



Agile CoCreation of Robots for Ageing

Deliverable 2.2 Needs Study for Mobility Application

Project: ACCRA
Project Number: 738251
Deliverable: D2.2
Title: D2.2 Needs Study of Mobility Application
Version: v1.0
Date: 02/10/2017
Confidentiality: Consortium
Author: Michael Tsui
Grazia D'Onofrio



Funded by



国立研究開発法人
情報通信研究機構
National Institute of Information and
Communications Technology

Table of Contents

DOCUMENT HISTORY	ERREUR ! SIGNET NON DEFINI.
LIST OF FIGURES	4
LIST OF TABLES	4
ABBREVIATIONS AND DEFINITIONS	5
EXECUTIVE SUMMARY	6
1 INTRODUCTION	ERREUR ! SIGNET NON DEFINI.
1.1 THE ROLE OF THIS DELIVERABLE IN THE ACCRA METHODOLOGY ...	ERREUR ! SIGNET NON DEFINI.
1.2 STRUCTURE OF THIS DELIVERABLE	ERREUR ! SIGNET NON DEFINI.
2 METHODS	ERREUR ! SIGNET NON DEFINI.
2.1 DATA ANALYSIS	ERREUR ! SIGNET NON DEFINI.
3 RESULTS: COUNTRY #1: NETHERLANDS 3.1 INTERVIEWS WITH ELDERLY	ERREUR ! SIGNET NON DEFINI. 3.1.1 Profiles of elderly participants..... 3.1.2 Elderly needs..... 3.1.3 Perception of robots
	3.1.4 Metrics..... 3.1.5 Ranking of the priority needs and robot services Erreur ! Signet non défini.
	 3.2 INTERVIEWS WITH FORMAL CAREGIVERS
	3.2.1 Profiles of formal caregiver participants
	3.2.2 Needs..... 3.2.3 Perception of robots
	3.2.4 Metrics..... 3.2.5 Ranking of the priority needs and robot services Erreur ! Signet non défini.
	 3.3 RECOMMENDATION 3.3.1 Objectives
	3.3.2 Refinement of user profile..... 3.3.3 Priority services to be developed (from end-user's perspective) . Erreur ! Signet non défini. 3.3.4 Mandatories (from end-users' perspective)....
4 RESULTS: COUNTRY #2: ITALY	ERREUR ! SIGNET NON DEFINI.
4.1 INTERVIEWS WITH ELDERLY	ERREUR ! SIGNET NON DEFINI.
4.1.1 Profiles of elderly participants..... 4.1.2 Needs..... 4.1.3 Perception of robots	Erreur ! Signet non défini.

4.1.4 Metrics **Erreur ! Signet non défini.**

4.1.5 Ranking of the priority needs and robot services **Erreur ! Signet non défini.**

4.2 INTERVIEWS WITH FORMAL CAREGIVERS AND INFORMAL CAREGIVERS **ERREUR ! SIGNET NON DEFINI.**

4.2.1 Profiles of formal caregiver participants **Erreur ! Signet non défini.**

4.2.2 Needs **Erreur ! Signet non défini.**

4.2.3 Perception of robots **Erreur ! Signet non défini.**

4.2.4 Metrics **Erreur ! Signet non défini.**

4.2.5 Ranking of the priority needs and robot services **Erreur ! Signet non défini.**

4.3 RECOMMENDATION **ERREUR ! SIGNET NON DEFINI.**

4.3.1 Objectives **Erreur ! Signet non défini.**

4.3.2 Refinement of user profile **Erreur ! Signet non défini.**

4.3.3 Priority services to be developed (from end-user's perspective) . **Erreur ! Signet non défini.**

4.3.4 Mandatories (from end-users' perspective) **Erreur ! Signet non défini.**

5 DISCUSSION: CROSS-COUNTRY NEEDS SYNTHESIS AND RECOMMENDATION **ERREUR ! SIGNET NON DEFINI.**

5.1 CROSS-COUNTRY RANKING OF THE PRIORITY NEEDS **ERREUR ! SIGNET NON DEFINI.**

5.1.1 Objectives **Erreur ! Signet non défini.**

5.2 CROSS-COUNTRIES FINAL RECOMMENDATION **ERREUR ! SIGNET NON DEFINI.**

5.2.1 Refinement of user profile **Erreur ! Signet non défini.**

5.2.2 Priority services to be developed (from end-user's perspective) . **Erreur ! Signet non défini.**

5.2.3 Mandatories (from end-users' perspective) **Erreur ! Signet non défini.**

List of Figures

Figure 1 Relationship deliverables ACCRA Project

6

List of Tables

Table 1 : Vertical and horizontal analysis (Gavard-Perret et al., 2008, page 262).	Erreurs ! Signet non défini.
Table 2 Profile of the elderly population at the Dutch Pilot Site	Erreurs ! Signet non défini.
Table 3 Dutch Elderly Population Age Distribution	Erreurs ! Signet non défini.
Table 4 Elderly Daily life needs as result from their limited mobility – The Netherlands	Erreurs ! Signet non défini.
Table 5 Elderly Mobility Needs – The Netherlands	Erreurs ! Signet non défini.
Table 6 Elderly Technical Needs – The Netherlands.....	Erreurs ! Signet non défini.
Table 7 Elderly perception on robots – The Netherlands	Erreurs ! Signet non défini.
Table 8 Factors for robot acceptance and positive perception – The Netherlands.....	Erreurs ! Signet non défini.
Table 9 Factors for disapproving robots and negative perceptions – The Netherlands	Erreurs ! Signet non défini.
Table 10 : Elderly – Metrics for Netherlands.....	Erreurs ! Signet non défini.
Table 11 : Priority needs for development.....	Erreurs ! Signet non défini.
Table 12 Dutch Formal Caregiver Profile	Erreurs ! Signet non défini.
Table 13 Daily Life needs due to mobility problems from the caregivers perspective – The Netherlands	Erreurs ! Signet non défini.
Table 14 Elderly mobility needs from the caregivers' perspective – The Netherlands..	Erreurs ! Signet non défini.
Table 15 Elderly technological needs from the caregivers' perspective – The Netherlands	Erreurs ! Signet non défini.
Table 16 Caregivers' needs – The Netherlands	Erreurs ! Signet non défini.
Table 17 Caregivers perception on the ASTRO robot – The Netherlands	Erreur ! Signet non défini.
Table 18 Factors negatively influencing the perception on the robot	Erreur ! Signet non défini.
Table 19 Formal Caregivers – Metrics Netherlands.....	Erreurs ! Signet non défini.
Table 20 Ranking of priority services	Erreurs ! Signet non défini.
Table 21 : Netherlands – User profile refinement.....	Erreurs ! Signet non défini.
Table 22 : Netherlands – The refinement of user profile.	Erreurs ! Signet non défini.
Table 23 : Netherlands - Priority services to be developed.	Erreurs ! Signet non défini.
Table 24 : Netherlands - Mandatories: what the robot should do...	Erreurs ! Signet non défini.
Table 25 : Netherlands - Mandatories: what the robot shouldn't do.	Erreurs ! Signet non défini.
Table 26 Profile of the elderly population at the Italian Pilot Site ...	Erreurs ! Signet non défini.
Table 27 Italian Elderly Population Age Distribution.....	Erreurs ! Signet non défini.
Table 28 Elderly Needs - Italy	Erreurs ! Signet non défini.

- Table 29 Elderly perception on robots - Italy **Erreur ! Signet non défini.**
- Table 30 Factors for robot acceptance and positive perception **Erreur ! Signet non défini.**
- Table 31 Factors for disapproving robots and negative perceptions**Erreur ! Signet non défini.**
- Table 32 Elderly – Metrics for Italy **Erreur ! Signet non défini.**
- Table 33 Ranking of the priority needs and robot services **Erreur ! Signet non défini.**
- Table 34 Profile of the Italian Caregivers **Erreur ! Signet non défini.**
- Table 35 Role distribution of the Italian caregivers..... **Erreur ! Signet non défini.**
- Table 36 Caregivers' needs - Italy **Erreur ! Signet non défini.**
- Table 37 Caregivers perception on the ASTRO robot – Italy..... **Erreur ! Signet non défini.**
- Table 38 Factors negatively influencing the perception on the robot**Erreur ! Signet non défini.**
- Table 39 Formal and Informal Caregivers – Methrics Italy **Erreur ! Signet non défini.**
- Table 40 Ranking of priority services - Italy **Erreur ! Signet non défini.**
- Table 41 Priority Services to be developed - Italy **Erreur ! Signet non défini.**
- Table 42 : Italy - Mandatories: what the robot should do. **Erreur ! Signet non défini.**
- Table 43 : Italy- Mandatories: what the robot shouldn't do..... **Erreur ! Signet non défini.**
- Table 44 : Cross-country priority needs. **Erreur ! Signet non défini.**
- Table 45 : Cross-country – Should we refine the user profile? **Erreur ! Signet non défini.**
- Table 46 : Cross-country – The refinement of user profile **Erreur ! Signet non défini.**
- Table 47 : Cross-country priority services to be developed..... **Erreur ! Signet non défini.**

Abbreviations and Definitions

Abbreviation	Definition
ICT	Information and Communication Technologies
ACCRA	Agile CoCreation of Robots for Ageing

Executive Summary

The ACCRA project aims to stimulate the independent living of elderly persons through the development of robotics. To achieve this goal the project has been divided into 4 phases: Needs study, co-creation, experimentation and sustainability analysis. This document presents the **needs study results of the mobility application in the Italian and Dutch pilot sites**. Figure 1 shows how this deliverable is connected to the other aspects of the ACCRA project.

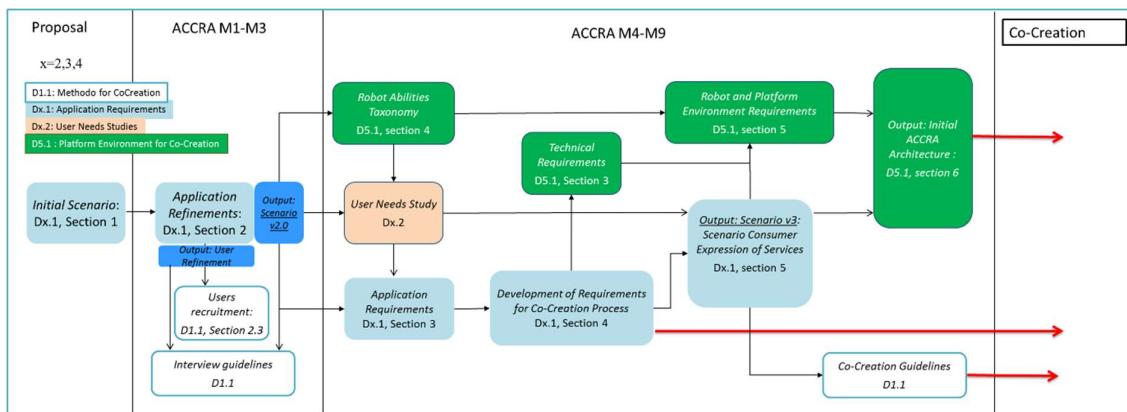


Figure 1 Relationship of deliverables ACCRA Project

The aim of the needs study was two-fold: 1) What are the elderly needs with regards to their mobility issue and 2) What were the perceptions of the participants about (care assistive) robots? The needs study was conducted with three end-user groups: elderly, informal caregivers¹ and formal caregivers. In the Netherlands, the participants were recruited from the elderly care organisation WVO Zorg and in Italy the participants were recruited from the Geriatrics Unit – IRCCS Casa Sollievo della Sofferenza. A semi-structured interview method was used, all interviews² were an 1-on-1 and had an average duration of 1-1,5 hours.

There were several needs that were outside the domain of mobility. Participants have expressed that they had needs with their daily life as result of their mobility problems, which shows that the daily life and mobility domains are interwoven with each other. Addressing needs from both domains are important to maintain independence. However, these needs are not taken into the priority list for the co-creation phase in this user case due the scope of this project. After cross-country analysis, there are three high priority needs with regards to the elderly mobility problems: safety needs, movement needs and exercise needs. In addition, there were country specific needs. In The Netherlands, the caregivers expressed their needs for a robotic solution that could support them with their work and in Italy the participants have expressed needs concerning communication. The three needs: safety, movement and exercise will be prioritized for the co-creation phase and the country-specific needs will be further explored.

¹ The Netherlands did not recruit informal caregivers

² Except 1 for interview session. This was an group interview.

***FOR MORE INFORMATION, PLEASE CONTACT THE
COORDINATOR OF THE PROJECT***

Trialog

Antonio Kung

Antonio.kung@trialog.com

Kyoto University

Yasuo Okabe

okabe@i.kyoto-u.ac.jp