceived as quite complex is the escalation procedure. The escalation procedure as designed was clear for neither the senior nor the CG. When an alarm goes off the senior would receive the message asking if he/she needs help. This message is not clear enough for the senior and thus he/she doesn't know what will happen next. This confusion will cause the senior to feel unsafe and even ignorant.

"Does it give an alarm at her side as well? Something in the display or with a sound? Or does it startle them up too much?" CG - Q 119
Senior gets emotional as she gets the feeling she is failing when using MG. S – O 29

Regarding this question, AGIM worked with an experimental design of the alarm notification on Senior App. Whenever an 'out of zone" alarm went off, senior notification displayed Figure 15 screen. This notification is not displaying terms related to safety. It only asks to the senior if he wants to call a CG.

Translation:
"Souhaitez-vous appeler Yves?" → "Do you want to call Yves?"
"Oui, appeler Yves" → "Yes, call Yves"
"Non, plus tard → No, call later"

No rejection was observed. Senior adherence to this notification appeared to be quite positive. Most Senior chose to give the CG a phone call.

Figure 15: experimental design of the out of zone alarm notification on the senior application.

Conclusion
The seniors perceived the system as too complex and therefore were afraid even to use it. It gave seniors with severe dementia an insecure feeling. Even when the seniors managed to use the phone and call a caregiver they did not fully understand the concept of MG, which in the end led to an increased feeling of insecurity.

3.1.5.2.2. Does MG give the informal care giver peace of mind?

The peace of mind of the CG is influenced by all the specific functions of MG. The influence of the individual MG functionalities is explained below.

3.1.5.2.2.1. Location

Being able to see the specific location of the senior is for most CGs reassuring and does contribute to their peace of mind. Furthermore, the CG can 'keep an eye' on the senior, even when not being physically around. This means that the CG can more or less continue his daily activities, while being able to get affirmation about the location of the senior whenever he/she

wants. However, for some CGs, the tracking function is not that necessary (yet). The benefit of MG for places close to home is not big enough to implement the MG service into daily life.

"Yes, because that is the most useful function, if she (senior) has her phone with her. […]"	*CG – Q 12*
"I don't exactly have a safer feeling if she has such a device with her. Nowadays she still can go outside for small meetings, as usual, and it's fine"	*CG – Q 120*
"Then all of us (the CGs) can jointly keep an eye on her […]"	*CG – Q 110*

3.1.5.2.2.2. Comfort zone:

The alarm that goes off when the senior is out of a comfort zone is the most interesting part of MG. Being sure that the senior is in his/her comfort zone or otherwise being immediately notified by the alarm will increase the peace of mind of the CG.

"The possibility for an alarm to go off when my mother is outside a predetermined area, that is nice"	*CG – Q 56*

3.1.5.2.2.3. Status

When an alarm goes off, the smartphone of the senior will give a sound notification and it will show the question: 'How are you feeling?' The CGs indicated that the seniors are not be able to objectively assess the situation: the senior will never select that he is not fine (because he feels fine; nothing is wrong) and therefore never indicate that he wants help. Furthermore, even if the senior does notice that he is not fine, there is still a possibility that he is not able to respond correctly, especially in a stressful situation (for example: when the senior does not know where he/she is). This leads to a decreased peace of mind for the CG since he/she can never be sure what the real state of the senior is and how he will respond to the alarm.

"Wherever she is, she will always say that everything is fine. And that she is able to do anything she wants."	*CG – Q 24*
"Even at the time when she was still wearing an alarm button around her neck, she forgot to press it when she had fallen down"	*CG – Q 55*

3.1.5.2.2.4. Feedback

After an alarm goes off, one of the CG (which can be specified on a list on the website) will be notified. He/she can choose whether to accept the alarm or reject the alarm. If the alarm is rejected, the next CG on the list will receive the alarm. When one CG (i.e. 'Laura') accepts the alarm, the senior gets the message: 'Laura will take care of you'. From that moment, both the CG and the senior are left in uncertainty about what will happen next. This uncertainty does not contribute to the peace of mind of the CG at all. In addition, when one of the CGs accepts the alarm there is no confirmation to the other CGs. Not even the CG who has rejected the alarm is informed about the state of affairs. One senior described the potential situation that the CG on top of the list receives an alarm, and he/she knows that a specific CG (but not the next one in the alarm list) is most often available around this time at this specific day. In that situation, he would like to call this person directly, instead of waiting for the system to get through the established order of CGs. Having to wait for that without being able to do anything will definitely not contribute to the peace of mind of the CG, especially not in an emergency situation where the senior is lost and needs help.

"But I think it will be much clearer if it will say 'I'm coming to you' "	*CG – Q 135*
"Than we [...] can react to each other"	*CG – Q 110*
"Then I would use the system to contact her (other CG) directly"	*CG – Q 25*
Phone showed 'Laura is going to take care of you' ; but the reassurance purpose of the notification is not very clear.	*S – O 54*

3.1.5.2.2.5. Usability of the smartphone

Whether MG could be integrated in the current situation depends on how well the CG can handle the smartphone. Some, mostly younger, CG did not have any trouble using the smartphone, while other CG experienced a lot of trouble. We take from this that it is necessary for the CG to be able to understand and use the smartphone in order to make MG a useful concept.
Next to how the CGs are able to cope with a smartphone, the usability of MG also depends on how well the senior understands the smartphone and the application. Because the seniors with more severe dementia don't understand the phone, this does not contribute to the peace of mind of the CGs.

Touch screen difficult to master	*S – O 45*
"From my point of view...everything is clear. Also easy to use"	*CG – Q 151*
"If you show how to use it, then he (informal caregiver) is able to imitate it. But a little later, he won't be any more"	*CG – Q 3*
"It will become too confusing, in fact it is too confusing already"	*CG – Q 139*
"But then she (senior) needs to take the phone with her. She is not used to that, so she will never remember taking the phone with her"	*CG – Q 12*

3.1.5.2.2.6. Battery

Even though there is an alarm to warn the senior and CGs about the battery level of the smartphone of the senior, it does not contribute to the peace of mind of the CGs: the CGs need to trust the senior to charge the smartphone when the battery is low. The CG is powerless in this situation: he has to go to senior's location to charge the smartphone himself if he wants to be sure.

"There are a few buttons on the device, that my mother's doesn't know how to use. For example a low battery. Then there is the assumption that she would know when to put the device in the recharger. If I look at my mother...that will never work"	*CG – Q 149*

3.1.5.2.2.7. Conclusion

To summarize, the peace of mind of the CGs is influenced by a number of factors. Being able to see the location of the senior from a distance, the most important function of MG, increases the peace of mind of the CG a great deal. However, this distance also causes some communication problems, which introduces a lot of uncertainty into the situation. This detracts from the peace of mind for the CG. Lastly, the fact that the senior is not able to deal with the smartphone on the needed level decreases the peace of mind of the CG as well.

3.1.5.3. *What is the influence of MG on the self-esteem and freedom of the senior?*

Several seniors mentioned they would feel spied upon when using the MG application. This indicates that it will decrease their feeling of independence. This feeling of lack of independence is also influenced by their level of disease insight. Seniors who are in denial about their dementia would not accept the product since it would require them to accept the fact that they need help. This would likely affect their self-esteem. Conversely, one senior with better disease insight mentioned that she is fully dependent on her husband already. Due to this, she would be more likely to accept the principle of MG and not feel spied upon.

The noticeable decrease in their self-confidence when trying to learn the skills of interacting with a smartphone, is likely to impact their self-esteem. Conversely, one senior with better insight in his/her disease felt the principle of MG would be reassuring and would give the confidence that she would be helped if needed.

"I don't why we should have this kind of device, we don't need it" S – Q 215
"I'm totally depending on him, if I'm outside. He takes care of me" S – Q 128
"You really have to keep everything as simple as possible...this generation of people with severe dementia don't know anything about smartphone use" CG – Q 47
"I think if she can cope with the phone, she will feel more safe. Only the thought of being able to tell someone she lost her way will be helpful." CG – Q 145
Senior gets emotional as she gets the feeling she is failing when using MG. S – O 29
"I am starting to get the hang of it....well a little bit of it" S – Q 42

Conclusion

The seniors' self-esteem and freedom is at risk of being affected negatively by the introduction of MG, although in one case it appeared they might benefit from MG. The seniors' self-esteem and freedom can only be increased or maintained if the service would be simplified in a way that the senior would be confident to use it/or if it would be an unobtrusive monitoring system that the senior does not need to operate. The complexity of the current system decreases the self-esteem and even makes seniors aware on how dependent they are on their spouse/son/daughter.

3.1.6. Which key value points arise from the MG test and what are recommendations for MG?

3.2. Key value points

The fact the CG is able to see the location of the senior increases the peace of mind of both the senior and the CG. For the senior this also increases the feeling of safety.

- Being able to set a comfort zone for the senior and knowing an alarm will go off when the senior leaves this zone gives the CG peace of mind.
- Both functions can be done from a distance, which gives the CG the opportunity to 'monitor' the senior without constantly bothering the senior.
- For the seniors with mild cognitive impairments the mobility is increased.
- The self-esteem of the seniors with mild cognitive impairments may increase with learning something new.

- Remains an intimacy issue regarding Location functionality.

3.3. Recommendations

- The usability and complexity of MG could be improved in order that all the users to be able to cope with it redesigning the user interface for the website and the applications slightly

- After an alarm goes off MG could play a more significant role in guiding the CG as well as the senior. For example the question the senior gets when an alarm goes off at the moment is: “How are you feeling?” Possibly this could be: “I’m coming to help you.” In fact, only an objective evaluation of the status of the senior could increase the peace of mind of the CG. Next, the alarm is too quiet. Some of the seniors have trouble with hearing, so a solution should be found.

- The word “alarm” is not the right term to use because it is has a too negative tone and may scare the senior unnecessarily. The name of the concept, MyGuardian, should also be changed into the language of the users. This way MG will be more understandable for the seniors.

- The CGs involved in a care network need to have more possibilities to contact each other. The function to send a group message should at least also be integrated in the CG application, next to a function to directly call each other in a quick way. This is very useful in case of an alarm: If a CG is not able to accept an alarm he/she still wants to know who accepted the alarm and if the situation is resolved.

- The application only works properly if there is a decent internet connection. In some of the houses, the reception was quite bad. None of the participants had Wifi in their homes. This could lead to errors with MG and thus affect the safety of the senior.

- The application should be able to go back to the application after ending a call. Currently, this is not the case, and it is sometimes confusing to the senior.

- Lastly, the senior location does not show precisely when the senior is in one place: it seems he/she is still moving.

4. Final Conclusion

In the previous report [D22 – Preliminary User Acceptance Test Report], a number of recommendations and future prospects were summarized. To provide a final conclusion from the user acceptance research of the concept, some of the statements from that previous report are reiterated and incorporated here.

Disease insight: [..] Depending on the senior’s disease insight, he can feel controlled - negatively influencing his well-being and independence, or supported by MG - positively influencing his well-being and independence.[..]

It appears that the level of impairment of the senior is the main influence on whether they will accept MG or not. In addition, if the senior forgets the smartphone, doesn’t understand the alarm or simply is scared of a smartphone, they will not sustainably adopt MG.

Dialogue paradigm: [..] Most seniors do not think or want to admit they need help and will therefore never select on an interface: ‘I need help’.[..]

The dialogue paradigm of the application, offering 'help', does not correspond well with the impairment of the senior. It is difficult for most people suffering from dementia to indicate whether something is definitely wrong, because most situations they would not classify as wrong themselves (for example if they were lost). The alarm should be able to objectively assess whether the senior needs help, without the senior having to answer questions. After assessing the situation it should contact a CG in a way it will give them all the information they need in order to contact and possibly help the senior. The last step would be to inform the other CGs. These steps should be possible everywhere and 24/7.

Integration in daily life: [..]If the CG is sure that the senior takes the phone (fully charged) with him/her every day, wherever he/she goes, it does create peace of mind. Unfortunately, the question remains if the senior is capable of: taking it with him, being able to operate it and being able to respond adequately to an alarm [..]

Many characteristics of MG lead to risks when trying to integrate it in the activities of daily living. The senior might forget the phone or be unable to operate it. While MG overall can potentially increase peace of mind for the CG, these risks decrease the peace of mind of the CG. For the CG to be truly convinced that the senior is safer with MG, all these factors need to be decreased to a minimum or simply solved.

From this qualitative research it can be concluded that the concept of MG is very promising and that most of the participants can see the value it can bring to their lives. They understand that it could make the seniors' lives less dependent (seniors) and give the CG peace of mind without constantly being with the seniors. However, the MG service system currently needs further improvements in order to reach the previously mentioned benefits.

5. Annexes

5.1. *Annex 1: the moderating effect of the cognitive status on the relationship between out-of-home behavior, oneself sensation of environmental mastery and affect*

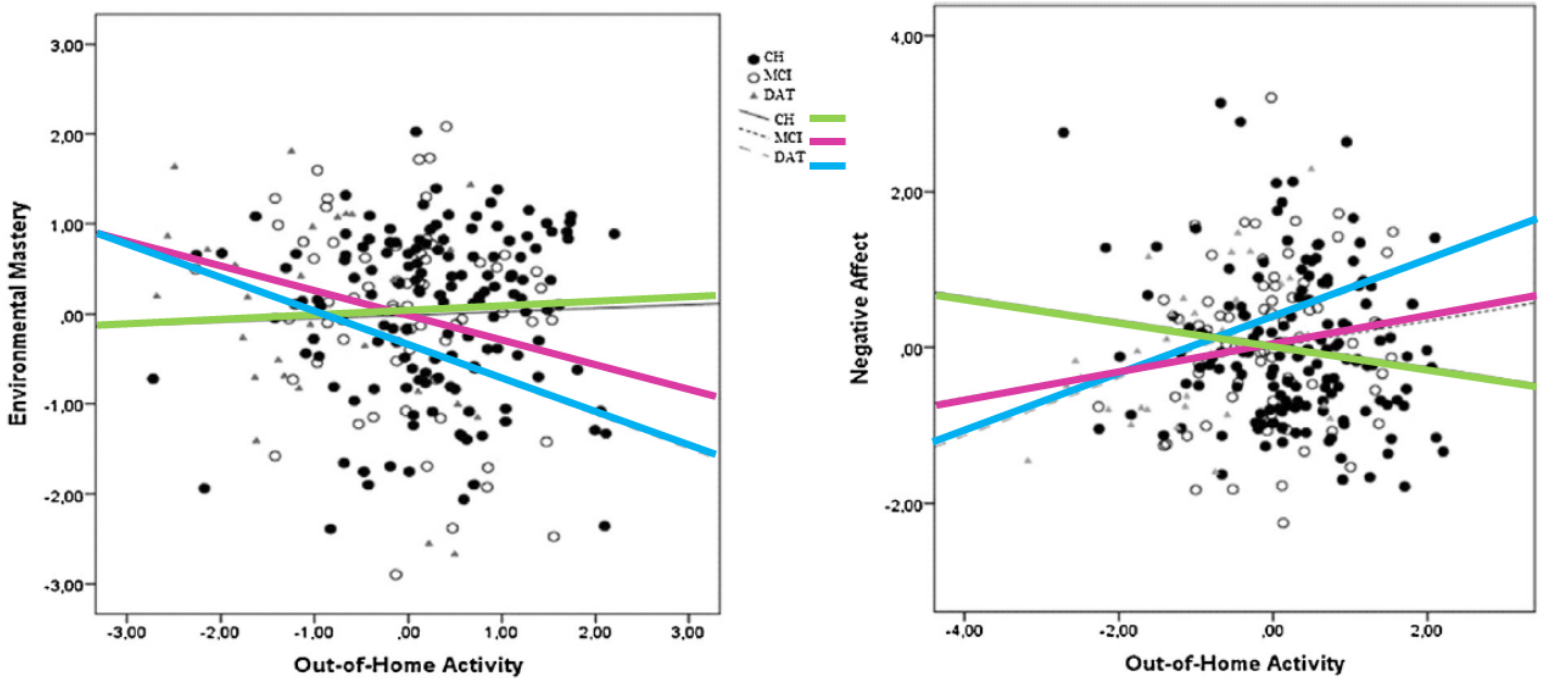


Illustration of differential relationships between out-of-home activity, environmental mastery, and negative affect. Notes: CH, cognitively healthy control persons; MCI, persons with mild cognitive impairment; DAT, persons with early-stage dementia of the Alzheimer's type. Relationships are controlled for age, sex, perceived health, physical functioning, household composition, country, out-of-home walking, and global out-of-home mobility. Extracted from Wettstein & al., 2014)

5.2. Annex 2: Full protocol description for the End-Users investigators

5.2.1. User testing protocol: an overview

5.2.1.1. *First encounter with the participants: presentation and information*

5.2.1.1.1. Material & intended interactions for the first encounter

Appendix 1: To be anticipated before the first encounter

Optional (but likely to be needed):

- Video or voice recorder (backup)

Needed:

- 1 smartphone per participant
- A few pens
- 1 camera

Notice of information

- One copy per participant (can be sent or given to the participants a few days before the encounter)
- All participants needs to read it.

Consent form

- Two copies
- The 2 copies need to be signed by all the participants AND by a researcher

Participant identification sheet

- One copy per participant
- The document is in an interview form
- Every participant is getting his picture taken (camera)

Life Space Assessment

- One copy per senior and informal CG
- To be filled in with the senior and the ICG (only if needed for the CGs, it is not a mandatory for a healthy CG for example).
- The document is in an interview form (complementary information in Appendix 2.)

Note sheet for qualitative markers

- The first page can be print only once, but we suggest to print about 5 copies of the second page.
- A 2nd researcher will have to fill this document in during:
  - the “Board” game
  - the “Practice” game

(Complementary information in Appendix 3.)

“Board”game guide

- One copy, if needed, for the researcher who will animate the group

- The material list, for the game in itself, can be found in the “Board” game guide

“Practice” game guide

- One copy, if needed, for the researcher who will animate the group
- The material list, for the game in itself, can be found in the “Practice” game guide.

5.2.1.1.2. Printing overview for the first encounter

ENCOUNTER # 1: **PRINTING OVERVIEW**	**Number of copies needed**
Notice of information	1 per participant
Consent form	2
Participant identification sheet	1 per participant
Life Space Assessment	1 per participant (mandatory for the senior, only if needed for the CGs)
Note sheet for qualitative markers	1
	5
“Board” game guide	1 (if needed)
“Practice” game guide	1 (if needed)

5.2.2.1.1. Protocol/script for the first encounter

To be anticipated before the first encounter:

- Simplify the smartphones before giving them to the participants (see Appendix 1.)

CAN LAST ABOUT 20 MINUTES!!!

- The smartphones must be turned on (GPS and 3G) one hour before the beginning of the two encounters. Indeed, the location on the CG app' shows the 10 last known positions (those can be off topic if the devices are putted on too late…)

Place: up to the researchers

Participants

- Senior
- Formal CG(s)
- Informal CG(s)
- Two or 3 researchers

Formalities

- Get the informed consent of the stakeholders (see **doc: consent form**)
- Fill in the participants identification sheets (see **doc: participant identification sheet**)
- Get knowledge about the current senior's mobility AND bring to the foreground the scenario which will be used during the field testing (see **doc: Life Space Assessment**)
- Assess the CGs' current mobility if he/she is aged (see **doc: Life Space Assessment**)

Test Protocol

The researcher who is filling in the note sheet can only be in charge of this task. He must be physically isolated from the group table, otherwise it is too complicated not to interact with the group and then filling in the note sheet becomes very difficult and misfit.

- Introduce and contextualize MG resources as well as adress mobility and safety issues with the stakeholder:
  - Board game (get material!)
  - Researcher A: animation (see **doc: Board game guide**)
  - Researcher B:
    - Upload the participant's pictures on the web while the researcher A explains the Board game.
    - Check that the participants' pictures have been uploaded
    - Continue collection of the qualitative markers (see **doc: note sheet for qualitative markers**)
- Get the participant more familiar with the use of a smartphone
  - One smartphone per participant
  - Researcher A: animation (see **doc: Practice guide**)
  - Researcher B: continue collection of the qualitative markers (see **doc: note sheet for qualitative markers**)

End the first encounter

- Define when and how some members of the group will help define the comfort zone for the field testing
- Take a minute to explain what will be the next encounter

5.2.3. Second encounter with the participants: field testing

5.2.3.1. *Material & intended interactions for the second encounter*

Needed:

- At least for the researcher A who will be outdoors with the senior: a voice recorder or a GoPro.
- 1 smartphone per participant
- 1 phone charger
- A few pens
- Users accounts already created:
  - Pictures
  - Names
  - Comfort zone
- If possible Computer and Wi-Fi connection in order to use the MG notification simulation portal (back up plan if the technology doesn't work):
  https://myguardian.unige.ch/MyGuardian

- Participants ID (for the notification portal): you can collect the participant ID by downloading the contact picture on the web app. The downloaded picture is automatically named with the contacts ID.

Note sheet for qualitative markers

- If 3 researchers available:
  - Researcher B: the first page can be print only once, but we suggest to print about 5 copies of the second page
  - N.B: the researcher C will animate the CG group during the field testing
  - Researcher A will be outdoors with the senior (voice/video taping needed for future analyze).
- If only 2 researchers available:
  - Researcher A: will need to record the outdoor session for a future analyze.
  - The researcher B will animate the CG group during the field testing (voice/video taping needed for a future qualitative analyze).

Field testing guide

- One copy per researcher

Attitude Assessment Sheet

- One copy per participant
- The document is in a questionnaire form

Satisfaction Assessment Sheet

- One copy per participant
- The document is in a questionnaire form

5.2.3.2. *Printing overview for the second encounter*

ENCOUNTER # 1:	**Number of copies needed**

PRINTING OVERVIEW	
Note sheet for qualitative markers	1 5
Field testing guide	2
Attitude Assessment Sheet	1 per participant
Satisfaction Assessment Sheet	1 per participant

5.2.3.3. *Protocol/script for the second encounter*

To be anticipated before the first encounter:

The smartphones must be turned on (GPS and 3G) one hour before the beginning of the two encounters. Indeed, the location on the CG app' shows the 10 last known positions (those can be off topic if the devices are putted on too late…)

Place: senior's place

Participants:

- Senior
- Formal CG
- Informal CG
- Two or 3 researchers

Field testing (see the **field testing guide** for an overview)

- If 3 researchers available:
    - Researcher A:
        - Accompanies the elder outdoors, consistently with the scenario that was brought to the foreground during the first encounter (thanks to the LSA). (see **doc: field testing guide**)
        - Use the voice recorder during the session outdoor for a future collection of the qualitative markers (see **doc: note sheet for qualitative markers**)
    - Researcher B:
        - With the CG group at the senior's place
        - Animates the CG group (see **doc: field testing guide**)
        - Manages the notification simulator if needed (see **doc: field testing guide**)
    - Researcher C:
        - With the CG group at the senior's place
        - Collection of the qualitative markers (see **doc: note sheet for qualitative markers**)
- If only 2 researchers available:
    - Researcher A:

  - Accompanies the elder outdoors, consistently with the scenario that was brought to the foreground during the first encounter (thanks to the LSA). (see **doc: field testing guide**)
  - Use the voice recorder during the session outdoor for a future collection of the qualitative markers (see **doc: note sheet for qualitative markers**).
- Researcher B:
  - With the CG group at the senior's place
  - Animates the CG group (see **doc: field testing guide**)
  - Manages the notification simulator if needed (see **doc: field testing guide**)
  - Use the voice or the video recorder during the session for a future collection of the qualitative markers (see **doc: note sheet for qualitative markers**).

Collection of the acceptance markers (to be done at the end of the field testing, the senior and the Researcher A being back to the senior's place)

- Measure of the participants' attitude toward MG (see **doc: attitude assessment sheet**)
- Measure of the participant satisfaction with MG (see **doc: satisfaction assessment sheet**)

End the second encounter

- A reward can be provided to the participants for taking part to the research.
- Thank the participant for taking part and ask if they have some questions.

5.2.4. Documents

5.2.4.1. *Notice of information*

5.2.4.1.1. In English

Notice of information

Study on the acceptance and appropriation of the assistive technology MyGuardian

This study is conducted as part of the European Project MyGuardian (Project AAL-2011-4-027)

This study is conducted by [name of the end-user partner].

If you have any questions regarding the study, please contact [name and contact details of the person in charge of the study, that should be the person that will sign the consent form for the end-user partner].

Dear Sir or Madam,

We offer you to participate to a study that is conducted by [name of the end-user partner]. In this document, you will find a description of this study. It is important for you to read this document and to understand it. If you have any questions, please ask [name of the contact]. You can also show this document to any people that could inform you about the study. If you accept to participate, we will ask you to sign the study consent form.

What is this about?

This study is part of a project named MyGuardian, co-founded by the European Union. Partners from Spain, France, the Netherlands and Switzerland are involved in the project. It started in 2012 for 3 years.

The aim of the project is to conceive an assistive technology to improve the quality of life of people having mild cognitive impairments and of people assisting them in their daily life. In a concrete way, this assistive technology comes as a smartphone (a phone with a touch screen), as you can see on the picture below.

This assistive technology, which you can put in your pocket or handbag, will be with you during your trips so that you feel confident and safe when you are outdoor. It could remind you the things to do, or where to go. It could also help you when you want to join someone. In fact, it could do many things, but the question is will you use it and enjoy it? That's why we need your help: we want to know if the technology we are developing is interesting or is not for you.

How the study is organized?

The study is composed of 3 encounters.

Who will be present during the encounters?

- You, some of your close relationships who accompany you in your daily life and 2 people from [name of the partner].

Where will the encounters take place?

- During the first encounter, we will invite you to come to []. The second encounter will take place at your home.

When will the encounters be?

- The dates will be fixed with you and in advance.
- For each encounter, we will stay together less than 2 hours.

What will we do during the encounters?

- During the first one, we will play together to understand what could do MyGuardian technology. We will also show what is a smartphone and how it works.
- During the second one, we will test together MyGuardian in your daily life.

What do we expect from you?

Our aim is to understand if the assistive technology we developed is interesting for you. It means that we will ask you questions about your feeling regarding the solution we offer, if you find it too complicated to use, if it is useful for you and others, etc. What we

expect from you is just to answer to all these questions directly. There are no good or bad answers here, your opinion is the only answer we are looking for. Our aim is not to evaluate you; our aim is to evaluate together the technology we developed.

Who will pay when you come to the encounters in [name of the location]?

There is no retribution for this study. Nevertheless, for the encounters that will be organized in [name of the location], a taxi can drive you from your home to [name of the location] and drive you back at the end. We will pay the taxi directly.

Are there any risks for you?

During the encounters, we will speak about your daily life to help us understand why the technology we developed is interesting for you or not. If some of these questions bother you, you just have to say it. You can also decide to stop the encounters and to leave the study at any time with no justification. Leaving the study will absolutely have no consequence for you.

What are the benefits for you?

On a personal point of view, you may gain no benefit from this study. Nevertheless, you participation will help us to improve a technology that, we expect, will assist people in their daily life.

Cancellation of the study on the experimenter's initiative

[name of the person that will sign the consent form for the end-users partner] can cancel your participation to the study if he considers that it is better for you. The cancellation will have no consequence for you.

Your rights

Your participation has no consequence on your own rights and does not exempt [name of the end-user partner] of its professional responsibility.

Your participation is voluntary. It means that you can cancel your participation to the study at any time without having to justify your choice. Please inform [name of the person that will sign the consent form for the end-users partner] if you want to cancel your participation.

Privacy

All through the study, [name of the end-users partner] will collect some information related to your daily and private life. Data that are mandatory for the study will be registered and processed. All data will remain strictly confidential, in the limits of the law. To guarantee your privacy, data will be registered in an anonymous way.

In order to test the technology properly, the researcher will take your picture.

In order to analyze properly the outcomes of the study, the researcher will voice or video record some parts of the sessions.

Data will be stored during XXX years and then destroyed.

Diffusion of the results of the study

Results of the study may be diffused and discussed in scientific conferences and journal. No data allowing your identification will be diffused. Data will strictly remain anonymous.

Loan of material

During the study, we will lend you some material for test purposes and help you understand how to use it. You promise not to damage intentionally the material and to give it back and the end of the study or before if your participation to the study is cancelled. A list of the material loan to you will be made.

Thank you.

5.2.4.1.2. In French

Notice d'information

Etude sur l'acceptation et l'appropriation de la technologie d'accompagnement MyGuardian

Cette étude est menée dans le cadre du Projet Européen MyGuardian (Projet AAL-2011-4-027)

Cette étude est menée par le laboratoire AGIM, de l'Université Joseph Fourier de Grenoble.

Si vous avez des questions relatives à cette étude, nous vous prions de contacter Agathe Morin (par mail : agathe.morin@agim.eu ; par téléphone : 04 56 44 81 08).

Madame, Monsieur,

Nous vous proposons de participer à une étude organisée par l'Université Joseph Fourier de Grenoble et réalisée par le laboratoire public de recherche AGIM, laboratoire dépendant de l'Université Joseph Fourier de Grenoble et du CNRS.

Dans cette notice, vous trouverez une description complète de cette étude. Il est important que vous lisiez et compreniez cette notice. N'hésitez pas à prendre conseil autour de vous, et à poser des questions aux investigateurs de l'étude. Si vous décidez de participer à l'étude, les investigateurs de l'étude vous demanderont de signer le formulaire de consentement de participation à l'étude. Votre consentement et celui d'au moins une personne vous aidant au quotidien sont nécessaires.

De quoi s'agit-il?

L'étude que nous vous proposons fait partie d'un projet nommé MyGuardian, dont le financement est assuré par l'Europe. Des partenaires d'Espagne, des Pays-Bas, de Suisse et de France participent au projet, qui a commencé en mai 2012 et durera 3 ans.

L'objectif de ce projet est de développer une aide technologique pour améliorer la qualité de vie des personnes âgées présentant des troubles cognitifs légers et de leurs aidants. Concrètement, cette aide technologique prendra la forme d'un Smartphone (téléphone portable avec un écran tactile), et ressemblera à la photographie ci-contre.

Cette aide technologique, que vous pourriez glisser dans votre poche ou dans votre sac, vous accompagnerait lors de vos déplacements de manière à ce que vous vous sentiez à votre aise et en sécurité et que vous puissiez continuer à mener la vie sociale que vous souhaitez. Elle pourrait par exemple vous rappeler l'heure ou le lieu d'un rendez-vous et vous guider pour vous y rendre. Elle pourrait également vous aider à joindre une personne de votre entourage. En fait, une aide technologique comme celle-là pourrait faire énormément de choses. Mais encore faut-il que ces choses soient utiles, et faciles à utiliser. C'est pour cela que nous organisons cette étude.

Comment est organisée cette étude?

L'étude se compose de 2 rencontres.

Qui sera présent à ces rencontres?

- Vous, les personnes de votre entourage qui vous accompagnent au quotidien ainsi que deux membres du laboratoire de recherche AGIM.

Où auront lieu ces rencontres?

- Aux locaux de l'ESI (European Scientific Institute), Archamps Technopole pour la première rencontre, et à votre domicile pour la seconde.
- Vos trajets seront pris en charge par l'Université Joseph Fourier (Taxi ou VTC).

Quand auront lieu ces rencontres?

- Les dates de ces rencontres seront fixées avec vous et à l'avance
- Les deux rencontres dureront 2 heures.

Que va-t-on faire durant ces rencontres?

- La première rencontre nous permettra d'échanger sur le sujet de la liberté de déplacement des aînés tout en découvrant la technologie grâce à un jeu inventé par nos chercheurs. Nous prendrons également le temps de nous familiariser avec le smartphone.
- Au cours de la seconde rencontre, nous utiliserons la technologie MyGuardian dans une de vos activités quotidiennes.

Qu'attendons-nous de vous?

Notre objectif est de comprendre si la technologie que nous développons est intéressante pour vous. Cela signifie que nous allons vous poser des questions sur votre sentiment à propos de la solution que nous proposons, si vous la trouvez trop compliquée à utiliser, si elle vous parait utile, pour vous, pour les autres, etc. Ce que nous attendons de vous est simplement de répondre à ces questions. Il n'existe aucune bonne ou mauvaise réponse, votre opinion est la seule réponse que nous recherchions. L'objectif n'est pas de vous évaluer, mais d'évaluer ensemble la technologie que nous développons.

Qu'en est-il de la prise en charge de vos déplacements à Archamps Technopole et de votre participation à l'étude?

Il n'y a aucune compensation financière pour cette étude. Néanmoins, pour les rencontres organisées à Archamps Technopole, un taxi prépayé sera mis à votre disposition, à l'aller comme au retour.

Quels sont les risques pour vous?

Au cours des rencontres individuelles, nous serons amenés à parler de votre vie quotidienne afin de déterminer si et comment la technologie que nous développons est intéressante ou non pour vous. Si jamais ces questions vous dérangeaient, vous pourriez alors interrompre la rencontre. L'étude sera alors interrompue, voire suspendue, sans aucune conséquence pour vous. Lors des rencontres de groupe, aucune question personnelle ne vous sera posée. Vous serez libre de parler ou non des difficultés que vous pourriez rencontrer au quotidien. Vous serez libre de donner

ou non votre avis sur le développement de l'aide technologique.

Quels sont les avantages pour vous?

Il se peut que vous ne retiriez aucun bénéfice personnel de votre participation à ce projet de recherche. Néanmoins, votre participation et votre avis nous permettront de concevoir une aide technologique efficace et simple d'utilisation, dans le but d'améliorer le quotidien des aînés.

Arrêt de l'étude par le responsable

Jérémy Bauchet ou un membre de son équipe, avec qui vous signerez votre consentement de participation à l'étude si tel est votre souhait, pourra interrompre votre participation s'il considère que c'est dans le meilleur intérêt pour vous et vos aidants, ou si vous ne désirez plus assister aux différentes rencontres.

Vos droits

En acceptant de participer à cette étude, vous ne renoncez à aucun de vos droits ni ne libérez les investigateurs de leur responsabilité civile et professionnelle.
Votre participation à cette étude est tout à fait volontaire. Vous êtes donc libre de refuser ou de cesser d'y participer à n'importe quel moment, sans avoir à donner de raison, en faisant connaître votre décision auprès de Jérémy Bauchet ou d'un membre de son équipe.

Confidentialité

Durant votre participation à cette étude, les investigateurs recueilleront et consigneront dans un dossier de recherche les renseignements vous concernant. Seuls les renseignements nécessaires à la bonne conduite de l'étude seront recueillis. Tous les renseignements recueillis au cours de l'étude demeureront strictement confidentiels dans les limites prévues par la loi. Afin de préserver votre identité et la confidentialité de ces renseignements vous ne serez identifié(e) que par un numéro de code.

Afin de tester convenablement la technologie, les investigateurs vont prendre votre photo (qui apparaitra sur les smartphones durant les tests).

Afin d'analyser rigoureusement les résultats de l'étude, les investigateurs seront amenés à enregistrer certaines parties de la rencontre sur dictaphone.

Les dossiers de recherche seront conservés 5 ans par le laboratoire AGIM, après quoi ils seront détruits.

Diffusion des résultats de l'étude

Les données de l'étude pourront être publiées dans des revues médicales ou partagées avec d'autres personnes lors de discussions scientifiques. Aucune publication ou communication scientifique ne renfermera quoi que ce soit qui permette de vous identifier.

Prêt de matériel

Au cours de cette étude, nous vous prêterons du matériel de manière à ce que vous puissiez le tester et nous donner votre avis. Vous vous engagez à ne pas dégrader intentionnellement ce matériel et à le restituer à la fin de l'étude, ou de manière anticipée si vous décidez de vous retirer de l'étude ou s'il est mis fin à votre participation à l'étude pour tout autre raison. La liste du matériel prêté sera mise par écrit et signée de vous et de l'investigateur effectuant le prêt.

Merci.

5.2.4.1.3. In Dutch

Studie naar de acceptatie en het gebruik van de MyGuardian service.

Dit onderzoek wordt uitgevoerd als onderdeel van het Europese MyGuardian Project (Project AAL-2011-4-027)

Als u vragen heeft naar aanleiding van deze studie, kunt u contact opnemen met: Janna Alberts tel: 06-47024217; e-mail: j.w.alberts-1@student.tudelft.nl

Beste heer, mevrouw,

Graag nodigen wij u uit om deel te nemen aan dit onderzoek dat wordt uitgevoerd door Careyn in samenwerking met de TU Delft ('Careyn/TUDelft') . In dit document vindt u een beschrijving van de studie, indien u vragen heeft, kunt u contact op te nemen met Janna Alberts (contactgegevens staan bovenaan).

Waar gaat deze studie over?

Het onderzoek is onderdeel van een project genaamd MyGuardian, mede gefinancierd door de Europese Unie. Verschillende partijen uit Spanje, Frankrijk, Zwitserland en Nederland zijn betrokken bij dit project.

Het doel van het project is om senioren met lichte dementie en hun zorgnetwerk te ondersteunen in hun dagelijks leven. Het onderzoek is gericht op hoe de vraag: hoe de MyGuardian service, de senior onderweg kan ondersteunen en tegelijkertijd het zorgnetwerk op de hoogte kan houden. Om deze vraag te beantwoorden hebben we uw hulp nodig: we zouden graag uw mening willen over de service van MyGuardian om het product verder te kunnen verbeteren.

MyGuardian bestaat uit een website die u op uw computer/laptop kunt bekijken en een mobiele telefoon applicatie voor op uw smartphone.

Hoe is de studie opgebouwd?

De studie bestaat uit twee bijeenkomsten die ieder ongeveer anderhalf uur zullen duren. De bijeenkomsten vinden plaats indien mogelijk bij u thuis. We zouden ook graag één (of twee mantelzorgers willen uitnodigen om hier aan deel te nemen.

Tijdens de eerste bijeenkomst zullen we vragen stellen over uw mobiliteit en uw dagelijkse leven. Daarnaast, zullen we (indien nodig) laten zien hoe een smartphone werkt, en hoe u deze kunt gebruiken. Als laatste, zult u door middel van een kaart spel kennis maken met de mogelijkheden die de MyGuardian service kan bieden.

Tijdens de tweede bijeenkomst zullen we samen de MyGuardian service testen in uw dagelijkse leven, hierbij zullen we onder andere kort naar buiten gaan. Verder zullen we u vragen stellen over hoe u het gebruik heeft ervaren.

Uw rechten en voortijdige beëindiging of annulering van de studie

Uw deelname is vrijwillig, indien er vragen zijn die u niet wilt beantwoorden kunt u dit aangeven. Ook kunt u ten allen tijde van de bijeenkomst ervoor kiezen om de bijeenkomst te stoppen. Stoppen met de studie heeft absoluut geen enkele consequenties voor u. Indien u de deelname wilt annuleren kunt u Janna Alberts contacteren.

Privacy en verspreiding van de resultaten van de studie

Gedurende de studie zullen de TUDelft onderzoekers informatie verzamelen (in de vorm van schriftelijke aantekeningen, foto's, video's en/of geluidsopnames) met betrekking tot het dagelijkse van de senior. Deze informatie is nodig om een goed beeld te krijgen van hoe de MyGuardian service past in uw dagelijkse leven. De informatie zal alleen voor de onderzoekers binnen het MyGuardian team beschikbaar zijn. De gegevens zullen anoniem worden geregistreerd. De resultaten van het onderzoek zouden mogelijk verspreid kunnen worden in wetenschappelijke artikelen. Deze resultaten zijn uitsluitend anonieme gegevens en resultaten, u zal hierbij dus niet herkenbaar in beeld zijn.

Als u besluit mee te doen aan deze studie willen we u vragen om een toestemmingsformulier te tekenen. Deze kunt u tekenen bij aanvang van het de eerste bijeenkomst.

Bedankt

5.2.4.1.4. In Spanish

Notificación

Estudio sobre la aceptación y la apropiación de la tecnología de asistencia MyGuardian

Este estudio se lleva a cabo como parte del proyecto Europeo MyGuardian (Project AAL-2011-4-027)

Este estudio está realizado por CETIEX

Si tiene alguna pregunta sobre el estudio, por favor póngase en contacto con ……

Estimado señor o señora,

Le ofrecemos participar en un estudio realizado por CETIEX. En este documento, encontrará una descripción de este estudio. Es importante que lo lea y que lo entienda. Si tiene alguna duda, consulte a …….. También puede mostrar el presente documento a cualquier persona que pueda informar sobre él. Si acepta participar, le pediremos que firme el formulario de consentimiento del estudio.

¿Qué es esto?

Este estudio forma parte de un proyecto llamado MyGuardian, co-fundado por la Unión Europea. España, Francia, los Países Bajos y Suiza participan en dicho proyecto. Se inició en 2012 por 3 años.

El objetivo del proyecto es concebir una tecnología asistencial para mejorar la calidad de vida de las personas que tienen problemas cognitivos leves y de las personas que les asisten en su vida diaria. De manera concreta, esta tecnología de asistencia se presenta como un teléfono inteligente (un teléfono con pantalla táctil), como el de la imagen.

Esta tecnología de asistencia, que se puede llevar en el bolsillo o en el bolso, estará con usted durante sus viajes, para que se sienta seguro cuando salga al exterior. Podrá recordarle las cosas que tiene que hacer, o a dónde ir. De hecho, podría hacer muchas cosas, pero la pregunta es ¿lo usaría usted? Es por eso que necesitamos su ayuda: queremos saber si la tecnología que estamos desarrollando es interesante o no para usted.

¿Cómo está organizado el estudio?

El estudio se compone de 2 encuentros.

¿Quién va a estar presente durante los encuentros?

• Usted, sus cuidadores y 2 técnicos de CETIEX.

¿Dónde se llevarán a cabo los encuentros?

• En …… de …..

¿Cuándo serán los encuentros?

• Las fechas se fijarán con usted y con antelación.

• Cada encuentro será de menos de 2 horas.

¿Qué vamos a hacer durante los encuentros?

• Durante el primero, vamos a jugar juntos para entender lo que podría hacer la tecnología MyGuardian. También le vamos a enseñar que es un smartphone y cómo funciona.

• Durante el segundo, le mostraremos cómo utilizar MyGuardian y lo probaremos juntos en su vida diaria.

¿Qué esperamos de usted?

Nuestro objetivo es entender si la tecnología asistencial que hemos desarrollado es interesante para usted. Esto significa que vamos a hacerle preguntas acerca de lo que le mostramos, si lo encuentra demasiado complicado de utilizar, si es útil para usted y para los demás, etc. Lo que esperamos es que responda a todas estas preguntas. No hay respuestas buenas o malas, su opinión es lo único que estamos buscando. Nuestro objetivo no es evaluarle a usted, si no evaluar juntos la tecnología que desarrollamos.

¿Compensación económica?

No hay retribución para este estudio.

¿Existe algún riesgo para usted?

Durante los encuentros, vamos a hablar de su vida diaria para ayudar a entender por qué la tecnología que desarrollamos es interesante para usted o no. Si algunas de estas preguntas le molestan, sólo tiene que decirlo. También puede decidir dejar el estudio en cualquier momento y sin justificación sin tener ninguna consecuencia para usted.

¿Cuáles son los beneficios para usted?

Desde un punto de vista personal, no obtendrá ningún beneficio con este estudio. Sin embargo, su participación nos ayudará a mejorar una tecnología que, esperamos, asista a las personas en su vida diaria.

Cancelación del estudio por iniciativa del experimentador

Los técnicos de CETIEX puede cancelar su participación en el estudio si considera que es lo mejor para usted. La cancelación no tendrá ninguna consecuencia para usted.

Sus derechos

Su participación no tiene consecuencias sobre sus derechos y no exime a CETIEX de su responsabilidad profesional.

Su participación es voluntaria. Esto significa que usted puede cancelar su participación en el estudio en cualquier momento sin tener que justificarlo. Por favor informe a …… si desea cancelar su participación.

Privacidad

A lo largo del estudio, CETIEX recopilará cierta información relacionada con su vida diaria y privada. Los datos que son obligatorios para el estudio serán registrados y procesados. Todos los datos serán estrictamente confidenciales, en los límites de la ley. Para garantizar su privacidad, los datos serán registrados de forma anónima. Los datos se almacenarán durante 5 años y serán destruidos.

El controlador de la investigación es responsable de un fichero a los efectos del artículo 3 de la Ley Orgánica 15/1999 de Protección de Datos de 13 de diciembre (LOPD) y se compromete a cumplir con sus obligaciones como tal.

El controlador de la investigación se compromete a adoptar, actualizar y mantener las medidas técnicas y organizativas necesarias para garantizar la seguridad y confidencialidad de los datos de carácter personal, evitando cualquier alteración, pérdida, tratamiento o acceso no autorizado. En particular en el tratamiento de todas las medidas de seguridad de datos personales, organizativos y técnicos, que exige el artículo 9 de la Ley de Protección de Datos y, en particular por la normativa implementada, aprobado por Real Decreto 1720/2007, de 21 de diciembre y la normativa vigente impuesta por de protección de datos en cualquier momento.

Además, la investigación toma medidas para aplicar el mismo deber de confidencialidad a aquellos empleados que intervengan en cualquier fase del tratamiento de datos personales. Esta obligación se extiende también al personal con acceso a los sistemas de información de cuidadores formales e informales.

Difusión de los resultados del estudio

Los resultados del estudio pueden ser difundidos y discutidos en conferencias científicas y revistas. No se difundirán datos que permitan su identificación. Los datos serán estrictamente anónimos.

Préstamo de material

Durante el estudio, vamos a prestarle algo de material con fines de prueba y para enseñarle a usarlo. Usted se compromete a no dañar intencionalmente el material.

Gracias.

5.2.4.2. *Consent form*

5.2.4.2.1. In English

Consent form

Study on the acceptance and appropriation of the assistive technology MyGuardian

Declaration of the participants (senior and/or his legal representative and caregivers)

I declare to have read the notice of information of the study and to have understood the nature of my participation to the study. I recognize that [name of the end-users partner] explained me the aim of the study, answered my questions and gave the time I needed to consent to participate.

One copy of this consent form will be given to me.

I declare that the people that sign this consent form with me have been named in good conscience.

At any time I can ask [name of the signatory researcher] any questions related to the study.

Senior	*Senior legal representative (if needed)*
Last name: …… First name: ……	Last name: …… First name: ……
Signature and date:	Signature and date:

First caregiver	*Second caregiver*
Last name: …… First name: ……	Last name: …… First name: ……
Signature and date:	Signature and date:

Declaration of the person responsible of the study

I declare that I have explained the content of the notice of information and of this consent form to the participants.

I answered to all questions related to the study. I said clearly that the participation is voluntary and that it can be cancelled at any time with no consequence.

I promise to respect what is written in the notice of information and in this consent form.

Last name: …… First name: ……

Signature: ……

5.2.4.2.2. In French

Etude sur l'acceptation et l'appropriation de la technologie d'accompagnement MyGuardian
Déclaration du Senior et/ou de son représentant légal, et de ses Aidants

Je déclare avoir lu la notice d'information, et avoir compris la nature de ma participation au projet de recherche. Je reconnais que l'on m'a expliqué le projet et la présente étude, que l'on a répondu à toutes mes questions et que l'on m'a laissé le temps voulu pour prendre une décision.

On remettra une copie signée du présent formulaire de consentement à un membre du groupe de participants auquel j'appartiens. Un second exemplaire ira aux investigateurs.

Je pourrai à tout moment demander des informations à Jérémy Bauchet ou aux autres investigateurs de l'étude. Je pourrai exercer mon droit d'accès, de rectification ou d'opposition au traitement des données me concernant.

Senior		Représentant légal du Senior (si besoin)	
Nom :	Prénom:	Nom :	Prénom: .....
Signature et date:		Signature et date:	
Aidant référent		Second aidant (si applicable)	
Nom :	Prénom:	Nom :	Prénom: .....
Signature et date:		Signature et date:	

Déclaration de l'investigateur responsable de l'étude

Je certifie avoir expliqué au participant les termes de la notice d'information ainsi que du présent formulaire de consentement.

J'ai répondu aux questions que le participant avait à cet égard et j'ai clairement indiqué qu'il demeure libre de mettre un terme à sa participation, et ce, sans préjudice.

Je m'engage à respecter ce qui a été convenu à la notice d'information et au formulaire de consentement.

Nom : ..... Prénom: .....
Signature et date:

5.2.4.2.3. In Dutch

Toestemmingsverklaring

Studie naar de acceptatie en het gebruik van de MyGuardian service.

Verklaring van de deelnemers (senior en/of zijn wettelijke vertegenwoordiger, en mantelzorgers)

Ik geef toestemming om video/geluidsopnamen te maken en deze opnames anoniem / niet anoniem* te gebruiken in presentaties en rapporten. (* doorhalen wat NIET van toepassing is)

Ik geef toestemming dat medewerkers van het onderzoeksteam betrokken bij het project en medewerkers van de afdeling Industrieel Ontwerpen van de TU Delft inzage kunnen krijgen in de video/geluidsopnamen.

Ik geef toestemming om gegevens nog maximaal 10 jaar na afloop van dit onderzoek te bewaren en te gebruiken voor onderzoeksdoeleinden.

Ik erken dat Careyn/TUDelft mij het doel van de studie heeft uitgelegd, mijn vragen heeft beantwoord en mij de tijd gaf die ik nodig had om in te stemmen met de deelname.Op elk moment kan ik Careyn/TUDelft vragen stellen met betrekking tot de studie.

De tijdens het onderzoek gebruikte materialen (laptop en smartphones) zult u niet opzettelijk beschadigen en op het eind van het onderzoek terug geven.

Met mijn handtekening bevestig ik dat ik de informatie over de studie heb gelezen en dat ik de aard van mijn deelname heb begrepen. Ik begrijp dat ik deelname kan weigeren én dat ik mijn deelname altijd kan beëindigen zonder dat dit voor mij gevolgen heeft.

Een kopie van deze toestemmingsverklaring zal aan mij worden gegeven.

Senior en/of eventuele wettelijke vertegenwoordiger van de senior

_____ _____
_____
_____

Achternaam Voornaam
Datum Handtekening

_____ _____
_____
_____

Achternaam Voornaam
Datum Handtekening

Mantelzorgers

_____ _____
_____
_____

Achternaam Voornaam
Datum Handtekening

_____ _____
_____
_____

Achternaam Voornaam
Datum Handtekening

_____ _____
_____
_____

Achternaam Voornaam
Datum Handtekening

Toestemmingsverklaring

Studie naar de acceptatie en het gebruik van de MyGuardian service.

Verklaring van de persoon verantwoordelijk voor de studie (Careyn/TUDelft)

Ik verklaar dat ik de inhoud van de informatie van de studie en van de toestemmingsverklaring heb uitgelegd aan de deelnemers.

Ik heb alle vragen gerelateerd aan deze studie beantwoord. Ik heb duidelijk verteld dat de deelname vrijwillig is en dat deelname te allen tijde kan worden beëindigd zonder enige consequenties.

Ik beloof het geschrevene in de informatie over de studie en in de toestemmingsverklaring te respecteren.

Persoon verantwoordelijk voor de studie (Careyn/TUDelft)

_____ _____
_____
_____

Achternaam Voornaam
Datum Handtekening

5.2.4.2.4. In Spanish

Estudio sobre la aceptación y la apropiación de la tecnología de asistencia MyGuardian
Declaración de los participantes (Persona mayor y/o su representante legal y cuidadores)

Declaro haber leído la notificación del estudio y haber comprendido la naturaleza de mi participación en él. Reconozco que CETIEX me explicó cuál era el objetivo del estudio, respondió a mis preguntas y me dio el tiempo que necesitaba para dar mi consentimiento para participar.

Una copia de este formulario de consentimiento será para mí.

Declaro que las personas que firman este formulario de consentimiento conmigo se han actúan de buena fe.

En cualquier momento puedo preguntar a …… cualquier duda relacionada con el estudio.

Persona mayor
Representante legal del mayor (si es necesario)

Apellido: ..... Nombre: ..... Apellido: ..... Nombre: .....

Firma y fecha:
Firma y fecha:

Primero cuidador Segundo cuidador

Apellido: ..... Nombre: ..... Apellido: ..... Nombre: .....

Firma y fecha:
Firma y fecha:

Declaración de la persona responsable del estudio

Declaro que he explicado el contenido de la Notificación y del formulario de consentimiento a los participantes.

Respondí a todas las preguntas relacionadas con el estudio. Dije claramente que la participación es voluntaria y que se puede cancelar en cualquier momento sin consecuencias.

Me comprometo a respetar lo que está escrito en el documento notificación y en este formulario de consentimiento

Apellido: ..... Nombre: .....

Firma: .....

5.2.4.3. *Participant identification sheet*

Goal: Information about the participant
Printing: print on copy per participant
Duration: 5 minutes
Introduction: With your permission, I am going to ask you a few questions. This is going to take 5'.

DATE AND TIME (dd/mm/yyyy; hh:mm):	
PLACE (e.g., Archamps):	
RESEARCHER (e.g., Agathe):	

GROUP	
Participant's group number (Number of the group (e.g., 01)):	
Number of caregivers in the group:	Formal CG: Informal CG:

PARTICIPANT				
Participant number (Number of the participant for anonymization (e.g., 01)) :				
First Name:		**Last Name :**		
Birthdate (dd/mm/yyyy)				
Gender :	Man	Woman		
Status:	Senior	Formal Caregiver	Informal Caregiver	

Does the participant own a device?

Select:	None	Computer	Tablet	Mobile phone	Smartphone

The participant's job:

Corresponding socio-professional level (To be filled in by the researcher, accordingly with the following link content) http://en.wikipedia.org/wiki/International_Standard_Classification_of_Occupations	Managers
	Professionals
	Technicians and associate professionals
	Clerical support workers
	Service and sales workers
	Skilled agricultural, forestry and fishery workers
	Craft and related trades workers
	Plant and machine operators, and assemblers
	Elementary occupations
	Armed forces occupations
Is the participant retired?	Yes No
Picture of the participant? (done?)	Yes No
Participant phone number:	
Participant address (only if the participant is the senior):	

SENIOR LEGAL REPRESENTATIVE (IF NEEDED)	
First Name:	**Last Name:**
Phone number:	

5.2.4.4. *Measure of the senior's mobility: Life Space Assessment (LSA)*

5.2.4.4.1. In English

Goal: Measure of the current mobility of the senior (inclusion factor! Minimum assisted Life Space level: LS3) & Emergence of the scenario which will be used in the field testing.
Printing: print one per senior **and** per ICG
Duration: 5 minutes
Introduction: With your permission we will fill in a short questionnaire. It is about how you manage your mobility. Shall we start?
Use and administration guide can be found in Appendix 2.

PARTICIPANT NUMBER:							**DATE:**					
THE NEXT QUESTIONS REFER TO YOUR ACTIVITIES JUST WITHIN THE PAST MONTH. DURING THE PAST FOUR WEEKS HAVE YOU. . .			A. IN THE LAST FOUR WEEKS, HOW OFTEN HAVE YOU BEEN TO (Name of appropriate Life-space)?				HOW DID YOU GET THERE?					
							B. DID YOU USE AIDS OR SPECIAL EQUIPMENT TO GET TO (Name of Life-space)?			C. DID YOU NEED HELP FROM ANOTHER PERSON TO GET TO (Name of Life-space)?		
	Yes	**No**	**Less than once a week**	**1-3 times a week**	**4-6 times a week**	**Daily**	**Yes**	**No**	**Don't Know or Refused**	**Yes**	**No**	**Don't Know or Refused**
BEEN TO OTHER ROOMS OF YOUR HOME besides the room where you sleep? **LIFE-SPACE 1**[2]	**(LS1)** ○	○	**(LS1F)** ○	○	○	○	**(LS1A)** ○	○	○	**(LS1H)** ○	○	○
BEEN TO AN AREA OUTSIDE YOUR HOME such as your porch, deck or patio, hallway (of an apartment building) or garage, in your own yard or driveway? **LIFE-SPACE 2**	**(LS2)** ○	○	**(LS2F)** ○	○	○	○	**(LS2A)** ○	○	○	**(LS2H)** ○	○	○
BEEN TO PLACES IN YOUR NEIGHBORHOOD, other than your own yard or apartment building? **LIFE-SPACE 3**	**(LS3)**		**(LS3F)**				**(LS3A)**			**(LS3H)**		

[2] Persons who correspond « no » to life-space 1 are assigned to life-space 0.

LS3: minimal Life Space Level for the participant to be included in the study.

At the end of this LS, ask for a specific place name: ……	○	○	○	○	○	○	○	○	○	○	○	○
BEEN TO PLACES OUTSIDE YOUR NEIGHBORHOOD, but within your town? **LIFE-SPACE 4**	**(LS4)**		**(LS4F)**				**(LS4A)**			**(LS4H)**		
At the end of this LS, ask for a specific place name: ……	○	○	○	○	○	○	○	○	○	○	○	○
BEEN TO PLACES OUTSIDE YOUR TOWN? **LIFE-SPACE 5**	**(LS5)**		**(LS5F)**				**(LS5A)**			**(LSH5)**		
	○	○	○	○	○	○	○	○	○	○	○	○

ONLY FOR THE SENIOR:

① ASK TO THE PARTICIPANT if the (Name of the **SL3** OR **LS4**, depending on which one will be more appropriate for the field testing) can be used for the next encounter.	Name of the place ……	Senior's answer: Yes No

If the senior's answer is "No", ask if he has a small shop in his neighborhood or close by (e.g., bakery). If so, ask again ① and use this last place instead of the name of SL3/SL4 and write the name of the place below.

Name of the place/small shop	Name of the place ……

The place selected will be the one used in the field testing!

5.2.4.4.2. Translations in French, Dutch and Spanish

	French	**Dutch**	**Spanish**
Life Space Level (LSL) general question	LES QUESTIONS SUIVANTES CONCERNENT SEULEMENT VOS ACTIVITES DU DERNIER MOIS. AU COURS DES QUATRE DERNIÈRES SEMAINES, ETES-VOUS ALLÉ …	LOCATIE	LAS SIGUIENTES PREGUNTAS ESTÁN REFERIDAS A SUS ACTIVIDADES DURANTE EL ÚLTIMO MES. DURANTE LAS ÚLTIMAS 4 SEMANAS, USTED A. . .
LSL specifics questions:			
1.	DANS DES PIÈCES DE VOTRE DOMICILE, autres que celle où vous dormez??	GEWEEST NAAR ANDERE KAMERS BINNENS-HUIS behalve de kamer waar u slaapt? -In de laatste maand, hoe vaak gaat u naar andere kamers behalve uw slaapkamer? Maakt u hierbij gebruik van bepaalde hulpmiddelen? Is er iemand die u hierbij helpt?	Utilizado otras habitaciones de su hagar además de su dormitorio?
2.	AUTOUR DE VOTRE DOMICILE, comme sur votre galerie, votre balcon, votre terrasse, dans les couloirs (immeuble d'habitation), dans le garage, sur votre terrain ou dans votre entrée de cour ?	GEWEEST NAAR EEN PLEK BUITENSHUIS zoals uw veranda, dek, patio, hal (van een appartement) of garage, in uw eigen tuin of oprit?) Zijn er veel dingen die u rondom uw huis doet? Kunt u een paar dingen noemen? Zit u graag in de tuin of op het terras? Hoe vaak zit u daar? Wat voor hulpmiddelen gebruikt u hierbij? Heeft u hulp om in…. te komen?	Ha estado en algún area fuera de su hogar como el patio, terraza, entrada o garaje?

3.	DANS VOTRE VOISINAGE, au-delà de votre cour ou de votre immeuble d'habitation?	GEWEEST NAAR PLEKKEN IN UW BUURT, anders dan uw eigen tuin of appartement? Zou u mij willen vertellen waar u graag heen gaat in uw buurt? Hoe vaak gaat u hier naartoe, wekelijks, maandelijks? Wat voor hulpmiddelen gebruikt u om daarheen te gaan? Is er iemand die u begeleid? Voelt u zich soms onzeker als u alleen op stap gaat? **(Naar mantelzorger toe) Maakt u zich zorgen als ____ alleen op stap gaat?	Ha estado en otros lugares de su vecindario, que no sea su própio patio o garaje?
4.	DANS VOTRE VILLE, au-delà de votre voisinage?	GEWEEST NAAR PLEKKEN BUITEN UW BUURT, maar binnen uw stad? Gaat u ook weleens de stad in? Hoe vaak komt u daar? Maakt u gebruik van het openbaar vervoer? Neemt u dan ook de …(rollator/stok/scootmobiel) mee? Krijgt u hulp om hier te komen?	Ha estado en otros lugares fuera de su vecindario pero dentro de su localidad?
5.	À l'extérieur de votre ville?	GEWEEST NAAR PLEKKEN BUITEN UW STAD? Gaat u ook weleens naar andere plekken buiten de stad? Bezoekt u misschien iemand? Waar gaat u dan heen? Hoe vaak gaat u daar heen? Wat voor hulpmiddel gebruikt u dan? Is er iemand die u daarheen rijdt.	Ha estado en otros lugares fuera de su ciudad?
How many times ?	AU COURS DES QUATRE DERNIÈRES SEMAINES, COMBIEN DE FOIS ÊTES-VOUS ALLÉ…(Nom correspondant au	HOE VAAK	DURANTE LAS CUATRO ULTIMAS SEMANAS CUANTAS VECES A ESTADO USTED EN (NOMBRE DEL

	LS)?		ESPACIO VITAL)?
How ?	Comment vous y êtes vous rendu?	Hoe bent u daar gekomen?	¿Cómo llegó allí?
Technical assistance ?	AVEZ-VOUS UTILISE DES AIDES TECHNIQUES OU UN EQUIPEMENT PARTICULIER POUR VOUS RENDRE… (Nom correspondant au LS)?	HULPMIDDELEN	¿USO ALGUN TIPO DE AYUDA ESPECIAL PARA LLEGAR A (NOMBRE DEL ESPACIO VITAL)?
Human assistance ?	AVEZ-VOUS EU BESOIN DE L'AIDE D'UNE PERSONNE POUR VOUS RENDRE… (NOM CORRESPONDANT AU LS)?	BEGELEIDING	¿NECESITO LA AYUDA DE OTRA PERSONA PARA LLEGAR A (NOMBRE DEL ESPACIO VITAL)?

5.2.4.5. *MyGuardian resources introduction: Board game guide*

Goal: Understand how to play to the Board game & information about the Board material.

Printing: print one copy, if needed, for the animator.

Duration: 45 minutes

Introduction: We are going to use a game to make you discover the resources proposed by MG. During the game, you will travel across squares corresponding to daily life events [show the scenario card package]. You will have to use MG resources [show the resources card package] to manage these situations, so that you can advance forward in the game. The purpose of the game is to discuss these daily events and how MG can support you in these particular contexts. The goal of the game is to be the first to reach the FINISH square. Shall we try?

Material

- Game board
- Three A4 board (one per player) with all the /functionalities resources appearing on it, so that the players can have an overview of the technology before/while playing.
- 2 dices (1 dice with numbers (6-sided dice with 3 numbers only from 1 to 3; 1 dice with colors (6-sided dice with 3 colors only)) (provided by AGIM)
- Scenario cards (52 cards)
  These cards can require 1, 2 or 3 resources/assistive acts/functionalities.
- Resource cards (96 cards)
  The cards are organized in three colors:
  - Blue: cards topic is communication
    - Send or receive a phone call (16 cards)
    - Send or receive a text message (16 cards)
    - React to an information (communication between MG and the users) (8 cards)
  - Red: cards topic is to get informed
    - Have a look at the phone level of charge (8 cards)
    - Have a look at the person's location (16 cards)
    - Have a look at what happened in the last days (messages, activities and location historic) (8 cards)
  - Yellow: cards topic is the peace of mind of the stakeholders (i.e. data that MG will use to provide assistance)
    - The person's agenda: what they have to do / reminding service, etc. (12 cards)
    - The person's usual places of activities: where they use to go (zone of comfort), etc. (12 cards)
- 3 checkers (one per player)

Purpose of the game: discuss MyGuardian ressources in a contextualized way.

Goal of the game: get at the end first!

How to play?

1. Prerequisite:
   - 3 players is the ideal number of players
   - All members of the care network including the Senior are players

- If you only have two participants in the group, we suggest that the researcher in charge of the animation plays with them.
- Strictly one researcher must be in charge of the animation.
- Another researcher is filling in the note sheet for qualitative markers.
- Give one A4 board with the all the resources presented on it to each participant.

2. The first player rolls the 'number dice' and go forward on the game board consistently with the number that came out from the dice.
    - 2.1. If he stops on a square with a number, he must pick up a 'scenario card' with the same number written on it (1, 2 or 3). This number corresponds to how many resources the player may need to manage this scenario/event/square and to advance forward on the game board. It is possible that the player workout the scenario with less resources.
      The player reads out loud the scenario written on the 'scenario card' and roll the 'color dice' the same number of time that inscribed on the back of the picked up scenario card.
        - If he has the good resource(s) (subjective, to be discussed with the group! There is no good or bad answers!), he can play them (i.e. discuss why this resource(s) is adapted to the scenario) and play again (go back to step 2). Here, the animator must stress the discussion because the participants have a tendency to conclude that their resource(s) fits the scenario when it is not exactly the case. Carefull, because the player keeps playing if the scenario is managed and the other players waits.
        - If he does not have the resources, the next player can play.
        - The used scenario and resources cards must be put aside and will not be used again.

    - 2.2. The player can also stop on a 'Get a [color] resource!' squire. If so:
        - He needs to pick up a 'resource card' of the specified color and use it the same way than the other resources.
        - He can play again (step 2)

3. The round can go on, the other players play the same way.
4. The game ends when one participant reaches the 'FINISH' squire.

The main goal is to speak about the resources, the scenarios being used to contextualize them.

The scenarios can be found in the Appendix 5.

Note: scenario interpretation is open and rules are flexible! Stakeholders can imagine new usages of the resources or not recognize themselves in a scenario. The purpose is first to speak about the resources provided by MG in a contextualized way (for the stakeholders!)... Also, a scenario imagined to work with 2 resources can be "validated" with more or less resources if it makes sense!

5.2.4.6. *Familiarization with the smartphone use:"Practice guide*

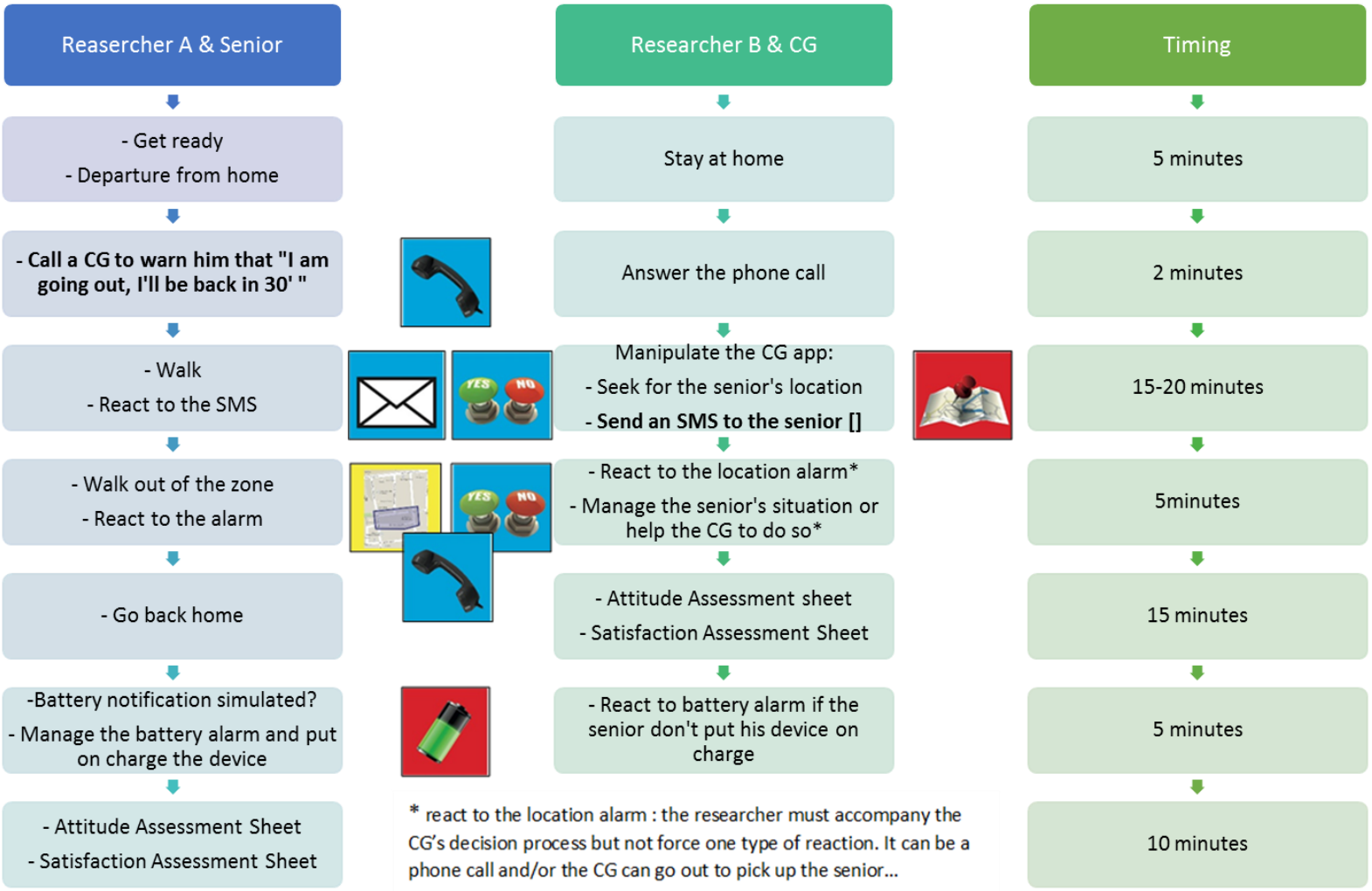
Goal: Get seniors and technology unfamiliar caregivers familiar with smartphone use (touch screen and automatic processes).
Printing: print one copy, if needed, for the animator/researcher (more complete guide can be found in Appendix 6.)
Duration: 15 minutes
Introduction: Who has/uses a phone? Can you show it? Who do you call with this phone? Who did you recently call? Our main goal of today is to reach a family member. This time not with you normal (cell)phone, but with the MG application on a smartphone.

!! Before doing this exercise it is important to know the attitude of the seniors towards technology (and smartphone use). If they have a negative attitude: start at the last exercise (nr. 4). However, this might have consequences for the field testing because the possibility for the seniors to encounter difficulties with the smartphone (i.e. not knowing how to unlock it) is higher.

Steps	**Key words**
Show & explain what smartphone is:	- Who knows what a smartphone is? - Similar to (cell)phone (calls) + more features - Functionalities similar to computer: internet - Today: only the basics!
Give participants smartphone:	- Does everybody have a smartphone? Show me. - No buttons on the front (black screen) - Screen react to your touch
Exercise 2: (un)lock smartphone	- Remind: screen is touch based - So if the phone in your bag/jacket you do not want it to react on other things - The (un)lock function - Push the button shortly (let everybody try) - Now push the same button again. - However, it is not completely unlocked - To completely unlock the smartphone and use it: slide with your finger (let everybody try).
Explain what application is:	- An application = small program on your smartphone.

	- We will only focus on one: the MG application. - We are now coming closer to our final goal of today: reaching a family member through the MG application.
Exercise 3: Show what MG application looks like & how to open it	- Look for the MG logo - Tick on it with your index finger and wait.
Exercise 4: Explain that by ticking on the pictures they can make a phone call	- Homepage MG application. - You now see the faces of the people you can call. - Who would you like to call? - Tick with your index finger on the face of that person. Moment of success= reaching a family member!
Exercice 5:	- Make the senior answer to a phone call

5.2.4.7. *Field testing guide*



5.2.4.8. *Collection of the supplementary acceptance markers*

5.2.4.8.1. A measure of the participants' attitude toward MyGuardian: Attitude Assessment Sheet

Goal: measure of the participant's attitude toward MyGuardian (Each participant needs to fill in the document)

Page 1: to be filled in by the researcher

Page 2 and 3: to be filled in by the participant

DATE AND TIME (dd/mm/yyyy; hh:mm):
PLACE (e.g., Archamps):
RESEARCHER (e.g., Agathe):

PARTICIPANT
Participant's number (Number of the participant for anonymization (e.g., 01)) :
Participant's group number (Number of the group (e.g., 01)):

5.2.4.8.1.1. In English

Questionnaire about how MyGuardian is perceived

Based on the work of Tsoni, C., 2012 "Proposition d'une echelle de mesure psychométrique de l'appropriation individuelle d'un outil informatique"

Study on the acceptance and appropriation of the assistive technology MyGuardian

This study is conducted as part of the European Project MyGuardian (Project AAL-2011-4-027)

Please fill in the following questionnaire. To do so, you will have to select how much you agree with each of the 10th following assertions (see the example below).

I like chocolate (example)				
Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree
○	○	○	○	✗

HOW MUCH DO YOU AGREE WITH THE FOLLOWING ASSERTIONS:

1. I understand clearly the principles of MyGuardian

Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree
○	○	○	○	○

2. I am pleased with using MyGuardian

Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree
○	○	○	○	○

3. I think MyGuardian could improve our current organization

Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree
○	○	○	○	○

4. MyGuardian suits me perfectly

Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree
○	○	○	○	○

5. I think MyGuardian could improve my daily life

Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree
○	○	○	○	○

6. I found in using MyGuardian an answer to my needs

Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree
○	○	○	○	○

7. I feel comfortable with MyGuardian

Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree

○	○	○	○	○

8. I master very well MyGuardian

Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree
○	○	○	○	○

9. I have no difficulties with MyGuardian

Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree
○	○	○	○	○

10. At the present time, I have a good appropriation of MyGuardian

Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree
○	○	○	○	○

If you have some questions, please share them with the researcher.

Thank you!

5.2.4.8.1.2. Translations in French, Dutch and Spanish

	French	Dutch	Spanish
Title	DANS QUELLE MESURE VOUS ETES EN ACCORD OU EN DESACCORD AVEC CHACUN DES ENONCES SUIVANTS :	Hoeveel bent u het eens met de volgende beweringen?	¿COMO DE ACUERDO ESTAS CON LAS SIGUIENTES AFIRMACIONES?
Items			
1.	Je comprends très bien la logique de MyGuardian.	Ik begrijp duidelijk de principes van MyGuardian	Entiendo claramente los principios de MyGuardian
2.	Utiliser MyGuardian me plait.	Ik ben tevreden met het gebruik van MyGuardian	Estoy satisfecho con el uso de MyGuardian
3.	Je pense que MyGuardian pourrait améliorer notre organisation actuelle.	Ik denk dat MyGuardian mijn huidige organisatie zou kunnen verbeteren	Creo que MyGuardian podría mejorar nuestra organización actual
4.	MyGuardian me convient parfaitement.	MyGuardian sluit goed bij me aan	MyGuardian me conviene
5.	Je pense que MyGuardian pourrait améliorer mon quotidien.	Ik denk dat MyGuardian mijn dagelijks leven zou kunnen verbeteren	Creo que MyGuardian podría mejorar mi vida diaria
6.	J'ai trouvé dans l'utilisation de MyGuardian une réponse à mes besoins.	Ik vind MyGuardian aansluiten op mijn behoeftes	He encontrado en el uso de MyGuardian respuestas a mis necesidades
7.	Je suis à l'aise avec MyGuardian.	Ik voel me comfortabel met MyGuardian	Me siento cómodo con MyGuardian
8.	Je maitrise très bien MyGuardian.	Ik kan goed met MyGuardian omgaan	Domino bién MyGuardian
9.	Je n'ai pas de difficultés par rapport à MyGuardian.	k heb geen problemen met MyGuardian	No tengo dificultades con MyGuardian
10.	Aujourd'hui, je me suis bien approprié le nouvel outil.	Ik heb MyGuardian me eigen gemaakt.	En la actualidad, tengo una buena opinión de MyGuardian
Likert scale			
Level 1	Pas du tout d'accord	Totaal niet mee eens	En la actualidad, tengo una buena opinión de MyGuardian
Level 2	Pas d'accord	Niet mee eens	En desacuerdo
Level	Ni en accord ni en	Niet eens of oneens	Ni en acuerdo ni en

3	désaccord		desacuerdo
Level 4	D'accord	Mee eens	De acuerdo
Level 5	Tout à fait d'accord	Helemaal mee eens	Totalmente de acuerdo

5.2.4.8.2. Measure of the participants' satisfaction with MyGuardian: Satisfaction Assessment Sheet

Goal: measure of the participant's satisfaction with MyGuardian (Each participant needs to fill in the document)

Page 1 and 5: to be filled in by the researcher

Page 2, 3 and 4: to be filled in by the participant

5.2.4.8.2.1. In English

Evaluation of Satisfaction with assistive Technology

Based on the work of Demers, R. Weiss-Lambrou & B. Ska, 2000 (QUEST 2.0)

Study on the acceptance and appropriation of the assistive technology MyGuardian

This study is conducted as part of the European Project MyGuardian (Project AAL-2011-4-027)

The purpose of this questionnaire is to evaluate how satisfied you are with your assistive device and the related services you experienced. The questionnaire consists of 12 satisfaction items.

- *For each of the 12 items, rate your satisfaction with your assistive device and the related services you experienced by using the following scale of 1 to 5.*

Not satisfied at all	Not very satisfied	More or less satisfied	Quite satisfied	Very satisfied
○	○	○	⊗	○

- Please tick or mark (see example above) the answer that best describes your degree of satisfaction with each of the 12 items.
- Please **do not** leave any question unanswered.
- For any item that you were not "very satisfied", please comment in the section ***comments***.

Thank you for completing this questionnaire.

HOW SATISFIED ARE YOU WITH:

1. The dimensions (size, height, length, width) of MyGuardian?

Not satisfied at all	Not very satisfied	More or less satisfied	Quite satisfied	Very satisfied
○	○	○	○	○

2. The weight of MyGuardian?

Not satisfied at all	Not very satisfied	More or less satisfied	Quite satisfied	Very satisfied
○	○	○	○	○

3. The ease to carry MyGuardian?

Not satisfied at all	Not very satisfied	More or less satisfied	Quite satisfied	Very satisfied
○	○	○	○	○

4. How safe and secure is MyGuardian?

Not satisfied at all	Not very satisfied	More or less satisfied	Quite satisfied	Very satisfied
○	○	○	○	○

5. How easy it is to use MyGuardian?

Not satisfied at all	Not very satisfied	More or less satisfied	Quite satisfied	Very satisfied
○	○	○	○	○

6. How your device meets your needs?

Not satisfied at all	Not very satisfied	More or less satisfied	Quite satisfied	Very satisfied
○	○	○	○	○

HOW SATISFIED ARE YOU WITH:

7. The quality of the services (information, attention) you received for using your assistive device?

Not satisfied at all	Not very satisfied	More or less satisfied	Quite satisfied	Very satisfied
○	○	○	○	○

Please turn the page…

- *Below is the list of the same 7 satisfaction items. PLEASE **SELECT THE THREE ITEMS** that you consider to be **the most important to you**. Please put an X in the **3 boxes** of your choice.*

○ 1. Dimensions	○ 6. Effectiveness
○ 2. Weight	○ 7. Information/attention provided
○ 3. Ease to carry	
○ 4. Safety	
○ 5. Easy to use	

The questionnaire is finished. If you have some questions, please share them with the researcher.

Thank you!

5.2.4.8.2.2. Translations in French, Dutch and Spanish

	French	**Dutch**	**Spanish**
Title	DANS QUELLE MESURE ETES-VOUS SATISFAIT(E) :	Hoe tevreden bent u met....	COMO DE SATISFECHO ESTA DE:
Item			
1.	Des dimensions (grandeur, hauteur, longueur, largeur) de MyGuardian?	Het gemak waarmee u MyGuardian meeneemt	Las dimensiones (tamaño, altura, longitud, anchura) de MyGuardian?
2.	Du poids de MyGuardian?	De veiligheid en vertrouwdheid van MyGuardian	El peso de MyGuardian?
3.	De la facilité avec laquelle on peut transporter MyGuardian?	Het gebruikersgemak van MyGuardian	Facilidad para llevar MyGuardian?
4.	De l'aspect sécurisant et rassurant de MyGuardian?	De aansluiting van MyGuardian op uw behoeftes	¿Es seguro MyGuardian?
5.	De la facilité d'utilisation de MyGuardian?	Van deze vier punten, welke beschouwt u als de belangrijkste? Omcirkel deze:	¿Es fácil usar MyGuardian?
6.	De la façon dont MyGuardian répond à vos besoins?		¿Cómo de efectivo es MyGuardian? (grado en el que el dispositivo se adapta a sus necesidades)
7.	De la qualité des services (information, attention) accordés pour pouvoir utiliser votre aide technique?		Calidad de los servicios (Información, atención) que recibió por para el uso del dispositivo.
Likert Scale			
Level 1	Pas satisfait(e) du tout	Helemaal niet tevreden	Nada satisfecho
Level 2	Peu satisfait(e)	Niet tevreden	No muy satisfecho
Level	Plus ou moins satisfait(e)	Min om meer tevreden	Más o menos satisfecho

3			
Level 4	Assez satisfait(e)	Best tevreden	Bastante satisfecho
Level 5	Très satisfait(e)	Heel erg tevreden	Muy satisfecho
Three items choice			
1.	Dimensions		Dimensiones
2.	Poids		Peso
3.	Facile à transporter	Draag gemak	Facilidad para llevar
4.	Sécurisant et rassurant	Veiligheid	Seguridad
5.	Facilité d'utilisation	Gebruikersgemak	Fácil de usar
6.	Efficacité	Effectiviteit	Eficacia
7.	Information/attention accordés		Información/atención proporcionada

5.2.5. Appendices related to the full description of the protocol

5.2.5.1. *Appendix 1: MG smartphones configuration*

Note: MyGuardian field tests are conducted with SAMSUNG Galaxy Nexus phones. This document was written for this smartphone model and may not work for other ones.

MyGuardian mobile application (for senior or for caregivers) has to be installed on the phone before (see user guide).

5.2.5.1.1. Basic smartphone settings

- Change phone ringtone to “Themos” (suggested as the less “built in” stressful ringtone)

Where? Go to Settings|Device|Sound|Phone ringtone

- Use the “slide” method to lock the screen. Not to lock the screen may be problematic to conduct the test (side effects of a not locked screen…). To unlock the screen, the user has to slide a padlock. Where to slide it is illustrated with a circle and an unlock padlock on the lock screen.

Where? Settings|Personal|Security|Screen security|Screen lock

- Define the font size as “Huge”

Where? Settings|Device|Display|Font size

- Use a customised wallpaper

Suggestion is to use a neutral wallpaper. To simplify the tests, AGIM uses wallpapers with the phone number and the name of the user (see figure 1). Software like PowerPoint or Adobe Illutrator can be used to do that, the file just has to be saved in jpeg format and transferred on the phone.

Where? Settings|Device|Display|Wallpaper or from the phone gallery (use the file as wallpaper).

Figure 1: wallpaper with phone number and user name.

5.2.5.1.2. Change and configure the smartphone launcher

The smartphone launcher is the application used to configure how applications are displayed on the phone and launched. The launcher “Apex Launcher” (free version) will be used for the test. The objective is to simplify the use of the smartphone.

Step 1: download and install “Apex Launcher”

From the Google Play Store, search for “Apex Launcher” (the free version, not the pro one) app., install it and open it.

Step 2: Apex Launcher configuration

You now have two more icons on the home page of the smartphone: Apex menu icon and Apex settings icon. Figure 2 shows the Apex menu.

Note: when the phone asked for, validate that you always apply the actions with Apex Launcher, not with the built in Android Launcher.

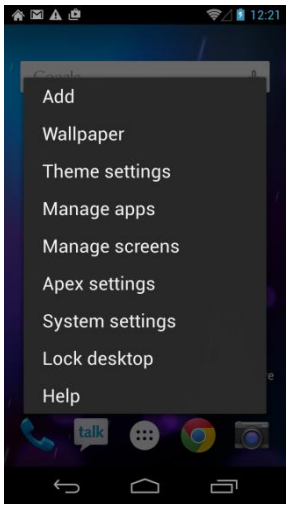


Figure 2 – Apex Launcher app. menu

1/ Screens configuration

Go to Apex menu | Manage screens (see figure 2)

Remove all the screens except the main one (for each screen, long-press it and slide it to the “remove” option, see figure 3).

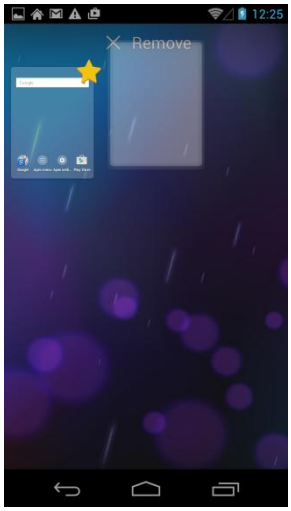


Figure 3 – remove all unnecessary screens.

At the end, you should have only one home.

2/ Remove all unnecessary icons on the home screen.

When long-pressing on each icon, a menu allow to remove it (see figure 4). Remove all icons expect MyGuardian one and Apex ones (to be done at the end …). Also remove the “Google” search bar.

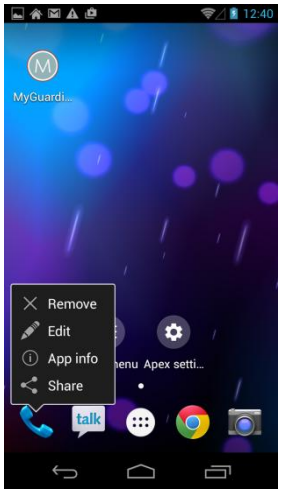


Fig 4. Remove all unnecessary icons

For the next steps, click on the Apex settings icon. The following menu is then available (see figure 5).

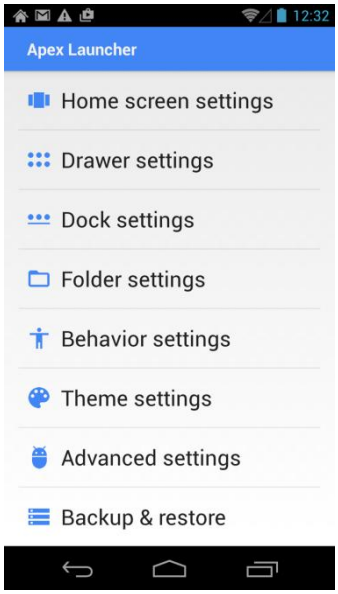


Figure 5 – Apex settings menu

3/ “Home screen settings”

From the Apex settings menu (fig 5), go to “Home screen settings”.

The configuration should be the following one (only for options that have to be changed):

- Layout / Portrait grid: 4 x 3 (just for MyGuardian icon to be aligned in the middle of the screen).
- Indicator / Show indicator: disabled it
- Hide element / Hide notification bar: enabled it
- Hide element / Hide shadows: disabled it

4/ “Dock settings”

From the Apex settings menu (fig 5), go to “Dock settings”.

Select the “OFF” option, for the dock to disappear from the home screen. At this step, your phone should look like fig 6 (maybe not for the wallpaper with the phone number and the user name…).

Fig 6. Smartphone with no dock.

4/ “Behavior settings”

From the Apex settings menu (fig 5), go to “Behavior settings”.

The configuration should be the following one (only for options that have to be changed):

- Screen orientation: change to Always portrait
- Home key action: select “launch app” at the bottom of the list and then selection MyGuardian app. and validate. You should see now “Home key action / Launch MyGuardian”.
- Menu key long-press action: select “Do nothing” (top of the list)
- Enable quick actions: disable this option
- Pinch in: select “show Apex menu”. So that you can still change the phone configuration at the end of the process… Pinch in is not the most intuitive gesture, we can suppose that users will not do that naturally.
- Swipe up: select “do nothing”
- Swipe down: select “do nothing”
- Desktop double tap: select “do nothing”
- Desktop long press: select “do nothing”

5/ “Advance settings”

From the Apex settings menu (fig 5), go to “Advance settings”.

Go to “Icon settings” and change the value of “Icon size” to 150% and the “Icon text size” value to 125% (for MyGuardian icon text to be all displayed).

6/ Final configuration

You can now remove Apex menu and Apex settings icons from the home page (long-press on them and use the “remove” option at the top of the screen).

You now have a MyGuardian phone! See figure 7.

Figure 7. MyGuardian phone

Now you can:

- Launch MyGuardian by clicking the MyGuardian icon
- Launch MyGuardian by clicking the Home page virtual icon

If you need to configure something else, the Apex Launcher menu is still accessible by pinching in the home screen.

Please do that and click on the “Lock desktop” option, for the MyGuardian icon not to be removed by the users. You can unlock the desktop by pinching in the home screen one more time and select the “unlock desktop” option.

When MyGuardian app is open, the notification bar is still present. Apex does not allow removing it…

5.2.5.2. *Appendix 2: Life Space Assessment: use and administration*

Original study: The assocation of life-space with measures of health

Using the UAB Study Of Aging Life-Space Assessment

Patricia Sawyer, PhD, Richard M. Allman, MD; Eric Bodner, BS

Using the UAB study of aging life-space assessment

The UAB Study of Aging Life-Space Assessment measures mobility in terms of the spatial extent of a person's life. The purpose of the Life-Space Assessment is to determine a person's usual pattern of mobility during the month preceding the assessment.

Each level of life-space represents a distance further from the room where one sleeps.

0 = Mobility limited to the room where one sleeps
1 = Mobility limited to within one's dwelling
2 = Mobility limited to the space just proximal to one's personal living space (for instance, a porch, patio, or yard just outside the home or hallway outside of an apartment)
3 = Mobility limited to one's neighborhood
4 = Mobility limited to one's town
5 = Mobility outside one's town

Three Life-Space level will be collected:

1) Independent life-space - the highest level of life-space attained without help from any devices or persons.

2) Technically Assisted life-space - the highest level of life-space attained using the help of assistive devices if needed but not the help of another person

3) Humanly Assisted life-space - the highest level of life-space attained using the help of another person (with or without assistive device) → **This Life-Space level will be the one used to define the field testing scenario. The field testing scenario (the place to where one researcher will accompany the senior must come out during the LSA interview).**

Administering the Life-Space Assessment:

It is critical to assess the degree of independent mobility for each level of life-space.

No assistance or help:

Independent mobility means that the person attains a level without help from any equipment or assistive devices and without the help of a person. If someone reports independent mobility, "No" will be marked for both columns B & C for that level.

Assistance from equipment:

Since the life-space assessment ascertains equipment persons use to get around, it is best to precede the single-page Life-Space Assessment with the following question: do you use a cane or any other equipment/aid?

If a person attains a level using an assistive device such as a cane, walker, or any device the person might use to proceed from one level to the next "Yes" should be marked in column B for that level. If help from another person is not needed, "No" should be marked in column C.

Don’t hesitate to make a probe:
If a person has previously indicated using a cane, the interviewer should prompt, starting at level 1, “did you use your cane to get to _____?”

Personal assistance:

If a person attains a level only with the help of another person, "Yes" should be marked in column C for that level. This includes persons who require someone to drive them places, someone to help them get onto a bus, or someone who needs accompaniment.

If assistive devices are also used, "Yes" will be marked in column B.

If only help from a person is used, "No" will be marked in column B. If the respondent generally has another person present "in case," they will be noted as needing personal help. If they use personal help when available but not always, they will NOT be noted as needing help since it is presumed they could go on their own.

At the point in the Life-Space Assessment that transportation is indicated as the method of travel, the interviewer needs to probe to see if the person travels independently (by themselves.) **The transition usually occurs at level 4, possibly at level 3.** For each of these levels, the interviewer can specifically ask, "Do you drive or does someone else drive?" "Does ___ go with you every time you go _____?" "Do you get on the bus or van by yourself or does somebody have to help you?" (Using public transportation independently gives the person full credit for independence.)

Notes:

It is important to get the information that defines the participant's mobility just within the past month, not how they were before that, or how they expect to be in the near future.

The meaning of "neighborhood" and "town" is whatever the participant perceives it to be.

Don't make the assessment harder than it is. Be sure to use the probes suggested above to determine the degree of assistance needed.

Don't leave any blanks. Every question should be answered.

5.2.5.3. *Appendix 3: Full list of the Board game scenarios*

5.2.5.3.1. In English

SCENARIO FOR WHICH 1 RESOURCE CAN BE NEEDED
I can't recall when I went to the hairdresser for the last time… I would like to check!
Oh right, I have to put the phone on charge!
I will tell Emma that I am almost at here place, I don't want here to be surprised.
No I can't take charge of this know and I have to share this information with everyone.
I will go and have a coffee at George's place. I want to warn Jade to prevent here to worry about me.
I would like very much to go take a walk on my own. Don't worry, I won't get lost.
I would like very much to go there alone. Don't worry, I will call you if necessary.
No, I will go there alone. If necessary, you will be able to find me anyway.
Nothing to report on my smartphone today, Lucas's day must have been good and normal.
Chloe has an appointment to the doctor tomorrow morning. I see that Leo has planned to accompany him.
Oh right, I have an appointment in 1 hour. I forgot.
I'd like to know if last Monday I went to the groceries
I'd like to know if yesterday Inés went to the physiotherapist
I'd like to know which week I visited Leo
I'd like to know if Enzo took a walk last week
I'd like to have a look at my old messages
I have something to tell
I'm at the groceries. I need to know if you will have dinner with me
The phone asks me if I'm right. I am!
I use to leave home less than one hour
Lea would like to be reminded when it's the market day
Where is Louis ?
Does my phone need to be charged?
Did I send a message to Marion yesterday?
SCENARIO FOR WHICH 2 RESOURCES CAN BE NEEDED
According to the agenda, Manon is currently outdoors. It seems that her behavior is consistent with her habits, I don't need to be worry.
Gabriel seems to be at home, but he didn't put his phone on charge. I will call him to remind him to do so.
Jules needed support but I didn't heard my phone ringing. Fortunately, Clément has been warned and has been able to pick here up.
Louise is going shoping and it seems that she had been charging her phone battries. But is the phone sufficiently charged?
Hugo called me, but I wasn't available. The call was transferred to Clara who took it.
I called Alice because I would have been glad if she could pick me up. Arthur answered the phone call and came instead of Alice.
I am speaking with Romane on the phone. I just need to be guided to Town Hall Square, and then I'll manage

I think I got a little lost . But it was not serious , Adam joined me and we went back together.
I can't explain where I am
I called Sarah at home and she did not answer. Where is she?
If Raphaël 's trip is not as usual, he may have some difficulties
My phone charge is low. I call Matthieu to tell her where I am
It's my brother birthday. I'd like to wish him
I walked a lot and I'm tired. I'd like Camille to pick me up
Maël needs help and I can't help her. Someone needs to take him in charge
If I'm out late, it may be abnormal
My son has to remember that each Monday I go to the market, at the church place.
Thomas has a rendezvous in 30 minutes, I'd like to be sure that he did not forget
Maëlys did not go to the groceries this week. I'll call her to invite her for lunch.
SCENARIO FOR WHICH 3 RESOURCES CAN BE NEEDED
Philippe just send me a message: he needs to be picked up. I am not available, and I need someone else to do this. I share this information with everyone.
Michel went out of his usual journey and doesn't answer to the phone. I go pick him up, you never know.
Marie got a little lost, but everything is alright, I have her on the phone and I am guiding here to her place.
I wasn't feeling alright that day. Fortunately, Nathalie called me at the right time and she came to me and she picked me up.
Isabelle has a rendezvous at the hairdresser. Is she there?
Noah took a walk but not in the usual way. Is he OK?
Théo took a walk but not in the usual way. I called him and I would like me to pick him up
Lina doesn't want her husband to worry when she goes out
Eva always forget to charge his phone when he goes back home

5.2.5.3.2. Translations in French, Dutch and Spanish

French	Dutch	Spanish
SCENARIO FOR WHICH 1 RESOURCE CAN BE NEEDED		
Je ne me souviens plus de quand je suis allée chez le coiffeur pour la dernière fois… J'aimerais vérifier.	Ik kan me niet herinneren wanneer ik naar de kapper ben geweest... ik zou dit graag willen zien.	No recuerdo la última vez que fui a la peluquería ... me gustaría comprobarlo
Ah oui c'est vrai, je dois mettre le téléphone en charge.	Ah okee, ik moet de telefoon opladen!	Vaya, tengo que poner el teléfono a cargar!
Je vais prévenir Emma que j'arrive chez elle, pour ne pas qu'elle soit surprise.	Ik zal Laura vertellen dat ik er bijna ben. Ik wil haar niet zomaar overvallen.	Le diré a Lucía que estoy llegando, no quiero sorpresas
Non, je ne peux pas m'occuper de ça tout de suite. J'en fais part à tout le monde.	Ik kan dit nu niet regelen. Ik deel deze informatie met iedereen.	No sé a qué se refiere este tema, debo compartirlo con los demás
Je vais prendre un café chez Georges, je vais prévenir Jade pour ne pas qu'elle s'inquiète.	Ik ga bij Rick koffie drinken. Om ervoor te zorgen dat Lisa zich geen zorgen maakt, laat ik haar dit weten.	Voy a ir a tomar café a casa de Daniel. Quiero avisar a Paula para que no se preocupe por mí.
J'aimerais vraiment aller me ballader seul. Ne vous inquiétez pas, je ne vais pas me perdre.	Ik wil heel graag even alleen een wandeling maken. Maak je geen zorgen, ik zal niet verdwalen.	Me encantaría ir a dar un paseo por mi cuenta. No te preocupes, no voy a perderme.
J'aimerais vraiment y aller seul. Ne vous inquiétez pas, je vous appelle si j'ai un problème.	Ik wil daar graag alleen naartoe gaan. Maak je maar geen zorgen, ik bel je als het nodig is.	Me encantaría ir solo. No te preocupes, te llamaré si te necesito.
Non, j'y vais seul. Au besoin vous pourrez me retrouver.	Ik ga er alleen heen. Mocht het nodig zijn, dan kun je me altijd vinden.	No, iré solo. Si fuera necesario, me encontrarás de todos modos.
Rien à signaler sur mon portable aujourd'hui, la journée de Lucas a du bien se passer.	Vandaag hoef ik niks op mijn laptop in te voeren. Lucas heeft vast een goede dag gehad.	No hay ninguna información en mi telefóno hoy, Lucas debe haber pasado un día normal.
Chloé a son RDV chez le médecin demain. Je vois qu'il est prévu que Léo l'accompagne.	Emma heeft een afspraak bij de doktor morgenochtend. Ik zie dat Leo meegaat.	Andrea tiene una cita con el médico mañana por la mañana. Veo que Alejandro tiene planeado acompañarle.
Ah oui, j'ai RDV dans 1h. J'avais oublié.	Oh klopt, ik heb een afspraak over een uur. Helemaal vergeten.	Vaya, tengo una cita en una hora. Lo olvidé
Suis-je allé faire des courses lundi dernier ?	Heb ik vorige week maandag boodschappen gedaan?	Me gustaría saber si el pasado Lunes fui a la tienda de ultramarinos
Inès est-elle allée voir son kiné hier ?	Is Anouk gisteren naar de physiotherapeut geweest?	Me gustaría saber si Inés fue ayer al fisio
Quelle semaine ai-je rendu visite à Léo?	In welke week ben ik bij Max op bezoek geweest?	Me gustaría saber qué semana visité a Alejandro
Est-ce que Enzo a fait de la marche la semaine dernière ?	Heeft Stan vorige week een wandeling gemaakt?	Me gustaría saber si Pablo paseó la semana pasada

Je voudrais consulter mes vieux messages.	Ik zou graag mijn oude berichten willen terug zien.	Me gustaría echar un vistazo a mis mensajes antiguos
J'ai quelque chose à dire.	Ik heb iets te vertellen.	Tengo algo que decirte
Je fais les courses. Je voudrais savoir si tu viens manger avec nous ce soir.	Ik ben boodschappen aan het doen en ik wil graag weten of je met mij mee eet vanavond.	Estoy en la tienda de ultramarinos. Necesito saber si vas a cenar conmigo
Le smartphone me demande si je vais bien. C'est le cas !	De telefoon vraagt me of het goed met me gaat. Dat gaat het!	El telefono me pregunta si estoy bien. Pues claro!!!!
Habituellement, je ne sors pas plus d'une heure de la maison.	Normaal gesproken ben ik niet langer dan 1 uur van huis.	Suelo salir de casa menos de una hora.
Léa voudrait qu'on lui rappelle lorsque c'est jour de marché.	Julia zou er graag aan herrinnert willen worden wanneer het marktdag is.	Me gustaría que me recordara cuando es el día del mercado.
Où est Louis?	Waar is Louis?	Donde está Marcos?
Est-ce que mon smartphone doit être rechargé ?	Moet mijn telefoon opgeladen worden?	¿es necesario cargar mi teléfono?
Ai-je envoyé un message à Marion hier ?	Heb ik een bericht naar Marion gestuurd gisteren?	¿Le envié un mensaje a Sara ayer?
SCENARIO FOR WHICH 2 RESOURCES CAN BE NEEDED		
Si j'en crois son agenda, Manon est de sortie. On dirait qu'elle est dans ses habitudes, je n'ai pas à m'inquiéter.	Volgens de planning in de agenda is Manon nu buitenshuis. Het lijkt erop dat haar gedrag overeenkomt met haar gewoontes. Ik hoef me geen zorgen te maken.	De acuerdo con la agenda, Maria se encuentra fuera. Parece que su comportamiento es normal por lo que no debo preocuparme.
Gabriel semble être rentré chez lui, mais il ne met pas en charge son téléphone. **Je vais l'appeler pour le lui rappeler.**	Het lijkt erop dat Guus thuis is, maar volgens mij is hij vergeten zijn smart Phone op te laden. Ik bel hem op zijn huis nummer om hem hieraan te herinneren.	David parece que está en casa, pero no puso su teléfono a cargar. Le llamaré para recordárselo.
Jules a eu besoin de soutien mais je n'ai pas entendu mon téléphone sonner. Heureusement, Clément a été prévenu et a pu aller le chercher	Ik heb mijn telefoon niet horen afgaan. Tessa had hulp nodig. Gelukkig is Bram gewaarschuwd en heeft hij haar op kunnen pikken.	Iker necesitó ayuda pero no escuchó el teléfono. Afortunadamente Clement ha sido avisado y ha podido recogerla
Louise part faire des courses, elle semble avoir mis son téléphone à charger mais est-il suffisamment chargé?	An is wezen shoppen en het lijkt erop dat ze haar telefoon heeft opgeladen. Maar is die wel voldoende opgeladen?	Marcos se va de compras y parece que ella ha cargado su teléfono. ¿Pero tendrá suficiente batería?
Hugo m'a appelé mais je n'étais pas disponible. C'est Clara qui a pu décrocher.	Hugo heeft gebeld, maar ik was niet in de mogelijkheid om op te nemen. Het gesprek werd doorgeschakeld naar Anna, die wel opnam.	Hugo me llamó, pero yo no estaba disponible. La llamada fue transferida a Clara que la cogió.
J'ai appelé Alice car j'aurais aimé qu'elle vienne me chercher. C'est Arthur qui a décroché et il a pu venir me chercher à la place d'Alice	Ik heb Corry gebeld om te vragen of ze me op kon halen. Arthur beantwoorde uiteindelijk de telefoon en kwam in plaats van Corry.	Llamé a Sofía porque me hubiera gustado que me recogiera. Alvaro atendió la llamada y vino en lugar de Sofía.

J'ai Romane au téléphone, j'ai juste besoin d'être guidé jusqu'à la mairie, après ca ira.	Ik ben met Jasper aan de telefoon. Ik heb een paar aanwijzingen nodig om het gemeentehuis te vinden. Als ik daar ben, lukt het me verder wel.	Estoy hablando con Alba por teléfono. Solo necesito que me guíe hasta el Ayuntamiento y allí ya me las arreglaré yo.
Je crois que je me suis un peu égaré. Mais ça n'a pas été grave, Adam m'a rejoint et on est rentré ensemble.	Ik denk dat ik een beetje verdwaald ben geweest. Niks serieus. Thijs kwam naar me toe en we gingen samen terug.	Creo que estuve un poco perdida. Pero nada grave, Javier vino y nos fuimos juntos.
Je n'arrive pas à expliquer où je me trouve.	Ik kan niet uitleggen waar ik ben.	No puedo explicar donde estoy
J'ai appelé Sarah chez elle et personne ne répond. Où peut-elle bien être ?	Ik heb Sarah geprobeerd te bellen, maar ze nam niet op. Waar is ze?	Llamé a Nerea y no contestó. ¿Dónde está?
Si le parcours de Raphaël n'est pas celui de d'habitude, il pourrait rencontrer des difficultés.	Als Gijs zijn route afwijkt van normaal, dan heeft hij misschien problemen.	Si el trayecto de rafael no es el habitual, puede que tenga algún problema.
Mon smartphone est déchargé. J'appelle Matthieu pour lui dire où je suis.	De batterij van mijn smart Phone is bijna leeg. Ik zal Thijs nu alvast laten weten waar ik ben.	Tengo poca batería. Llamaré a Adrián para decirle donde estoy.
C'est l'anniversaire de mon frère. Il faut que je lui souhaite.	Vandaag is mijn broer jarig. Ik wil hem graag feliciteren.	Es el cumpleaños de mi hermano. Me gustaría felicitarle.
J'ai beaucoup marché et je suis fatigue. Il fraudrait que Camille vienne me chercher.	Ik heb veel gelopen vandaag en ben moe. Ik vraag Michelle om me op te komen halen.	Dí un largo paseo y estoy cansado. Me gustaría que Sara me recogiera.
Maël a besoin d'aide et je ne suis pas en mesure de lui fournir. Il faut que quelqu'un le fasse.	Nicole heeft hulp nodig en ik ben niet in staat om haar te helpen. Iemand anders moet het doen.	Sergio necesita ayuda y yo no puedo dársela. Alguien tiene que hacerse cargo.
Si je suis toujours dehors tard le soir, il se peut que ça ne soit pas normal.	Als ik langer weg ben dan normaal gesproken, dan kan het zijn dat er iets aan de hand is.	Si me retraso, puede ser por algo raro.
Mon fils doit se rappeler que tous les lundis c'est jour de marché, place de l'Eglise.	Mijn zoon moet onthouden dat ik elke maandag naar de markt vlakbij de kerk ga.	Mi hijo tiene que recordarme cada Lunes que debo ir al mercado, en la plaza de la iglesia
Thomas a un rendez-vous dans 30 minutes. Je voudrais être certain qu'il n'a pas oublié.	Thomas heeft over 30 minuten een afspraak. Even checken of die dat niet vergeten is.	Sergio tiene una cita en 30 minutos, me gustaría asegurarme que no se la ha olvidado.
Maëlys n'a pas fait de courses cette semaine. Je vais l'appeler pour l'inviter à manger.	Sandra heeft deze week geen boodschappen gedaan. Ik bel even, om haar uit te nodigen voor lunch.	Irene no fue a la tienda esta semana. La llamaré para invitarla a comer.
SCENARIO FOR WHICH 3 RESOURCES CAN BE NEEDED		
Philippe vient d'envoyer un message: il a besoin d'être récupéré. Je ne suis pas	Tom heeft me zojuist een bericht gestuurd. Hij moet opgehaald worden. Ik kan	Aitor me acaba de mandar un mensaje: necesita que lo recojamos. Yo no estoy

disponible, mais une autre personne le sera sans aucun doute. Je fais part de ma décision à tout le monde.	helaas niet, iemand anders moet het doen. Ik deel deze informatie met iedereen.	disponible y necesito que alguien lo haga. Comparto esta información con los demás
Michel est sorti de son trajet habituel et ne répond pas au téléphone. Je vais le chercher, on ne sait jamais.	Michiel wijkt af van zijn normale dagelijkse routine en neemt zijn telefoon niet op. Ik ga hem opzoeken. Je weet maar nooit.	Ivan salió de su rutina diaria y no constesta al teléfono. Voy a buscarlo, pues nunca se sabe.
Marie s'est un peu égarée, mais tout va bien, je l'ai au téléphone et je la guide jusqu'à chez elle.	Marieke is een beetje verdwaald geraakt, maar er is niks ernstigs gebeurd. Ik heb haar aan de lijn en geef aanwijzingen om haar naar haar huis toe te begeleiden.	Ana estaba un poco perdida, pero todo está bien, la llemé por teléfono y la estoy guiando hasta su casa.
Je n'étais pas dans mon assiette ce jour là, heureusement Nathalie m'a appelé au bon moment et elle est venue me chercher.	Die dag voelde ik me niet zo goed. Gelukkig belde Nathalie me op het juist moment en kwam ze naar me toe om me op te halen.	No me encontraba bien aquel día. Afortunadamente, Clara me llamó en el momento oportuno, vino y me recogió.
Isabelle a rendez-vous chez le coiffeur. **Y est-elle ?**	Isabelle heeft een afspraak bij de kapster. Is ze daar al?	Julia tiene cita en la peluquería. ¿está allí?
Noah est parti marcher mais il n'a pas pris le chemin habituel. Est-ce que tout va bien pour lui ?	Anneke ging voor een ommetje, maar nam een andere route dan ze normaal gesproken neemt. Gaat alles wel goed met haar?	Ismael salió a pasear, pero no por su ruta habitual. ¿está bien?
Théo est parti marcher mais il n'a pas pris le chemin habituel. Je l'ai appelé et il voudrait que je vienne le chercher.	Theo neemt een ongebruikelijke route. Ik heb hem gebeld en hij wil graag dat ik hem op kom halen.	Samuel salió a pasear, pero no por su ruta habitual. Le llamé y me gustaría recogerle.
Lina ne veut pas que son mari s'inquiète lorsqu'elle sort de la maison	Liesbeth wil niet dat haar man zich zorgen maakt wanneer ze de deur uit gaat.	Marta no quiere que su marido se preocupe cuando salga.
Éva oublie de recharger son smartphone lorsqu'elle rentre chez elle.	Eva vergeet altijd haar telefoon op te laden als ze thuiskomt.	Inés siempre olvida cargar su teléfono cuando vuelve a casa.

5.2.5.4. *Appendix 4: Full list of the Board game resources, resource categories and squares*

5.2.5.4.1. *In English*

RESOURCES, RESOURCE CATEGORIES AND SQUARES
The person's agenda
The person's usual places of activities
Send or receive a phone call
Send or receive a text message
React to an information
Have a look at the phone level of charge
Have a look at the person's location
Have a look at what happened in the last days
The day before yesterday
Yesterday
Peace of mind
Communicate
Get informed
Get 1 yellow resource!
Get 1 blue resource!
Get 1 red resource!
Start
Finish

5.2.5.4.2. *Translations in French, Dutch and Spanish*

RESOURCES, RESOURCE CATEGORIES AND SQUARES		
French	Dutch	Spanish
Le calendrier des activités	De agenda van de senior	Agenda personal
Les lieux habituels des activités	Gebruikelijke plekken waar de senior zijn activiteiten plaatsvinden	Lugares habituales de actividades de la persona
Passer ou recevoir un appel	Bel of wordt gebeld	Enviar o recibir una llamada telefónica
Envoyer ou recevoir un message	Stuur of ontvang een text bericht	Enviar o recibir un mensaje de texto
Réagir à une information	Reageer op informatie	Reaccionar ante una información
Consulter le niveau de charge du smartphone	Bekijk het batterij niveau	Consulta el nivel de carga del telefono
Consulter l'emplacement actuel de la personne	Bekijk de locatie van de persoon	Consulta la localización actual de la persona
Consulter ce qui s'est passé dernièrement	Bekijk wat er is gebeurd in de laatste paar dagen	Consulta lo que sucedió en los últimos días
Avant-hier	Eergisteren	Anteayer

Hier	Gisteren	Ayer
Etre rassuré	Gerustgesteld	Tranqulidad
Communiquer	Communiceren	Comunicarse
S'informer	Geinformeerd worden	Informarse
Vous gagnez 1 ressource jaune !	Pak 1 gele hulpbron!	Coge un recurso amarillo
Vous gagnez 1 ressource bleue !	Pak 1 blauwe hulpbron!	Coge un recurso azul
Vous gagnez 1 ressource rouge !	Pak 1 rode hulpbron!	Coge un recurso rojo
Départ	Start	Salida
Arrivée	Einde	Llegada

5.3. Annex 3: Additional study conducted to assess the MyGuardian interface usage by elderly.

5.3.1. Population & method

5.3.1.1. *Objective & Method*

This study deals with the usability and acceptability issues of MyGuardian Web App for elderly people. However, it is important to take into account that the MyGuardian Web App is focused for caregivers mainly, so the obtained results could not be significant for

Data are gathered from elderly people with the following inclusion criteria:

- Over 65 years old
- Informed consent to participate to the study

For this study, one individual encounter is planned and organised as follow, in 4 times:

- Time 1: presentation of the study and collect of the informed consent. This time aims to introduce the participant with the study and make them feel comfortable with the purpose of the encounter
- Time 2: evaluation of the participant appetence for new technologies (questionnaire, see Appendix 1).
- Time 3: testing the web app usability. Each participant is asked to complete a predefined list of tasks covering the functionalities provided by the agenda (see Appendix 2). Level of (in)dependence when completing the listed tasks is evaluated thanks to a 5 items scale. This scale is inspired by tools developed by occupational therapist and used for the independent living skills assessment (Dutil *et al.*, 1996). There is no time limitation to complete the different tasks and the participant can ask assistance to the experimenter.
- Time 4: evaluation of the participant's feeling about the web app (questionnaire, see Appendix 3).

Encounters are done at the participant's home. The experimenter comes with a laptop or the participant own computer is used to test the web app. A connection to the Internet is mandatory.

At the end of the encounter, participants were asked to use the web application during 3 days on a tablet that was provided by the experimenter. A semi-directed interview is done at the end of the 3 days test period.

5.3.1.2. *Population*

Twelve participants were included in the study, 9 women (84, 8 ± 7 years old) and 3 men (79 ± 7 years old). Five of them were living in a retirement home, all women; 7 of them were living in community dwelling (3 men and 4 women, 4 of them were couples). Recruitment was done thanks to the retirement home staff and a nursing office. All participants are from Grenoble area, France.

Mean duration of the encounters is 31 minutes (± 12 min).

	Living…				**Technological equipment**	**Average duration of the encounter**
	Where?		With who?			
	Home care	At home	With consort	Alone		

Gender	Women	1	1	1	1	laptop	28 min
	Men	0	2	1	1	laptop and smartphone	41 min
	Total	1	3	2	2		34.5 min

Table 10: Characteristics of the participants who were familiar with computer usage

5.3.2. Results

5.3.2.1. *Computer usability outcomes*

8 of the 12 participants never used a computer before the study. Nevertheless, their participation was important for comparison purposes and also to enlarge the sample size.

Manipulating the computer was a challenge for most of the participants. To avoid the difficulties engendered by using the computer's pointing device, we asked the participants having such difficulties to show directly on the screen where to point and click, with their fingers. Unfortunately, for those persons, ending the tests was not possible because of the level of concentration needed and the resulting tiredness.

5.3.2.2. *Web application usability outcomes*

Tasks 2 and 3 are passive tasks, meaning that the participant is asked to describe what he sees on the screen and what is, according to him, the purpose of the web application (home page for task #2, diary page for task #3, see Appendix 2).

Two participants said that the purpose of the web app is explicit, that the "task" part is planned to note what they have to do, and that the "diary" part aims to manage rendezvous. Some see the interface as a "journal". For 2 participants, the application has no utility and can be considered as a pastime. The reason is that it takes more time for them to complete the information on the screen than writing them on a paper agenda or calendar for the appointments or on a notebook for the things to do.

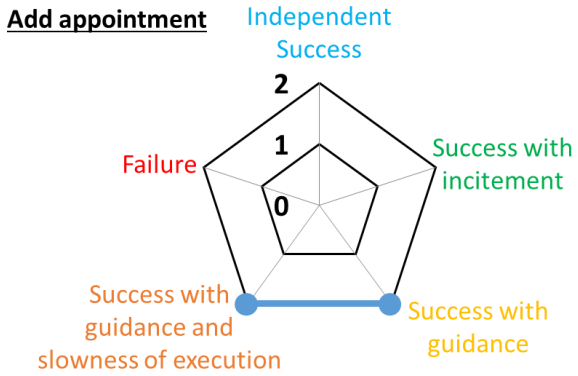
Most of them do not master the time chronology concept used by the application.

Most of them need a lot of time to complete the tasks. They click at random of the web interface components during the completing and do not really understand the meaning of the elements. Most of them do not read what is written on the screen, they try to find the correct way to complete the task as quickly as possible and a consequence select several items at the same time without focusing on the task the experimenter ask them to complete. Being therefore set to fail engenders annoyance and frustration. Their conclusion is that they do not have the basic knowledge to do the things correctly, even if most of them find that completing the tasks is easy.

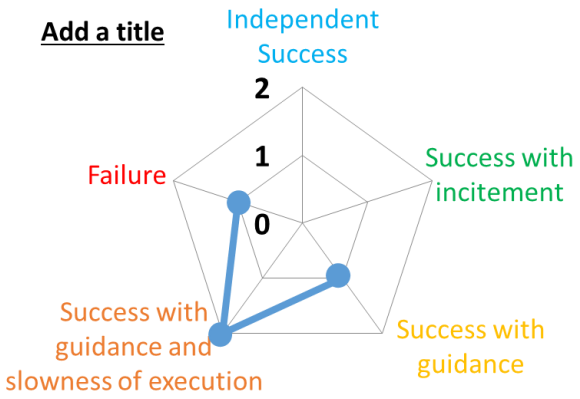
Most of the participants say that for a first utilisation, the application implies several complicated manipulations. Some of them agree to use the application another time but with some assistance.

Graphs introduces the results regarding the usability tests conducted with the 4 partitipcants who was familiar with the the use of computers.

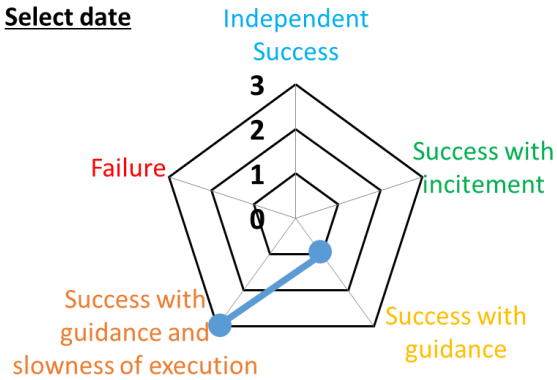
a)



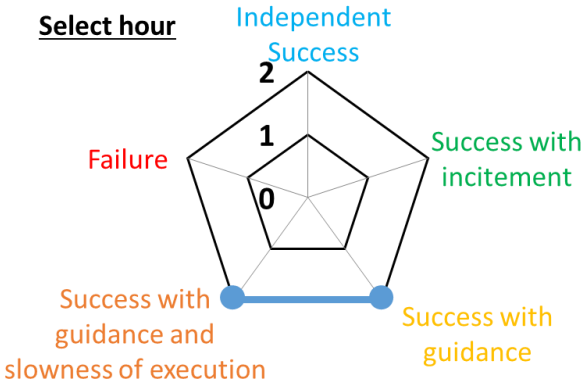
b)



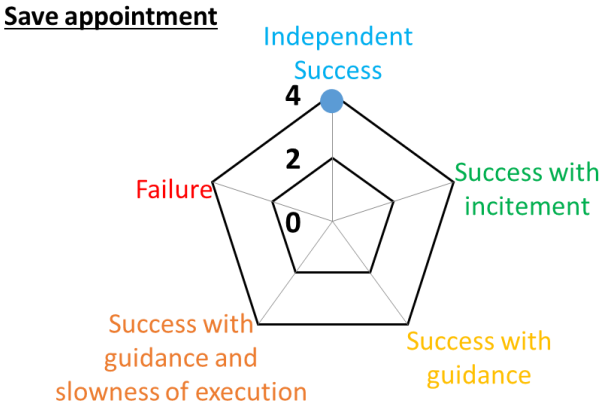
c)



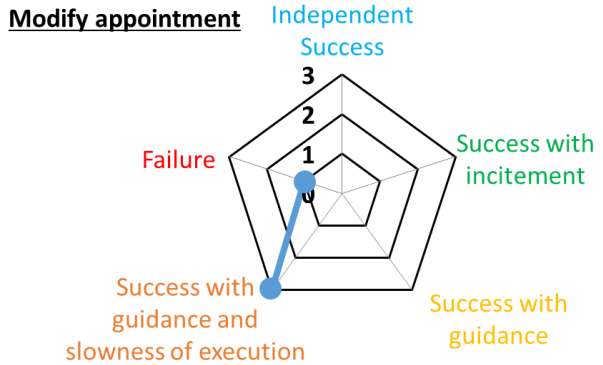
d)



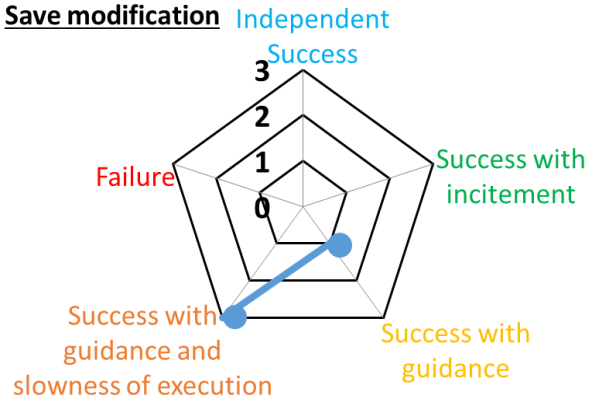
e)



f)



g)



h)

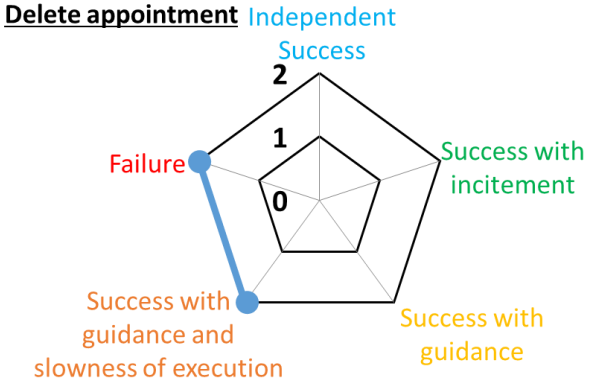
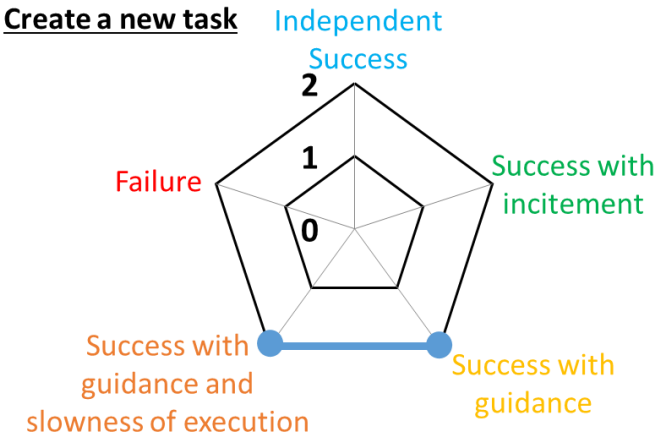
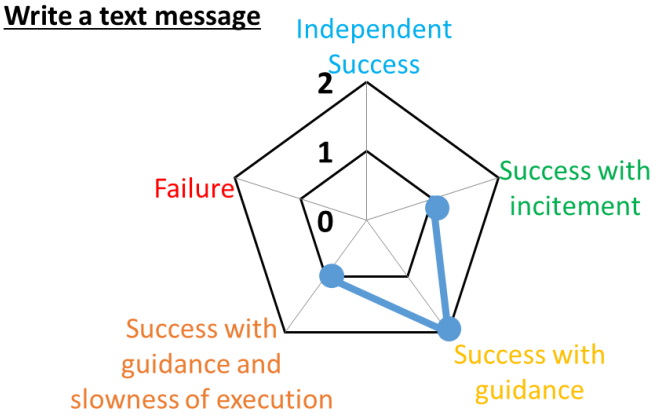


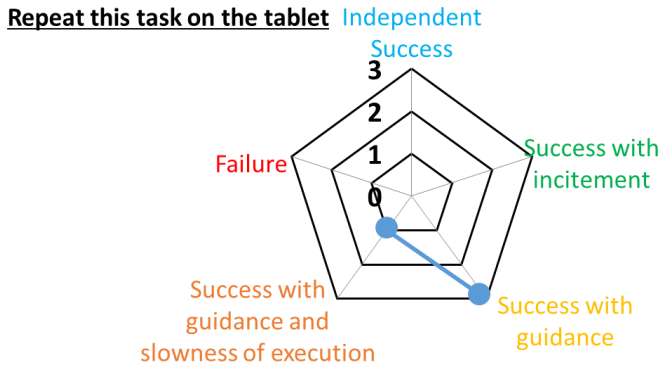
Figure 16 from a) to h): number of participants (familiar with computer usage) who reached various levels of success during each tasks related to the appointment fonctionality of ConnetedCare web interface. Total number of participant: 4.



a)



b)



c)

Figure 17 a), b) and c): number of participants (familiar with computer usage) who reached various levels of success during each additional tasks: a) create a new task; b) Write a text message; c) repeat this task on the tablet. Total number of participant: 4.

No participants successed to complete independently the first (swith the computer on) and the last one (disconnect from the application and Switch the computer off).

5.3.2.3. *Main difficulties met*

- Including participants is difficult as most consider that computers are not for them; sometimes the opposition comes from the family as they think that such a tool is not suitable for their relative.
- Ability to manipulate the pointing device and keyboard is crippling
- Some of the participants stop during the tests, saying that they won't be able to complete the tasks and that it has no interest.
- Impact of eyesight impairments on the tasks completion, conducting one participant not to complete the whole study.
- Impact of articular impairments (degenerative joint disease) on the ability to use the computer, conducting one participant not to complete the whole study.
- Impact of cognitive impairments on the ability to understand the tasks that have to be completed.

5.3.2.4. *User's feeling toward the protocol and the technology: the outcomes*

Below, the participant answers to the users' feelings questionnaire. Given the current little number of participant who filled that questionnaire in, these results aren't significant and are to be processed as qualitative results.

1/ In your opinion, the tasks are:

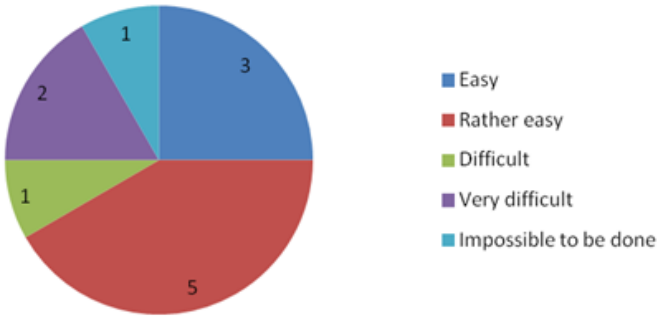


Figure 18: perceived ease of use of the interfaces (number of participant)

2/ Have you been comfortable with the exercises?

Nine persons answered "yes" and three persons answered "no".

3/ You would have needed help?

Eight people answered "yes" and four answered "no".

4/ The laptop manipulation is ?

For six persons, the manipulation is easy (50%), for three is rather easy (25%) and for other three persons it's difficult (25%).

5/ This application can be useful for you?

Eight people answered "yes" and four answered "no".

6/ Would you be willing to take ownership of a laptop or a tablet?

The answer is fifty-fifty (50%/50%).

Additional comments:

Investigator: "And if I install the digital diary on your own device?"

Participant : "No as I don't need it, I have all my appointments in my mind. I am enough autonomous to remember my appointments"

7/ This application is rather clear and understable?

Seven people answered it's easy, four answered it's difficult, and for one person it's rather easy.

Additional comments :

Participant: "It it clear enough but this application is not suitable for me, as there are main things in the application that I don't catch right from the beginning"

8/ Does the given instructions seemed clear enough to you?

Ten people answered it's easy. One person it's difficult and for one other person it's difficult.

5.3.2.5. *Results regarding the use of the web application on a tablet during 3 days.*

On the 12 participants, 3 accepted to use the web application during 3 days on a tablet provided by the experimenter. One person was hospitalized and could not complete the 3 days test. Another one had cognitive impairments that were too important to have significant results. As a consequence, only one person was interviewed at the end of the 3 days test. This use case is presented below.

1/ Have you used MyGuardian application on the tablet during these 3 days?

I did.

2/ How many times?

Two times. The first one alone, the second one with the assistance of my daughter

3/ How longer did you use it?

The first time only 10 minutes, just to see if I could turn the tablet on alone, but I could not as the passwords were required to be connected. The second time 30 or 40 minutes with my daughter and my wife.

4/ What have you done with the tablet?

We tried to complete the same exercises as during the first test.

5/ Was is it easy for you to use the application?

It wasn't. I think it's not very ergonomic, icons and images are small, and also is the keyboard that appears suddenly when you want to write something and that takes half of the screen. Moreover, the keys are really too small and too sensitive.

6/ Do you think this application could be useful for you?

I don't think so, as I never used a computer before I think I'll have difficulties. But regarding the concept I think it's useful, as less papers will lie around and we can carry it easily and all information will be gathered on only one support.

I think it could more useful for people that already master computers; I don't and learn something new today will be difficult for me.

7/ What are the brakes for using the tablet and the application?

- *It's something new for me*
- *I prefer to speak directly with someone face to face and also I'm afraid making a mistake when using it, that is to send a message to someone who was not the message recipient.*

8/ Would you have used it if some support was provided?

I used it with my daughter so I would, but certainly more as a pastime than for a serious usage.

9/ What was displeasing regarding the interface?

Nothing. It's just too sophisticated for someone like me.

10/ What should be done on the tablet so that it will be easy to use?

What I said you before. I like the speech synthesis, for someone like me that has difficulties to use the keyboard I think it's useful.

5.3.3. Conclusion

5.3.3.1. *General Conclusion*

As a conclusion, MyGuardian Caregiver Web App can be useful for people having skills in computer, or who want to learn how to use a computer. Its main brake is that people have to turn on the computer and open the application each day. It means that we have to anticipate the way people will go from the paper agenda to the digital one, the way to integrate it in their daily life and the human support that is needed.

Tests were conducted with people whose average age is 83, who don't want to have to learn new skills, and for which computer is not at the centre of their interest. Some of them don't want to learn how to use computer as they don't understand how it works, are afraid of going to fail. As a result, they express some aggressiveness and irritation not to show their weakness.

5.3.3.2. *Proposals and adjustments for the MyGuardian Web App User Interface*

Consistently with these primary outcomes, a few elements of the web application interface will gain to be adjusted as follow:

- On the HOME interface:
  - Associate colours per categories (diary, tasks, messages)
- On the diary interface:
  - Appointment creation:
    - the elders don't know what to put in the "description" box. We therefore propose two potential solutions which will need to be further more tested: (1) suppress this box,

as the elders don't spontaneously see the purpose of it, they are questioning at the same time the utility of the box; (2) replace "description" by something more explicit, such as "Complementary details about the appointment". We propose the implementation of the 2nd solution, so that it can be tested in the handovers to come.

- add the possibility for the elders to set a reminder to the appointment (a reminder 2 days, 1 day, 1 hour, 15 minutes before it).

- Proposals regarding all the interfaces:
  - increase the font size as well as the "+" sign standing for an adding.
  - modify the sign standing for coming back to the HOME page. It is too small and it is not intuitive for elders. We propose to keep the sign (←), to make it larger and add a full sentence to it, such as "Go back to the HOME screen".

5.3.4. Appendices related to the MyGuardian Web App assessment

Madam, Sir,

Within the framework of an European research project, I'm going to ask you about the services and the digital tools which you use maybe in the retirement home. For that purpose, I invite you to participate in the anonymous survey below, and thank you beforehand for your collaboration.

Name:
First name:
Age:
Socio-professional group:
Farmers developers ☐
Architects, storekeepers and business manag☐s
Frames and superior intellectual occupatio☐
Intermediate occupations☐
Employees☐
Worker ☐
Mother or father at home☐
Other ☐

5.3.4.1. *Appendix 1: Participants' personal equipment*

1. Can you access a computer in your place of residence?
Yes ☐ No ☐

What kind of computer?

Desktop computer ☐ Laptop computer ☐ No computer ☐

2. Do you access the Internet in your place of residence?
Yes ☐ No ☐

In WiFi?

Yes ☐ No ☐

3. Do you own a smartphone?
Yes ☐ No ☐

If so, what kind of smartphone do you own?

Iphone ☐ Android ☐ Other ☐ No smartphone☐
I don't know ☐

4. Does the device access the Internet?
Yes ☐ No ☐

5. Do you use Internet on your smartphone?
Several times a day☐ Once a day☐ Several times a week☐
Occasionally ☐ Never ☐

6. Do you own a tablet?
Yes ☐ No ☐

If so, what kind of tablet do you own?

Ipad ☐ Android ☐ Windows ☐ Other ☐
I don't know ☐

7. Does the device access the Internet?
Yes☐ No ☐

8. Do you use Internet on your tablet?
Several times a day☐ Once a day ☐ Several times a week☐
Occasionally ☐ Never ☐

5.3.4.2. *Appendix 2: Description of the tasks to be realized*

"To address the usability of the diary, on the web site or on a tablet, I'm going to ask you to realize some tasks."

The scores will be estimated on a scale of global quotation which includes 6 different levels:
0 = independent
0.5= Success with confirmation
1 = success with incitement
2 = Success with guidance
3= Success with guidance and slowness of execution
4= Failure

	0 = Independent	**0.5** = Success with confirmation	**1** = Succes with incitement	**2** = Success with guidandce	**3** = Success with guidance and slowness of execution	**4** = Failure
First task: - Find the button of starting up of the computer						
- Switch it on						
Second task: - Passive consultation of the HOME page						
Third task: - Passive consultation of the Diary interface						
Fourth task: - Add an appointment						
* find the good date						
* Select the good hour						
* put a title in your meeting						
* protect the meeting						
Fifth task: - Modify your meeting: *Change the date or another thing						

* protect the modification						
Sixth task: - Delete this appointment						
Seventh task: Create a new task * Spray plants						
* give the title of " spray plants" in your task						
* protect the task						
* archive the task						
* Invite someone to participate						
Eighth task: - write a message						
Ninth task: - repeat this task in the tablet						
- Last task :						
- disconnect from the application and switch off the computer						

Table 11: Tasks to be completed by the participants during ConnectedCare web application usability tests

Second task: (passive consultation) once arrived on the homepage, observe attentively the general menu (icons, images, text). Can you explain me the purpose of the various elements you see?

Third task: please go to the diary. Now observe attentively the page and please explain me the purpose of the various elements you see (passive consultation).

Fourth task: Once in the diary, create an appointment at the hairdresser on January 10th 2015, at 4 pm.
Go to the right date and select the right hour.
Put a title to your appointment.

Fifth task: now can you modify the appointment?
Go to your appointment and change the date or the hour.

Sixth task: now can you delete the appointment?

Seventh task: please create a new task: water the plants
Please save your task.

Eighth task: please read your messages and answer in the course of the discussions.

Last task: disconnect from the diary and put out the computer / the tablet

5.3.4.3. *Appendix 3: User's feeling evaluation*

1. In your opinion, the tasks are :

Easy ☐ Rather easy ☐ Difficult ☐ Very difficult ☐
Impossible to be done ☐

2. Have you been comfortable with the exercises?

Yes ☐ No ☐

3. You would have needed help?

Yes ☐ No ☐

4. The laptop manipulation is?

Easy ☐ Rather easy ☐ Very difficult to treat ☐

5. This application can be useful for you?

Yes ☐ No ☐

If not, why?

6. Would you be willing to take ownership of a laptop or a touchpad?

Yes ☐ No ☐

If yes, would you be willing to let me install the digital diary application on your own device?

7. This application is rather clear?

Easy ☐ Rather easy ☐ Very difficult ☐

8. Does the given instructions seemed clear enough to you?

Easy ☐ Rather easy ☐ Very difficult ☐

The survey is now over. Thank you for your invaluable participation

Laetitia Courbet
Research analyst - Laboratory AGIM FRE 3405 CNRS- UJF/Team GEM

5.4. Annex 4: Letter from the French ethical authority: the Comité de Protection des Personnes SUD-EST II (CPP SUD-EST II)

COMITE DE PROTECTION
DES PERSONNES SUD-EST II
HOPITAL EDOUARD HERRIOT
Bâtiment 12 - 1er étage
5, Place d'Arsonval
69437 LYON CEDEX 03
Tél : 04.78.42.94.48
Fax : 04.78.42.94.69
Emails : info@cppsudest2.fr
francoise.leclet@chu-lyon.fr
Site : www.cppsudest2.fr

Lyon, le 20 Novembre 2014

Monsieur Jérémy BAUCHET
Université de Grenoble
Laboratoire AGIM - Bâtiment Le Forum 1
260 avenue Marie Curie
ARCHAMPS TECHNOPOLE
74160 ARCHAMPS

Réf : CAL n° 2014-046

Monsieur,

Le Comité de Protection des Personnes SUD-EST II, lors de la séance du 19 Novembre 2014, a pris connaissance de votre courrier, en date du 6 novembre 2014, concernant un projet qui porte sur l'acceptation d'une Technologie d'Assistance pour la Cognition (TAC), effectuée dans le cadre du projet de recherche européen MyGuardian.

A l'issue de la délibération et au regard des éléments que vous apportez dans votre courrier, le Comité a considéré que ***cette étude n'entre pas dans le champ d'application de la Loi du 9 août 2004,*** dans la mesure où il s'agit d'une étude non interventionnelle. Il s'agit d'une étude qui s'inscrit dans le domaine des sciences humaines et non dans le cadre des études biomédicales.

Cet avis tient lieu d'avis éthique (Numéro IRB : 00009118).
Pour information, voici le site : http://ohrp.cit.nih.gov/search/irbsearch.aspx

Recevez, Monsieur, nos salutations les meilleures.

Pour le CPP SUD-EST II
Le Président de séance - Docteur Catherine CORNU

Membres ayant participé à la séance :

*AMIET Nicole (Domaine Juridique) - BIENVENU Jacques (Recherche Biomédicale) - BOISRIVEAUD Christine (Psychologue) - CORNU Catherine (Recherche Biomédicale - méthodologie) **Présidente de séance** - GIMENEZ-GEAY Isabelle (Infirmière) - NAGEOTTE Alain (Pharmacien) - NGUYEN Kim An (Recherche Biomédicale) PELEGRIN Serge (Représentant Association Malades et Usagers) PHILIPPE-JANON Chantal (Domaine Social) ROHFRITSCH Mathilde (Recherche Biomédicale) ROUSSET Guillaume (Domaine Juridique)*

5.5. Annex 5: Conclusions from D22 - Preliminary User Acceptance Test Report

MyGuardian increases mobility only if the carers have enough belief and certainty in the senior taking the device with him (charged), and the senior knows how to operate a smartphone (even if he panics). The frequency and ease with which they senior can go out unaccompanied, can be maintained for a longer period of time, creating a more independent, but still safe situation.

MG can give seniors with disease insight a safe feeling, because they know they are being supported. However, for seniors without insight this will not be the case. They do not have the feeling they need help. In a worst case scenario they can feel they are being spied upon. Furthermore, most seniors do not know how to operate a smartphone, giving them an insecure feeling.

A trustful, good relationship in which the carer(s) can comfort the senior. Explaining the reason and advantage of using MG will positively influence the seniors self-esteem and freedom. Mainly because he will be able to live independently at home for a longer period of time. However, if there is not enough trust, the senior might feel controlled. In that case, the senior will not understand that MG is there to help him and will feel limited in his freedom. Furthermore, the seniors' self-esteem will suffer if he does not know how to operate the application and/or smartphone.

If the informal carer is sure that the senior takes the phone (fully charged) with him every day, wherever he/she goes, it does create peace of mind. Unfortunately, the question remains if the senior is capable of: taking it with him, being able to operate it and being able to respond adequately to an alarm. The current elderly generation is not familiar with using a smartphone. However, the upcoming elderly generation will be more accustomed to a smartphone. The informal carers should definitely have an application on their phone in which the senior's location can be checked and to which (alarm) messages can be sent. To sum up, MG can give a feeling of control to the informal carers, but it can also be perceived as extra pressure.

Depending on the senior's disease insight, he can feel controlled - negatively influencing his well-being and independence, or supported by MG - positively influencing his well-being and independence. Wrong word choices in the senior application can influence the way the senior reacts. Most seniors do not think or want to admit they need help and will therefore never choose a button: 'I need help'. Chances are higher that the care tasks are being performed on time with MG, contributing to the well-being of the senior.

First of all MG needs to meet the legal requirements of professional care information systems. Second, the easy distribution of tasks to formal caregivers on the website and being controlled. Through a care desk to pick up an alarm, should be integrated in the current organization of formal care. The remuneration situation needs to be clarified. Another important aspect is that the privacy of the senior and close carers should be maintained.