RESILIEN-T

Technology driven self-management for building resilience among people with early stage cognitive impairment

AAL-2018-5-82-CP

Deliverable D2.1 Report on codesign results and interfaces specifications

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List of Acronyms

AAL	Active Assisted Living
EU	European Union
IRCCS - INRCA	L'Istituto nazionale ricovero e cura anziani (INRCA) è un Istituto di ricovero e cura a carattere scientifico (IRCCS) pubblico
MCI	Mild Cognitive Impairment
No.	Number
SIPBB	Switzerland Innovation Park Biel/Bienne
WP	Work Package

Executive Summary

This deliverable will report the outputs of the three Co-Design activities, further analyzed and discussed within the experts in consortium partnership, by providing design guidelines about interaction requirements to be considered in the development and what would be more relevant to be tested during the testing phase.

This document will feed T2.3 - Development of the UI according to HCI requirements definition activities, especially regarding user-centred design and interaction design issues.

The structure of this deliverable is described below.

- **Chapter 2** provides the User research activities, including the interviews and the awareness sessions, providing methodology description, relevant data and item-specific insights.
- **Chapter 3** explains the activities conducted in the Workshops held in Italy, the Netherlands and Canada, with reference to the materials used in the workshops and participants profile.
- **Chapter 4** describes the results of the Co-design activities that have been reported in a common, shared template that will integrate findings and proposals emerging from Co-design. Reporting from the three Pilot countries will be organized according to the domain areas and the modules foreseen in the Co-design methodology. This chapter will report the final version of the RESILIEN-T Scenarios.
- **Chapter 5** provides the description of the RESILIENT design concept, its value and applications, as resulting from co-design sessions results and Design Themes elaboration. This chapter describes the RESILIENT Design Concept and interaction model, in addition to the definition of guidelines for interface design.

1. Introduction

The project RESILIEN-T aims at supporting the wellbeing of people with mild cognitive impairment (PwCI) through technology driven self-management and self-monitoring ability, with the aim of slowing the progression of the disease.

In particular the project aims at slowing the progression of the disease by empowering PwCI
- to live an active and meaningful life,
- maintain independence in daily activities
- live safely at home, with dignity and satisfaction during the course of the illness.

In general RESILIEN-T will
- develop an open, modular, adaptable platform to provide **self-management and coaching services to PwCI**, integrating informal and professional caregivers as necessary, to be used either autonomously or in conjunction with on market systems for lifestyle monitoring or wearable devices.
- develop **evidence-based applications (apps) to support self-management by PwCI**, covering the areas of nutrition, physical, social and cognitive activities.

This project follows a user-centred and participatory design approach, aiming at addressing properly real target users' needs, ethical and cross-cultural dimensions, and at monitoring and validating the psycho-social impact of the proposed solution. Both target groups (PwCI/caregivers) will be part of a continuous design process; users and stakeholders' engagement is a key success factor addressed both in the Consortium composition and in its capacity to engage relevant stakeholders external to the project.

Users have been engaged since the beginning of the project through user research and engagement activities; then have been part of the application design, participating in three Co-Design Workshops organized in the three main piloting countries: Italy, Netherlands and Canada.

Then again, in the 2nd and 3rd years of the project, users' engagement in Test and Piloting events in the three target countries, as well as one additional target country—Switzerland, will help the Consortium fine-tune the RESILIEN-T solution before the end of the project.

RESILIEN-T partners have been involved both as experts and as facilitators, coordinating group activities and tables, and adopting collaborative learning/design techniques such as scaffolding and fading.

A Participatory design approach has been applied to the workshop aiming at fostering:
- Diverse participation, perspective taking and inclusive decision-making
- Mutual learning, testing of premises, and generation of new concepts
- Iterative actions to achieve a final design of an artifact that answers to the participants' requirements and ideas.

The RESILIEN-T research and design approach is based on PwCI domain analysis and aims to define the experience of RESILIEN-T target users and consequently the design concept of the RESILIEN-T system, according to the following scheme:

- **Phase 1_** Analysis of caregiving services for PwCI

- **Phase 2_** User research, questionnaires and interviews
- **Phase 3_** Co-design of the RESILIEN-T user experience and interaction concept.

This document describes the process and the methodology followed, highlighting the informative elements provided by the research activities, the construction of the knowledge of the user of the domain, the further elaboration of this knowledge for the design, and the results for the setting up of RESILIEN-T technologies development.

1.1   1.1. Scope and Objectives

The main objective of this document is to present the results of the activities of the Co-Design Workshops in relation to:

1. End-Users Involvement and Participation
2. Active Living concept exploration
3. User Experience Design and Interaction Design

Below there is a description of the specific objectives of the activities conducted during the Workshops. The activity modules are presented in relation to the three areas of work mentioned above.

1. End-Users Involvement and Participation as enabling condition
Co-Design workshop will involve inter-disciplinary experts from the Consortium and all the relevant external actors covering technical and social/human scientific fields: cognitive and social psychologists, service designers, ICT system designers, developers and integrators.

End-Users involvement and participation in the Workshop activity is the enabling condition for the accomplishment of T2.2 technical objectives: all the participants are motivated to collaborate in idea generation by providing their own perspectives on facts and their wishes and needs. Whether the user research and listening activity has been mainly based on individual analysis of MCI needs and formal/ informal caregivers needs, the interaction design concept generation process will be preferably managed with a group perspective in order to solicit the evolution of ideas through sharing, discussion and negotiation processes.

The participatory and collaborative approach of the workshop will prevent not having only "individual ideas", since not efficient in integrated research and design activities and causing the risk of conflicts and the risk to have strong ideas presented by weak people or weak ideas presented by strong people. In the Co-Design workshop novel concepts belong to the group and are shared among all participants, not at the aim to select the best one but at the aim to define and enrich the RESILIENT interaction design concept.
Introductory and warming up activities will allow to get all participants engaged in the process.

2. Active Living concept exploration as first scope
The Co-Design Workshop will leverage upon user research and use cases carried out as analysis of the existing active living scenarios and service provision flow in the fields defined as in the scope of RESILIENT project. The analysis has taken into consideration contents [Ref. Outcomes from T2.1].

By mean of Scenarios validation all the knowledge of target users, their sociological and individual characteristics, their needs, their thoughts and beliefs, their lifestyle, values and, ethical perspectives will constitute the starting point for the Co-Design activity.

In this sense the first step of the workshop will be dedicated to presenting the participants with the RESILIENT scenarios in order to start focusing on both service providers and MCI and formal/ informal caregivers daily life experience and situations. This activity will be in-spired by storytelling and listening methodologies and will permit participants to share personal opinions and perspectives. The objective of the activities under this domain is to foster a clusterization and elaboration of results in order to provide an organized level of input for the design activities.

As an input for this phase:
Second iteration of Scenario-based design will be carried out according to the outcomes of user research and interviews activities carried out in Italy and the Netherlands. In this iteration the initial formulation of Personas and Scenarios, developed in M4, will be revised, enriched and extended in quality and quantity in order to provide 'as-is' current scenarios and future RESILIENT user experience description.
Novel scenarios produced will be the basis to explore the active living concept and the intrinsic motivation of the end-users towards interactive companions.

In addition to that, further input to Scenarios Validation will be provided by the Content modules definition, as outcomes of T2.1.

3. User Experience Design and Interaction Design as second scope
Second scope of the Co-Design workshop, together with the Active Living concept and scenarios exploration, will be the design of how the RESILIENT system is expected to work and interact with real users. Main goal of this activity is to provide design concept and user experience guidelines for T.2.3 Development of the UI according to HCI requirements definition.

As an input to this activity, the RESILIENT team will prototype specific taskflows of the RESILIENT system interaction. Such interaction will be defined in an experiental way, by means of working prototypes, such as early implementations, role or look-and-feel mockups. According to these different modalities, participants to the Workshop will be involved in evaluation sessions where specific aspects of the interaction will be demonstrated and discussed. Basic assumption of this approach is to stimulate the discussion and the generation of novel interaction ideas by experiencing with interactive mockups.
Design simulation techniques, like Wizard of Oz, will be adopted. This integrated approach to prototyping will allow us to guide end-users through the "navigation" of available solution prototypes and to collect their feedback and contribution.

In particular, the codesign activity objectives are to:
- Validate and improve **scenarios and task flows** developed In WP1
- Validate and enrich the **PwCI' interviews** in terms of requirements
- Present and discuss the **use cases**
- Prioritize the **features of the the Resilien-t tools**

1.2   1.2. Research, User-centred and Participatory Design Methodology

1.2.1 Designing for/with vulnerable people

People with MCI or other similar diagnoses are often not included in the research, and data collection comes from Care field. "In order to enable the voices of people with dementia

a voice and increase their level of empowerment also with research processes, it is important to include them as valued participants. Therefore public and patient involvement (PPI) and coproduction, especially in an interdisciplinary design and healthcare context, is important to bring together, adapt, adopt, amalgamate and develop suitable methods to facilitate people with dementia as active partners in each step of the research (Niedderer, Coleston-Shields, Craven, Gosling & Salter, 2017).

For this reason co-design sessions are fundamental moments: in fact "co-designing aids to create a common knowledge base among designers, users and other stakeholders" about PwCI's goals, needs, weaknesses, and expectations.

Furthermore the co-design process could also nurture a positive impact on the PwCI because it "fosters social interaction and enhances empathic connections between participants" (Wang, Marradi, Albayrak & van der Cammen, 2019).

In this regard, the design process was divided into three fundamental phases:
- User research and Analysis - identify users' daily habits, their lifestyle (nutrition, physical activity, social relationships)
- Generative and explorative phase - collecting ideas and merge them into few scenarios and design concept
- Evaluation and assessment stage in co-design workshop: the results are submitted, discussed and improved together with the users

The objective of the workshops was two fold: on the one hand to discuss and validate the RESILIEN-T use cases defined according to the user research and field analysis and, on the other hand, to create a space for further exploring the potentialities of RESILIEN-T, in particular related to user experience and interaction with RESILIEN-T system.

A Participatory design approach has been applied to the workshops aiming at fostering:
- Diverse participation, perspective taking and inclusive decision-making,
- Mutual learning, testing of premises, and generation of new concepts,
- Elaboration of user insights and feedback into further design of RESILIEN-T interfaces and interaction.

The RESILIEN-T project will develop many different kinds of functionalities, are described in the use cases and the Workshop has allowed to present, discuss and validate this selected set of scenarios, also supporting prioritisation of UX statement and exploration of alternative ways of interaction.

The user experience co-design have allowed to enter into details of how the RESILIEN-T system would work, how people would interact with services in order to accomplish their personal objectives.

In order to accomplish these objectives four workshops have been held: two sessions for each of the pilot countries of the project, Italy, Canada, Switzerland and Netherlands.

The research and design methodology developed in the project integrates methods and techniques from a broad range of disciplines, from ethnography and psychology, to User-centred and Participatory design.

The process has been structured as follows:

> Process analysis

> Field research and User research

> Scenario-based design

> Co-design

> Design concept generation

This paragraph focuses on describing the relation among user research, design and development.

User research methodology adopted in RESILIEN-T have included Interviews. These interviews have been carried out by Inrca that are able to establish a relationship of trust and reciprocity with people of concern, to use an appropriate language, a participatory approach and to keep in mind cultural markers and to manage any vulnerabilities.

Field data collected in the first part of the research has been used as input for Scenario-based design, a set of scenarios addressing RESILIEN-T system and user experience as arising from the requirements identified in the four pilot countries. The use of scenarios (Carroll, 1999; 1995) allowed to structure data gathered through activity analysis while envisioning the role and functionalities of the RESILIEN-T system, and assessing and validating the envisioned solutions from a technical perspective. In this way scenarios worked as a design tool along the overall design process.

1.2.2 Scenario-based design

Participatory approaches to system design have been enriched over the years by ethnographic methods directly oriented towards the support of user practices as opposed to using technology simply to automate their tasks. Additionally, we also draw from the field of participatory design, with its emphasis on democratic participation of users in the design process as they know what they need better than anyone else (Ehn, Kyng

1987; Ehn, 1988). We use scenarios (Carroll, 1999; 1995) in our design process to help elicit and structure data from

(1) activity analysis,

(2) the envisioning of roles and functionalities of the technology, and

(3) assessing and validating envisioned solutions from an architectural perspective. Thus, scenarios work as a crucial design tool throughout our design process.

We use scenarios because they are one of the most valuable techniques for understanding what users want to use the system and for planning for the potential impacts of the developed system.

Scenario-based design methodology arose from human-computer interaction and software design (Carroll, 2000), but has been adopted over the years in numerous contexts, including engineering, architecture, product and service design, and healthcare. "In scenario-based design, descriptions of how people accomplish tasks are a primary working design representation. […] Maintaining a continuous focus on situations of and consequences for human work and activity promotes learning about the structure and dynamics of problem domains, seeing usage situations from different perspectives, and managing tradeoffs to reach usable and effective design outcomes" (Carroll, 1999). In other words, a scenario consists of a flexible description, roughly detailed, that includes involved actors and their goals, as well as information about the environment (what Carroll calls setting), the system's rough functionalities, and the sequence of actions required to achieve the actors' goals.

Thus, a scenario is concrete enough to offer a specific point of view on the problem and on the consequent solution, but it's also flexible because the descriptions used are rough and changeable, thereby allowing for review and adjustment during construction (in terms of a representation of actions, event or situation that explain the hypothetical use of a product or service, investigating their possible performances, opportunities, weak and strong points before actual fulfilment). Importantly, using scenarios in system development helps keep the future use of the envisioned system in view as the system is designed and implemented.

Carroll (1999) affirms that "scenarios allow designers to provisionally construct a space of user tasks despite the instability in requirements originating from the context of technology development." This technique helps designers to stay focused on a specific context, use and target. Moreover a scenario can be structured along different forms, such as narrative text, storyboard, video or prototype, and it may be in formal, semi-formal or informal notation. (Go & Carroll, 2004).

The use of scenarios is strictly related to the processing and use of personas. Personas may be defined as "a fictional, yet realistic, description of a typical or target user of the product. A persona is an archetype instead of an actual living human, but personas should be described as if they were real people. The description

should be thorough, including details about the persona's needs, concerns, and goals, as well as background information such as age, gender, behaviors, and occupation." (Harley, 2015)

Three types of scenarios may be constructed:

Activity scenarios stem from the fieldwork and activity analysis. They are grounded and built on data collected with ethnographic observation and storytelling through focus groups, interviews, diaries, and cultural probes. Activity scenarios account for concrete use episodes, from standard practices to routines, from routine activities to exceptional circumstances faced in daily activities.

Envisioning scenarios represent a tool to envision the future system, a first way to embody ideas and explore the possibilities to support these ideas. Envisioning scenarios stem from the inspiration phase of the design process. They support the construction of a coherent and rich vision of the concept and provide support for proof-of-concept. Envisioning scenarios fix some of the narrative elements and use them as leverage for creative generation of design solutions.

Prototype Scenarios. According to the approach proposed by Houde and Hill (1997), interactive prototypes represent the evolution of mock-ups, integrating role, look and feel with implementation aspects. Scenarios for prototype evaluation represent detailed interaction paths, and have the function to allow the refining of the interaction modalities and the sensorial features of the prototypes. Scenarios for prototype evaluation must enable a clear grasp of the contextual elements, and have to afford specific requirements coming from the activity.

Scenarios simplify user involvement, since they provide shared vocabulary, "a common language that everyone can understand, irrespective of their backgrounds, they create a common ground so that a discussion can take place among the various stakeholders concerning the current and future use." (van der Bijl-Brouwer & van der Voort, 2013).

The RESILIEN-T envisioning scenarios have been further analysed in light of prototype implementation. Thus scenarios for prototype evaluation represent detailed interaction paths, and have the function to allow the refining of the interaction modalities and the technical features of the prototypes. Scenarios for prototype evaluation enabled a clear grasp of the contextual elements, had afforded specific requirements coming from the activity in order to support technical feasibility assessment and optimisation.

1.2.3 Research and Design Process

The research and design methodology developed in the project integrates methods and techniques from a broad range of disciplines, from ethnography and psychology to User-centred design and Participatory design.

The process has been structured along the following phases

FAMILIARIZATION
- Awareness session & early contact
- Resilien-T concept presentation
- Establishment of panels of users and activity planning

IN-DEPTH ANALYSIS & USER RESEARCH
- Interviews, analysis focus group, ethnography, reviewing existing technology to elicit user requirements

PARTICIPATORY AND COLLABORATIVE DESIGN
- Codesign Workshop for idea generation & conceptualisation

This paragraph focuses on describing the relation among user research, design and development.

User research methodology adopted in RESILIEN-T have included Interviews and sharing sessions between caregivers involved in the project. Interviews have been carried out by expert partners able to establish a relationship of trust and reciprocity with people of concern, to use an appropriate language, a participatory approach and to keep in mind cultural markers and to manage any vulnerabilities.

Field data collected in the first part of the research have been used as input for Scenario-based design, a set of scenarios addressing RESILIEN-T service and user experience as come from the requirements for the three pilot countries. The use of scenarios (Carroll, 1999; 1995) allowed to structure data gathered through activity analysis while envisioning of the role and functionalities of the RESILIEN-T system, and the assessing and validating the envisioned solutions from a technical perspective. In this way scenarios worked as a design tool along the overall design process.

The plot of the scenario unfolds when the actor starts to perform activities aimed at achieving his or her goal, when the product responds to these actions and/or when outside events (changes in the setting) trigger or interrupt the interaction between the actor and the product. To conclude, a scenario should be accompanied by a description of use issues which can provide input into the (re-)design of a product. These issues can relate to user experiences that should be improved or retained, to usability qualities (effectiveness and efficiency), or to other higher level qualities that need to be optimised such as performance.

Scenarios represent one of the most valuable techniques for representing current activities and analysing and planning how a new system could impact on users' activities and experiences. A scenario identifies people having certain motivations toward the system, describes the actions taken and some reason why these actions were taken, and characterizes the results in terms of the users' motivation and expectations. They project a

concrete description of the activity the users engage in when performing tasks, a description sufficiently detailed so that the design implications can be inferred and reasoned about.

Scenario-based design is used to explore the boundaries of the design space proposing innovative and creative solutions; by continuously comparing the results of WP1 and re-tuning the process, WP2 have iteratively refined the scenarios to progressively incorporated the creativity, innovation, educational and technical requirements developed in the project.

This approach ensures that the final result will take advantage of all contributions and manage both innovation and user-research; furthermore, the requirements developed in WP1 and the scenarios developed in WP2 will constitute a coherent and integrated operative knowledge on the basis of which RESILIEN-T tool will be designed.

Indeed starting from the needs, requirements, expectations, and wishes gathered via personal stories collection, a common set of experience scenarios have been defined. This set of scenarios represent the input to the creative phases described below.

Scenarios represent the tool used to develop a consistent user experience across the diversity of the different RESILIEN-T software services and contexts of use. In particular, the scenarios will present design concepts to seamlessly support the users in moving across different domains such as physical activity, self-management, memory training and social relations.

The narrative developed are envisioning scenarios, meaning that the most useful and viable scenarios envisioned are availed of to represent the characteristics and role of the future system. The concept thus generated will be described and merged into the reference activity and the scenario will explain how the activity itself may be modified when the service is introduced.

The RESILIEN-T envisioning scenarios have been further analysed in light of mock-up implementation. Thus scenarios for mock-up evaluation represent detailed interaction paths, and have the function to allow the refining of the interaction modalities and the technical features of the mock-ups. Scenarios for mock-up evaluation enabled a clear grasp of the contextual elements, had afforded specific requirements coming from the activity in order to support technical feasibility assessment and optimisation.

1.2.3 CoDesign Workshop methodology

The structure of the Co-Design Workshop does refer to three main domain areas described above:
- End-Users Involvement and Participation
- Active Living concept exploration
- User Experience Design and Interaction Design

Workshop organisation have followed a modular approach that each pilot countries have adapted according to practical arrangement of agenda and availability of participants, scope of the workshop and background knowledge of the project.

In this paragraph several activities that have been allocated in specific workshop time schedule are described with reference to the domain areas. Those modules have been selected and fine-tuned on purpose by Workshop organisers and facilitators.

End-Users Involvement and Participation as enabling condition
[Introduction / Warm up methods]

MODULE 0 - Introduction
This module has the goal of setting the rules of the workshop (this is safe space, what you said here will be reported only in anonymous form, allow everyone to express, listen, etc) and gathering expectations from the workshop.

Then to the the end check back the expectation. Normally I do this by asking participants to express their expectation and at the end of the workshop we go back to that flipchart and see how well we did in achieving the expectations. Some basic rules will be expressed in visual form on a flip chart and then add new rules coming from the audience if any.

Active Living concept exploration as scope 1
[Storytelling / Validation methods]

In research and design projects, problem formulation, story gathering and story making/building through Scenarios can help researchers, participants, clients and other stakeholders make sense of complex interconnected situations (IDEO, 2009).

Working with stories is considered a generative tool for co-design that captures participants' self-expression (Sanders, 2000). Furthermore storytelling is often used within a research team to facilitate the sharing of research experiences and develop common ground among diverse team members (IDEO, 2009) and makes possible to develop empathy and engage users and other stakeholders in the process of exploring possible solutions, generating feedback and refining the solution (Gruen, 2000).

In the Co-design workshop storytelling is particularly used for Active Living concept exploration, to elicit intrinsic motivation issues and to explore alternative futures with relation to the 'as-is' experience of MCI and formal/ informal caregivers.
Since an heterogeneous panel of stakeholders will attend the Workshop activities, including MCI, formal/ informal caregivers, and technical experts from the consortium, three high-level validation dimensions are proposed to be taken into account for the validation of Scenarios:

- user acceptability, including ease of use, suitability of the system for supporting cognitive task requirements, job satisfaction,
- domain suitability, i.e. the suitability of the content of information, the display representation and system functionalities for the selected applicative domain, its work-practices and internal procedures,
- technical usability, i.e. the property of a tool to be effectively used, understood and learnt by the people for which it has been designed, including look&feel, role and implementation aspects of the prototype as well as on the way the users will be requested to interact with it.

In the Co-design workshop storytelling takes on the forms of Story Building and Validation Scenarios.

Story Building is adopted by facilitators and project partners to prepare the materials for the workshop. Current formulation of Scenarios have already been defined in a narrative text on the basis of personal stories shared by PwCI and caregivers. In the preparation of the workshop the stories in Scenarios will preferably be further elaborated and mediated through graphics, journal, picture, etc. in order for all the participants to be able to understand and appreciate the narrative.

MODULE 1 - Storytelling and UX Statement

At the Workshop the **AS-IS** and the Future Scenarios will then be shown and the stories will be told to participants in order for them to reflect on their own stories. Each stories will be also disentangled in order to define UX statement to be used in the discussion with participants.

The **Statement cards** is an efficient tool to start discussions around experiential topics. By using Scenarios inspired statements, the participants can discuss the statement freely. It aims to trigger participants to react, whether they agree or disagree, without being the "owner" of the statement. The discussion is meant to lead to the placing of the statement card as "true" or "false", and to foster validation of statements as acceptable and feasible.

The UX Statements will be prepared according to the Validation methodology proposed.

MODULE 2 - Alternative Futures

The analysis of the proposed Scenarios and the placing of statement of Slot 1 would also enhance the development of further user experience by active participation of the workshop users. By using the **What if method** possible alternative experience and course of action will be explored. The What if method is used to examine the participants' thoughts towards improvement of the proposed UX statements by producing multiple post-its within a time limit, starting with "What if". The method is directed towards co-designing and problem solving.

The outcomes of this session will be elaborated by the RESILIENT team into **Affinity Diagram**s summarising the inner experience and motivations of participants. The elaboration will done by facilitators clustering all the post-its created by participants into similar categories.

User Experience Design and Interaction Design as scope 2
[Prototyping / User testing / Validation methods]

MODULE 3 - User experience and interaction co-design

The analysis of the proposed Scenarios and the placing of statement of Slot 1 would also enhance the development of further user experience by active participation of the workshop users. By using the What if method possible alternative experience and course of action will be explored. The What if method is used to examine the participants' thoughts towards improvement of the proposed UX statements by producing multiple post-its within a time limit, starting with "What if". The method is directed towards co-designing and problem solving.

The RESILIENT prototypes and mockups will show specific **interaction flows** with relation to the services described in the Scenarios presented in Module 1 and will allow the users to navigate the service, i.e. access, fruition, get profit, evolution and abandon, through the user interface prototypes.

In this module the interaction flow will be prototyped allowing the users to make direct experience of services and applications. By mean of working prototypes, being them implementation, role or look&feel mockups, the user will interact with service and application by mean of preliminary interfaces.

Simulation techniques, like Wizard of Oz, will be adopted to allow the users interacting with the RESILIENT interface whilst the feature of the application are emulated. In fact the Wizard of Oz technique involves the user interacting with the system under evaluation, whilst a hidden operator processes input from the user and simulates the system output accordingly. This technique is very useful to evaluate the user experience beyond the level of preparedness of working prototypes.

According to these different modalities, participants to the Workshop have been involved in discussion focusing on specific aspects of the interaction getting experienced in the workshop.

MODULE 4 - Review and testing of existing app

During the second focus group with seniors with MCI different technological solutions to stimulate physical activity were shown (Table 1). The Compaan tablet, the Galaxy active watch, and the Watchi were present in real life. Participants had the possibility to interact with these technologies. Next, one by one other technological solution were presented showing videos via a PowerPoint presentation. Using input from the first focus group sessions which motivators are important for seniors, scenarios were constructed using existing technological situations (Table 2). These scenarios were proposed to the participants with the question which kind of technologies they had seen today would be most appropriate to use. So, leaving out the technology and letting the seniors imply how they would want to experience the proposed solution. It was used to let seniors imagine certain situations and analyze their reactions and answers. This provided insight in how technology could be usable to stimulate seniors and when seniors are interested in technological solutions and when they are not.

In Canada, we had participants interacting with apps on Samsung Galaxy Tab devices (1 per participant). For this section, we included the top-performing Android apps based on our Desk Research using the AcTo dementia framework. Participants could choose from 4 apps: (1) Cognitive Training (Peak), (2) Physical activity and exercise (30-day fitness), (3) Diet (LifeSum), and (4) Seniors-focused app (Memory Games). We asked them to list their 1st, 2nd, 3rd and 4th choices from this list. This would give us a sense of what they're interested in using technology for. The participants then played with their two top choice apps and told us what they liked and disliked about them.

Peak (cognition)

Life Sum (diet)

30 Fitness Challenge (exercise)

Memory Games (seniors focused)
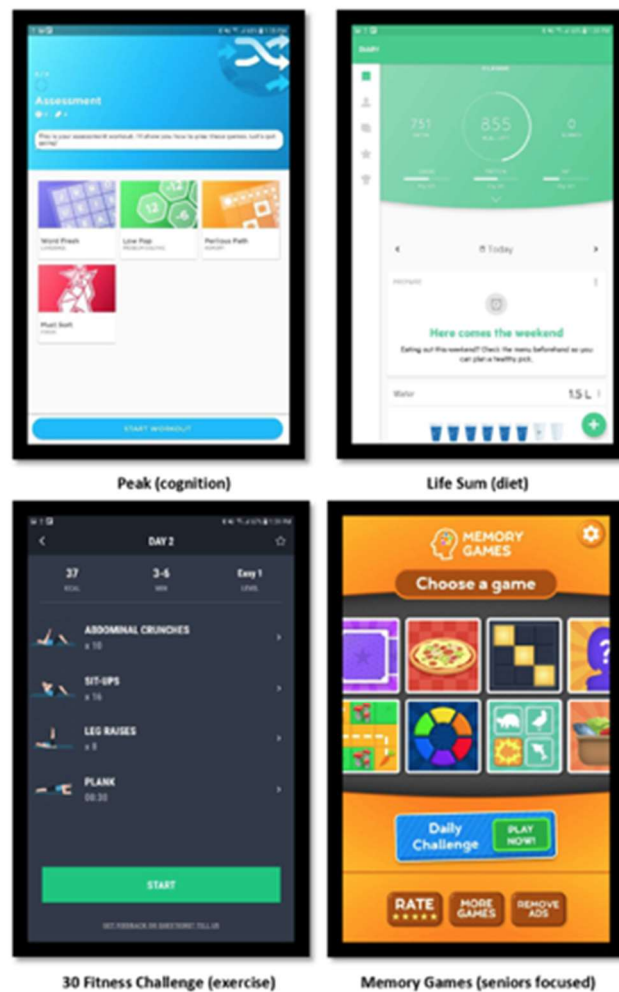
Participants were then introduced to the Resilien-T personas and were asked to brainstorm ways in which technology may be used to support the personas to live well. Finally, participants engaged with the Compaan interface and provided us with a list of what they liked and what they didn't like about it.

2. User Research

2.1 Awareness sessions and users engagement

2.1.1 Italy

The awareness session has been described in the following table:

Activity	Description
<u>Introduction</u> Short explanation, project partners, goal of the project, role of Inrca. Short round of introductions	The focus group was carried out on 21th of May 2019 inside the local Alzheimer's Centre of INRCA. Four psychologists and one experts in the field of care and assistance of people with dementia have taken part at the focus group. In addition to these people, the following people of the AAL project were present: Valentina (INRCA), Elisa (INRCA), Paolo (INRCA), Lorena (INRCA) and Alessandro (BSD).
<u>Recruitment of participants</u> Who do we want to interview (in- and exclusion criteria)? How are we going to recruit participants?	The researches gave a presentation about the project. About Inclusion and exclusion criteria: ● Familiarity with the Technologies ● Good level of education ● set an age limit (maximum 80 years) The experts were invited for starting the recruitment of people with MCI also if MCI' is an unclear definition. For this reason, it is necessary to define a protocol of recruit only one for all. This protocol should contain a questionnaire to assess memory and autonomy (IADL/ADL); the experts suggest that the Montreal Cognitive Assessment (MoCA) could be useful. it is important to identify an equal to cut-off for all.

What do professional carers think about the role of coaching in different topic? Nutrition Physical activity Social interaction	Example: The patients could receive the prescription of doing some physical activity at home through simple videos of persons that are doing the training. Moreover, the system could suggest gyms near the house. If the person show change in sleep patterns (e.g., longer sleep intervals, early morning awakenings, night-time awakenings), the system could propose some suggestions such as going to sleep at the same time every night. **How can a person be motivated to follow the message by the table?** Giving only motivational message such as "today you did not walk sufficiently or today you did not physical activities" is not enough. Users need to consciousness of the advantages of wellbeing attitudes. For this reasons the system could motivated users giving a sort of wellbeing literacy that shows the good impact of this attitudes on the health status. The expert suggest also that to improve the acceptance of the coaching it is important to train the user on how the things that that system can suggest the them can help them to stay better and the result that they can obtain following the indications
Next step:	10 interviews 4 dyads during interviews and 6 dyads during the focus group

2.1.2 The Netherlands

The awareness session that took place on 11/04/2019 has been described in the following table.

What	Results
Introduction - Short explanation - project partners - goal of the project - role of Careyn - short round of introductions	Six formal carers were present (including project partners). Their professions include: intern (care technology), home care, care manager, community care services, coordination of welfare and day care centers, coordination of external welfare services. Three of them were new to the project and got an introduction to the goals of Resilien-T. They were invited for starting the recruitment of people with MCI.

| Recruitment of participants

- Who do we want to interview (in- and exclusion criteria)?

- How are we going to recruit participants? Flyer

Informed consent

- What the process of recruitment is?

- Questions? | The process of recruitment: people can use the information leaflet (Dutch version) and give names and phone numbers to Regina. Regina will contact Vilans, and then they will contact the participants.

We could also use the general practitioner assistant (POH in Dutch) to get in touch with possible participants. Or people from CareynPlus; which is a welfare/care service of Careyn. |
| Research design

- Interviews

- Audio recordings

- Inviting people with mild cognitive impairments (and partners / informal carers) for co-design sessions

- Co-design sessions

- Remarks and feedback? | Might be a challenge, because people without significant problems are often not visited by the care professionals of Careyn. Therefore the welfare services are a nice opportunity for finding participants. |

Focus group, interactive part
 	
   - What do professional carers think about the role of coaching in the different topics? Do they have best practices?
 	
      - Nutrition
      - Physical activity
      - Social interaction
	Dreams:
	
	● to live at home as long as possible
	● keeping contact with daughter (and improving the relationship)
	● skyping contact with grandchildren
	● watching football
	● arranging everyday life activities by themselves
	● living together
	● not being a burden to the significant others
	
	Difficulties:
	
	● forgetting important appointments
	● social contacts outside their homes
	● change in daily patterns
	● getting bad eyesight; not able to email use
	● not knowing how new technology works
	● being afraid to leave the other person alone (what if something happens)
	● being lonely
	
	What do we want to know?
	
	● What kind of care do they use?
	● How can they communicate with others (with limited eyesight)
	● Would this person be interested in using technology when contact with grandchildren is made possible?
	● What is needed to stay at home?
	● What is difficult in nowadays life?
	● What is their experience with technology?

Round up Questions? Hand out flyers Hand out small present / thank you	We brought cookies ☺

2.2 User research and interviews

2.2.1 Italy

In the following table the summary table with the interviews' participants profiles.

Participant 1	**Husband: 74 years old [MCI]** Wife: 74 years old They living together, independent in an apartment
Participant 2	**Mother: 76 years old [light MCI]** Daughter: 45 years old They living together, independent in an apartment
Participant 3	**Wife: 71 years old [light MCI]** Husband: 73 years old They living together, independent in an apartment
Participant 4	**Wife: 79 years old [MCI]** Husband: 82 years old They living together, independent in a country house.
Participant 5	**Wife: 70 years old [light MCI]** Husband: 72 years old They living together, independent in an apartment
Participant 6	**Husband: 68 years old [MCI]** Wife: 60 years old They living together, independent in an apartment
Participant 7	**Husband: 69 years old; light MCI** Wife: 59 years old Son: 36 years old They living together, independent in an apartment
Participant 8	**Woman: 84 years old; MCI** Living alone, independent
Participant 9	**Woman: 76 years old; MCI** She lives alone Nephew: 40 years old
Participant 10	**Wife: 76 years old; light MCI**

| | Husband 74 years old |
| | They living together, independent in an apartment |

In this paragraph the main themes resulting from the user research and the insights for the design have been described:

a. ACTIVE LIVING

"I think that have a healthy life is to stay fit and cultivate hobbies and interests."

"Looking at these images I think that the most important is to maintain *social relationships* because I like to compare my opinions with other people on different topics. It makes me feel alive."

"*Relationships* are very important. I make friends easily because I like to be in company."

"I believe that the lifestyle should be appropriate to the age of the person. For me the *social relationships* are essential to a healthy life. I take good care of relationships with my family."

"I need to have a lot of *social relationships* to be happy. I need to discuss and to spend time with colleagues, friends, family, grandchildren. I wouldn't know how to live without social relations."

b. DIET

"I should *eat healthy* for my diabetes and I try but it's not easy and frequently I can't do it."

"I try to follow a *healthy diet* low in fat and carbohydrates to lose some extra kilos, but sometimes I can't cope with some temptations."

"I especially take care of *physical fitness* because I have always been overweight and I suffered for this problem. I have always on a diet, so I am used to taking care of everything I eat."

"I be careful with the food I buy. I often look for local or biological foods. I believe that a *healthy eating* is very important to feel good."

"I always plan what to cook the next day and the housework to do. I never write down my *plans*, but I try to keep them in mind."

c. PHYSICAL ACTIVITY

"I think that doing physical activity is very important. I have always been a sportsman, but in the last years I suffer from hip pain. I try to do gardening, but sometimes I prefer to give up."

"I love to move and be active and independent. I attend a *gymnastics* course and every day I do stretching and I walk a lot."

"I know it's also important to be *physically active* but I don't do so much. However, I often hoe the garden during the week."

"After my operation, I can't do *gym*. I could go for walks but I gets tired of physical."

d. TRAINING MEMORY

"I know that it would be important to *train memory* with reading, crossword puzzles … but these activities bore me. Some years ago I loved reading a lot of books and sports newspaper."

"I never *schedule* the day's *appointments* other than medical visits. "

"I take care of my mind more than my body. In fact, playing in a theatre company, I often have to learn my lines from the script by memory. This is a good exercise to *train my memory*. I also read a lot and I like crossword puzzles and rebuses."

"I use different strategies to don't forget my appointment. I have a timetable where I put the bills and I mark the expiration dates. I also set the alerts on my smartphone to remind my appointments."

"I also play cards on the computer to maintain my *memory trained*."

"I always plan what to cook the next day and the housework to do. I never write down my *plans*, but I try to keep them in mind."

"I think it's very important to keep my *mind trained*. I do the crossword puzzles and I read to exercise my mind."

e. FORGETFULNESS

"I don't want to bring the agenda with me, so I often *write notes* on papers but sometimes I lose them. In addition, two years ago I helped my niece to study and I perceived that this activity really trained my memory."

"Since I retired I finally feel free to not *schedule* my daily activities, but now it's my daughter who plans it for me, because I looking after my niece."

"At the end of the day, I always write a *diary* with what happened during the day. In addition, I always write my appointments on the agenda."

"I always need to make a shopping list so I don't forget what I should buy. In addition, I write in a paper diary the most important appointments to avoid the risk of forgetting them."

"Sometimes I forget what I have to do or what I have to buy. This is not a serious problem yet."

f. MOTIVATION

Users often feel like "I cannot" and ask the doctor for advice on a healthy lifestyle and sometimes I follow them"

"I want to keep living independently as long as possible. My fear is that in the future I will be dependent and that I will not to be able to do my housework and to take care of myself."

"I agree with the early diagnosis, so I follow all the visits recommended by the doctor and I write down the appointments in my handmade agenda. "

"I believe that keeping the mind trained can help to delay cognitive disorders".

"I like to read a lot to enhance my speech, because during the day I only talk with my husband and I don't have many social relationships."

g. ADVICE

"I like to compare my opinions with people. Talking and chatting with people helps me both to enrich my language and to overcome depression and sadness."

"I listen advices about living healthy on TV programmes"

"I get advice from internet and newspapers focused on the good practices for having a healthy lifestyle."

I take part of a group to train my memory because I aware that I am starting to have trouble remembering things.

"I mainly ask my relatives (daughters, son and nephews) for advice about my well-being."

h. TECHNOLOGY

"I haven't smartphone and I don't be able to use it. I have only a mobile phone. I am not interested in learning the use of the main technological devices (smartphone, laptop …)."

"I don't like very much technology but I able to use smartphone, Internet and I have also Facebook profile. "

"I always use laptop, smartphone, Internet. I like very much technologies and I often store and modify my photos on my computer."

"I really like technologies and I always use Internet, laptop, social networks, smartphone. I also use a pedometer that monitors my progress and performances. I can see them through an app on my smartphone."

"I don't do crosswords and I don't read, but I attend some meetings with the psychologist to *train my memory*. My work in the Curia office also helps me to keep my memory active."

"By now she often forgets notes, purchase things, examinations."

2.2.2 The Netherlands

Dutch interviews within the Resilien-T project were held at the homes of participants. These took on average 36.4 minutes (SD = 10.0). The interviews were recorded by means of a voice recorder. Information was given about the interview procedure and after this, participants were asked to read and sign an informed consent form. The informed consent stated what was being studied, ensured pseudomyzed analysis, announced that audio, and image recordings were going to be made, and made clear to the participants that they could withdraw their consent and cooperation at any given point in time during or after the session.

Next to the introductory and ending questions, there were 5 main questions, regarding the current experiences of the participants in healthy living and advice, support and motivation for resilience. Participants were asked to use a set of photos to talk about these possible themes, such as social interaction and memory. Participants had to put these photos in order of importance now and in the near future.

One of the participants was willing to use a digital photo camera to further collect images related to these themes.

In the following table the summary table with the interviews' participants profiles.

Participant 1	Clearly present MCI. Results are mainly focussed on the opinion of the partner.
Participant 2	MCI is not clearly present. Participant does fit the target group of 'frail seniors' that can use coaching services.
Participant 3	MCI is not clearly present despite the high age of the participant. Participant does fit the target group of 'frail seniors' that can use coaching services.
Participant 4	Clearly present MCI.
Participant 5	MCI not clearly present and is also denied by the participant. Participant does fit the target group of 'frail seniors' that can use coaching services.
Participant 6	MCI not clearly present and is also denied by the participant. Participant does fit the target group of 'frail seniors' that can use coaching services.
Participant 7	Clearly present MCI.

Participant 8	Clearly present MCI.
Participant 9	MCI not clearly present and is also denied by the participant. Participant does fit the target group of 'frail seniors' that can use coaching services.
Participant 10	MCI doesn't seem to be present. Difficult to get answers related to the research because the participant keeps getting off the subject to talk about unrelated topics.

In this paragraph the main insights, and the quotations, resulting from the user research and the insights for the design have been described:

a. ACTIVE LIVING

"If you lose social contacts, you will get lonely"

"He likes to cook for the residents of the two flats here. He made soup with Easter and we had a brunch. He really enjoys doing that" (wife).

"Being among the people is important, having a chat together" (wife).

"Sometimes I call my friend to grab something to eat in the city nearby".

b. DIET

"I try to eat as healthy as possible, I am really trying hard for that".

c. PHYSICAL ACTIVITY

"When you get older physical movement becomes very important. You have to keep walking. If you don't move you become as stiff as a poker".

"If you don't go outside anymore and just keep sitting, then your brain won't work and you are not motivated to do anything anymore" (wife).

d. TRAINING MEMORY

"When you have so many activities, you have to start planning. I have written in my agenda for example that I have to work there next month, to cook".

"Planning is not important for me. I will see what tomorrow will bring, everything will be alright. When you plan something, it can turn out very different in the end

e. FORGETFULNESS

"My agenda and calendar are written full with appointments, otherwise we plan different activities at the same date. If we forget something, then so be it".

"Sometimes my daughter in law tells me things, and when she talks about that again I don't remember that she told me that before".

It is very difficult for me, because he forgets things sometimes, then he wears the keys around his neck, but he still puts the entire cord somewhere, then I also don't know where it is" (wife).

"When I am watching television and the commercials are over, I sometimes forget what I was watching. I find that pretty annoying".

"I always have to read the same sentence 10 times and then I think, what am I doing?".

"He really likes all the memory notes, they are important to him" (wife).

"The stupid yellow notes. I place them everywhere and then he (son) says: 'write it on a decent piece of paper'. But you have to write things down".

f. MOTIVATION

"We want to stay fit and live as long as possible. Last week I saw a woman of 104 years old on the television and she was still fit, also mentally. The mental health is the most important

"The final years that I am here, I only want to do fun things. When I hear things I don't like, I will turn my back on it".

"Physical activity, training my brain and nutrition have become more important when I got older".

"I am still here. The one day comes after the other. I don't think about it much".

"I don't want to think about not being able to do something anymore. If I can't care for myself anymore. I hope that the sweet Lord will come to get me when that happens".

g. DIFFICULTIES

Being dependent of the help of others "I don't want my family to help me too much, they have their own lives"

"Experiencing serious impairments in daily activities"

"Not being able to sport or learn due to impairments"

"Fear of becoming dependent of others"

"Fear of not being able to do what I love due to impairments (visual ability, holding a pencil)"

"Fear of becoming dependent (not being able to move, dress or shower)"

"Vulnerable, not wanting to be a burden"

h. ADVICE

"We know what is healthy for us, we can think for ourselves on this theme. We don't need advice".

"I don't need any advice on food, I know what is in everything".

"I saw something about his medicine on television yesterday, that it is not at all beneficial to use them and that the doctor has a connection with the pharmacist to make profit out of it. The people didn't have any benefit from it. Then I looked at his medicine, exactly the same. So I said, maybe it is better to cut the medicine in half. The cardiologist says that he can't suddenly stop taking the medicine, but if you then see on television that is has so many drawbacks… Luckily we can break it in two pieces, it has a line in the middle…" (wife).

"We don't like people who pretend to know everything better. You feel your own body the best, you don't need anyone else for that".

"Advice from family (son) to eat more"

"The man doesn't get advice from a specific person or source."

i. TECHNOLOGY

"It is important for me to communicate with people by means of my phone".

"I can play games on my phone, and when I am doing a puzzle from the newspaper I search for solutions on the computer".

"I send emails for the choir, I make photos and copy files for Spanish class. Then I can make the spaces larger and use different colours for the translations. I get emails from the pharmacy".

"I have a normal mobile phone, I can text, call and be called. I also have a small camera".

"We are practicing with sending a WhatsApp" *(son).* "For me it is a matter of remembering which buttons to use".

"He has a smartphone with WhatsApp and a computer at home. However, he doesn't use these devices very often. He prefers to be outside in nature and look at the birds."

Results summarized in personalities:

The 'bring value today' type

- We have today and we don't know what the future holds
- 'Having to' is out of the question, we only do things because they are important to us today
- We are not putting effort anymore in trying to achieve things we can't do anymore, they don't bring us positivity
- We focus on the positive, what we can still do, what can still bring value
- We want to contribute to society, bringing value to other people is important to us
- We like to be around people

Participants: 3) The day-by-day woman, 5) The 'no obligations' man

The 'vulnerable' type

- We want to spend the day meaningful and useful to prevent negative feelings
- We want to spend as much time as possible on our hobbies to keep ourselves busy
- We have to 'keep going' in life
- If something doesn't go that well anymore, we feel sad and avoid it
- We are afraid to become lonely and already feel lonely sometimes
- We don't like to be told what to do be confronted with what we can't do
- We are dependent on the company and help of our family

Participants: 7) The confused woman, 8) The out-of-home woman

The 'open minded' type

- We have many interests and activities
- We like to experience and try new things
- We observe what happens around us and like to think and discuss about this
- We like to spend our time creating things, such as tinkering, crafting or drawing
- We are open to the open to the opinion of others and make well-thought decisions based on these, sometimes leading to the middle way (we don't need evidence, just our own reflection)

Participants: 1) The active couple, 4) the overwhelmed man

The 'striving' type

- If something doesn't go that well anymore, we train until we can do it again
- We are 'go-getters', a setback motivates us to put extra effort in achieving something
- We don't want to show that we are suffering or can't do something, we will fix it ourselves
- We like to be surrounded by our family and don't want to be a burden for them
- We want to be independent, we don't like needing help with daily activities

- We want to enjoy life and don't want to restrict ourselves too much

Participants: 2) The lonely woman, 9) The recovery man

The 'curious' type

- We are open to advice and opinions of others
- We are intrinsically motivated to work on our health, we are self-disciplined
- We want to absorb information and knowledge, for example by reading or discussing with people who know what they are talking about
- We want to know what options are out there to help us, what really works, and how and why this works
- We are uncertain about what we know about health and the advice we hear/read, we want to see evidence of certain health benefits
- We want to meet others with similar interests to discuss with

Participants: 6) The insecure woman, 10) The opinionated man

2.2.3 Switzerland

In the following table the summary table with the interviews' participants profiles.

Participant 1	**Who :** IND1, 87 years old **Language:** English	**Date:** 26 August 2019 **Where:** at his apartment, ADD1 **Other attendants:** IND2 his partner in life and Lexie Intrator, who introduced me to them. **Reference:** IND3
Participant 2	**Age:** 93 years old (January 1926) **Gender:** Female	**Meeting date:** 16 September 2019 **Reference:** IND3
Participant 3	**Age:** 90 years old (July) **Gender:** Female	**Meeting date:** 16 September 2019 **Reference:** IND 4
Participant 4	**Who: IND7, 89 years old** Language: Français	**Date:** 20 October 2019 **Where**: in the GoldenAge office

a. ACTIVE LIVING

Not much in socializing. I was a big reader. I do not do crosswords anymore. I like good food, but it is only mildly important.

I do not socialize with friends, they are quite separated in space.

I do not socialize much. Apartment is a bit small.

She drives today. If / when that would stop, she would not be able to meet as frequently those that are important to her. This is one of major fears. She would like to live closer to her son, to prevent to be able to continue seeing him in the future.

b. FORGETFULNESS

She then moves on to mention something about his memory. Very weak. Forgets what I said after a couple of minutes.

I am quite angry and irritated because of loss of memory.

Memory has gone down a lot.

"My memory is slowly disappearing".

In order to not forget medicine, writes down what she should take and where.

c. MOTIVATION

Enjoys meeting her friends for coffee in the morning ("no big manager discussions").

Tracks the news, interested.

But not really interested in learning new things.

Reading, family. Social is important too, but she was only able to find one friend in the home where she lives.

I used to cook. I don't do cook anymore. I am much poorer than I was in the past. I cannot do it anymore.

Good living is about exercising (physical and intellectual), sociliazing and eating well.

Eating well, exercising is not important to her.

d. TECHNOLOGY

Not particularly interested in technology. But willing to be contacted when we are ready with prototypes.

Doe not have a smartphone. Is willing to use one of our tablets, for testing, as "it is always good to help on such research". Will depend how I feel when we get to it.

From the interviews the research partners developed 5 main personality types that resemble the participants that were interviewed. These personality types were linked to the Big Five personalities, to use existing knowledge and enrich that with the insights collected in the 24 interviews.

3 Co-design Activity Description

After the interviews, several sessions took place in the different countries. In Italy, 2 sessions took place with 4 participants attending each of the two sessions.

Session 1 have seen the adoption of MODULE 1 - Storytelling and UX Statement and MODULE 2 - Alternative Futures, while in Session 2 the MODULE 3 - User experience and interaction co-design has been carried out.

In The Netherlands 4 Sessions were conducted involving five seniors with MCI in two sessions and five healthcare professionals in the other two sessions.

The following modules have been experienced with both the target audiences: MODULE 0 - Introduction, MODULE 1 - Storytelling and UX Statement and MODULE 4 - Review and testing of existing app.

In Canada 1 Session has been carried out involving 3 participants in the following three modules: MODULE 0 - Introduction, MODULE 4 - Review and testing of existing app and MODULE 3 - User experience and interaction co-design.

The following section describes the activities been carried out in the three countries.

3.1 Workshop Activities - Italy

3.1.1 Sessions

Session 1

Date	September 18th, 2019
Location	INRCA - Istituto di Ricovero e Cura a Carattere Scientifico Via S. Margherita, 5 - 60124 Ancona (AN)
Participants	PwCI Giuliano - 68 years (male) PwCI Annamaria - 82 years (female) PwCI Giuseppe - 76 years (male) Informal caregiver - 64 years (female)
Involved Partner	Italian User Panel: Bsd Inrca Univpm

Agenda

10:30- 11:00 Welcome and introductions
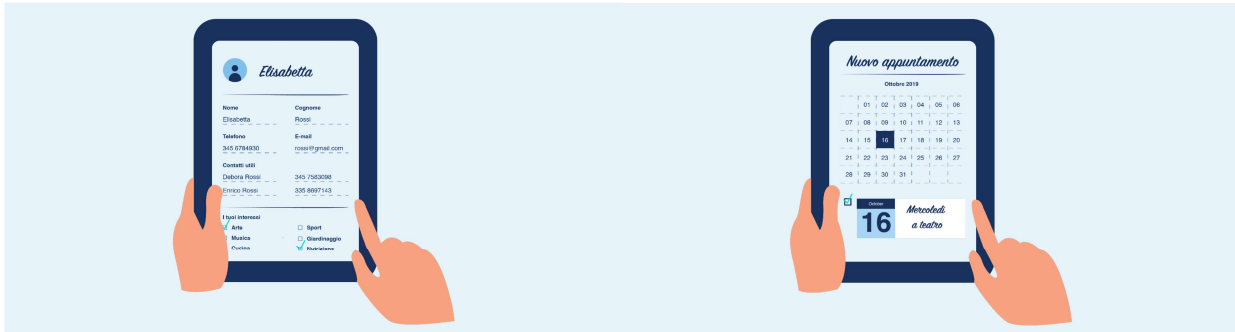
11:00- 12:30 MODULE 1 - Storytelling and UX Statement

        Scenarios explanation with PwCI

14:00- 17:00 MODULE 2 - Alternative Futures

        Follow-up | Processing of results between Irnca, BSD and Univpm

MODULE 1 - Storytelling and UX Statement

Elizabeth
[ENVISIONING SCENARIO]

"What i enjoy the most is being with other, it's just wonderful!"

User Profile
Elizabeth is 74 years old and lives alone since her husband passed away a few years ago. Nevertheless Beth is a determined and dynamic woman. She is constantly on the move. Beth handles all her daily activities, such as grocery shopping and housework.
She is also very active in the social field. She likes to do things for others, like getting groceries for her neighbours.

When she gets out, she prefers to walk, but in case of necessity she uses a bus, which is another opportunity to socialize! She has no relevant age-related physical problem but she recently noticed that her memory is getting worse.

She loves meeting up with her friends, especially to play Bridge.
Once a month, she goes to the theatre. Elizabeth is quite capable with technology. She uses a tablet to search for online recipes and to consult the theater's program. She also uses a smartphone to communicate with her family.

1- Beth doesn't want to give up, she wants to maintain her independence, so she starts using the Resilien-T system. Beth has filled in her full profile into the system, including her interests, contacts and recurring meetings.

Statement 1: I think I can also enter the description of my interests and preferences in the tool and manage a new appointment on the digital calendar

Answers:
Giuseppe: "I am not very much interested in technology."
Annamaria: "I write everything with pen on paper, I don't know if I'd like to use the tablet"
Giuliano: "This service is like a guardian angel. It could be a great brain aid. If developed well, it could be very useful."

2- Beth heard that tomorrow evening there will be a performance and sets the appointment on the calendar. The system checks the events organized in the town and compares the collected data with those recorded by Elizabeth. The system detects a gap among datas: a similar event will take place in two days.
So it offers further information on the theatre program and asks her: "Are you sure your event is correct? Do you want to check?"

Statement 2: I believe that a tool for checking my calendar and confirming the scheduled event, could be useful.

Answers:
Giuseppe: He doesn't know it. He uses his smartphone only to communicate and take some pictures - for example - during vacations or to his grandchildren, but he doesn't share them on social media, keeping the pictures for himself.
Annamaria :She cannot answer
Giuliano : He answers in an affirmative way

3- The Resilien-T also suggests to book the ticket and to invite her friends, so she calls Adele and Grace and then she buys tickets for everyone. On the day of the performance, the system asks questions related to mobility in order to stimulate Beth to plan the activity: "How will you reach the theater?" "Do you want to take pictures during the show to create a memento of this evening?".
When she gets home, the system asks how the soiree went and it proposes to Elizabeth to create a "memento" of the evening by adding photos, videos, and personal notes, in order to populate her own digital album of memories.

Statement 3: I believe that a reminder tool for planning my appointments and sharing my photos would be valuable and stimulating.

Statement 4: I would like to have a tool that encourages me to relate to others and cultivate my friendships.

Answers:
Giuliano : "Recommendations are always useful, but I'd want to feel free to choose if follow them or not"

Margaret and James
[ENVISIONING SCENARIO]

"Travelling keeps us young and alive!"

User Profile
James and Margaret Murphy are a very close couple. James is 68 years old and Margaret is 65. They love to travel and have visited many places, particularly South America. They are planning a trip to Vietnam next summer. James and Margaret have been married for 30 years and they have two grown-up children, Robert and Melanie, who do not live close to them. Despite the distance, they use Skype and other social networks for communicate with each other.

Margaret is starting to have some memory problems. For example she started forgetting bringing the keys, when leaving home.
James tries to support and to reassure his wife.

James and Margaret are familiar with technology: they use smartphones and tablets to plan their trips and to keep updated. They say that they learn something new every day! They are very grateful for what life has given them and love their home, family and friends.
James and Margaret want to spend the rest of their lives together**.**

Giuseppe: We don't draft the grocery list. We decide at the moment what to buy."
Caregiver: Giuseppe's wife denies him. They always write an approximate list of foods. Giuseppe retired before earlier than her, so he managed all aspects of the house. He was very good! Now, however, since her retirement, she always thinks of everything.
Annamaria: "I don't want to disturb my family so I go to grocery alone, even if I'd like to have company. I write the shopping list on a sheet of paper.."
Giuliano: "I never do the grocery. My wife handles it. Sometimes I go with her. We do not use reminders. My wife remembers everything we need to buy."

1-Margaret and James continue to divide the household tasks.
Today they have decided to split the responsibilities: Margaret will get grocery. The system helps Margaret to plan her activity and at the same time stimulating her cognitive activity.
"Which of these foods do you have to buy?"

Statement 1: I believe it is useful to have a tool for planning and organizing my grocery

Answers:

Giuseppe : "I don't feel the need."

Giuliano: "At the moment I don't need it but it seems like a very useful tool for those with memory problems."

2-"Where do you prefer to buy these foods?" showing the nearby shops on the map. Once the shopping list is completed and she has decided the itinerary, Margaret goes out.

Statement 2: I think it could be very useful a navigator that help me to reach the shops.

Answers:

Giuseppe: He didn't answer.

Caregiver: "I would love to use it! I'm very curious about technology. I think technology it could represent a proper aid if it's used in the correct way." She also says that Giuseppe is very annoyed by the voice of the navigator and he willingly does without it.

Annamaria: She didn't answer.

Giuliano: "With these modern systems we use the brain less than years ago. In the past when you had to call someone you had to remember your phone numbers. today we are used to pressing a key and calling quickly. On the other hand it is also true that technology simplifies your life."

3-James continues to propose new activities to Margaret. In the afternoon they will go for a walk in the park. Since Margaret wears Resilien-t's smartwatch, the system monitors and collect data about her physical activity.

Giorgio
[ENVISIONING SCENARIO]

"I like to spend time on my own!"

User Profile

Giorgio is 78 years old and is used to live alone after getting divorced in 2001. Until his retirement 5 years ago, he was an important lawyer.

He has always been proud and charismatic man and he rejects the idea of getting old. Giorgio appreciates loneliness, he prefers to spend his days painting, reading and listening to music. He has a few friends who visit him occasionally. Giorgio has one daughter, Sarah, who lives a few kilometres away from him. He usually goes out close to home or when his daughter Sarah picks him up by car to take a ride.

Giorgio is not interested in technology. His daughter gave him a mobile phone that he uses to communicate with his family. He has been living diabetes since 2016. He is overweight and he leads a sedentary life. Moreover he doesn't follow a healthy diet, and this would also increase his risk of vascular problems. And as if that wasn't enough, he's had problems with his memory. Despite these challenges Giorgio wants to maintain his independence and he is convinced he doesn't need help.

1-Giorgio starts to use the Resilien-t system to try to keep himself active and allow his daughter to get reassured when he is alone at home.

Sarah synchronized the blood glucose measuring system with the the Resilien-t's one. It shows in real time the data just measured relating to Giorgio's blood glucose, so that it can keep a report.

Statements 1: I consider it useful to be able to integrate my measuring instruments with the system.

Answers:
Giuseppe: He is not interested.
Caregiver: She already uses few apps with pedometers.
Annamaria: She didn't answer.
Giuliano: He is not interested.

2- In addition, the system supports Giorgio with food recommendations.

Statements 2: I think it's important to accept recommendations for my diet

Answers:
Giuseppe: He didn't answer.
Caregiver: She says that Giuseppe is diabetic (he doesn't use insulin) but he wants to have a balanced diet regardless of the pathology.
Annamaria: She is not interested about it.
Giuliano: He underwent a liver transplant and became a diabetic. So at the moment it records all the data manually on a paper calendar, then transcribes them into an excel. Then he prints and takes the resulting table to the diabetologist. He says that as a tool it is interesting and useful.

3-The system also tries to encourage Giorgio towards social interactions and to keep on moving, proposing to him to join the local association of passionates for painting.

"Next Friday there will be an art class, near your home. Are you interested on it?"
"On 21st June will open the exhibition "Edgar Degas: A Strange New Beauty. I thought you might be interested!" Giorgio becomes curious and decides to visit the exhibition.

Statements 3: I consider the system of recommendation of events in my city to be useful

Answers:
Giuseppe: The user seemed more involved (when we talk about jazz music)
Caregiver: She is very interested about it.
Annamaria: She is not interested about it.
Giuliano: He says it could be very useful.

MODULE 2 - Alternative Futures

Session 2

Date	October 16th, 2019

Location	INRCA - Istituto di Ricovero e Cura a Carattere Scientifico
	Via S. Margherita, 5 - 60124 Ancona (AN)
Participants	PwCI GIorgio - 75 years (male)
	PwCI Deanna - 71 years (female)
	PwCI Bruna - 75 years (female)
	Informal caregiver Franco 77 - years (male)
Involved Partner	Italian User Panel:
	Bsd
	Inrca
	Univpm

Agenda

10:30- 11:00 Welcome and introductions

11:00- 11:30 Scenarios explanation with PwCI

11:30- 12:30 MODULE 3 - User experience and interaction co-design

                 Prototype testing and discussion with participants

12:30- 13:30 Processing of results between Inrca, BSD and Univpm

Prototype:

Taskflows sequences were designed using Sketch.

The prototype was animated with Adobe XD creating an mixed interaction where direct touch interaction has been combined with wizard of Oz approach to facilitate the live reaction of the user interface. In particular taskflows follows a straightforward flow / sequence of interactions, using a technique called "WIZARD of OZ" while users have left free to interact and navigate going back and forward in the sequence.
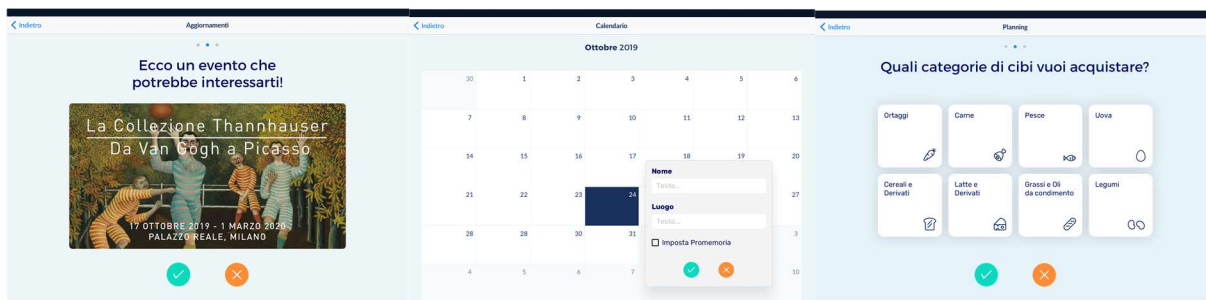
Giorgio
[ENVISIONING SCENARIO]

→ Stimulating physical activity through suggestions based on users interests

Questions n1: What are your hobbies or interests? What kind of information would you like to receive by the system?

Answers:
Giorgio : "Sport, in particular football and volleyball"
Deanna: "Information about initiatives related to my city. I like walking, so I would like to receive information about walking and trekking."
Bruna : "I don't know what interests to specify."

Questions n2: Do you have a smartwatch? Would you like to have one? (focus on physical activity)

Answers:
Giorgio: "I'm always on the move. It seems interesting, but I don't feel the need to have a smartwatch". Giorgio's wife encourages him to do physical activity.
Deanna: "I already have one (she wears it). Instead I am very interested in having additional information about my physical activity, know how many kilometers I have traveled, heart rate, etc. I am a curious person. I do a lot of physical activity, in addition to walking, I go to the gym 3 times a week.
Bruna: "I'm not interested in having a smartwatch. I don't do much physical activity. I usually walk a little and in this moments I prefer to do it alone." (Every Sunday the couple goes with 7 other families to their own property, where they eat and spend time playing burraco.)

Margaret
[ENVISIONING SCENARIO]

→ Receiving nutrition suggestions and organize grocery shopping

Question n1: Do you go on grocery on foot? How often do you go to the grocery?
Answers:
Deanna and Bruna: When they have to buy a few things, they go to the market on foot.
Giorgio and Deanna: During the weekend they buy the necessary food for the whole week. They drive to the market. Then for small purchases they go almost every day.

Question n2: Would you like to receive suggestions on recipes?
Answers:
Giorgio: No cooking, so no need for suggestions
Deanna: It is Ddeanna's husband who cooks. They usually have different dishes due to the limitations of Deanna's diet. Deanna, however, likes to cook and uses apps to find recipes, so she believes the suggestion is useful.

Question n3: Do you make the shopping list?
Answers:
Deanna: "Yes. So Resilien-t's help would be very important."
Giorgio: "I write everything on the agenda. I don't feel the need for other aids."
Bruna: "I write everything in post-it."

Elizabeth
[ENVISIONING SCENARIO]

→ *Create an event on the calendar*

Question n1: What method do you use to remember things? Do you set reminders on your phone or do you write things on your calendar?
Answers:
Deanna: I write my appointments on the calendar or set reminders on my smartphone.
Giorgio: I note my appointments mainly on the agenda; sometimes even on the calendar.
Bruna: I use post-it

Question n2: Have you ever asked someone to remember you any appointment or something else?
Answers:
Bruna: Sometimes I ask my husband to remind me my appointments.
Giorgio e Deanna: No

Questions n3: Would you like to have a digital companion who help you to remember things?
Answers:

Giorgio: He says he usually uses the agenda to remember things, but he says that Resilien-t's help could be useful. He would use it.

Deanna: "For me it would be very useful to have help to remind me of things. The tablet would be perfect because I sign everything, shopping, visits, appointments and I do it on a calendar or smartphone. (She takes 18 medicines a day)"

Bruna: "I prefer to remember things by myself. I don't want to get help from this point of view. If I need, I am asking some help. My husband always tends to remind me of things. "

Despite this, she said he would use it.

Question n4: Do you have a tablet?

Answers:

Deanna: Yes. She and her husband bought a tablet to let our grandchildren play but then it turned out to be useful especially to them.

Bruna: No they haven't. She and her husband have a computer.

Giorgio: No he hasn't.

Spontaneous conversation

Bruna: "Sometimes I wonder, "Did I do this? Once done, I throw the related post-it "

Deanna: "To remind me if I did something, I put a check on the to-do list"

Question: Would you like to receive information like photos and videos of your family? (feed)

Answers:

Giorgio, Deanna, Bruna: Yes

3.2 Workshop Activities - The Netherlands

3.2.1 Sessions

Focus groups to further understand motivational factors.

The aim of this research was to explore and recommend suitable use of technology as motivator to increase physical activity. Four focus groups were conducted. Two including five seniors with MCI and two including five healthcare professionals. These groups were in latter co-design activities further involved as part of a co-design team in the Netherlands.

Date	September, october & december 2019
Location	Careyn, Blankenburg 4 in Rozenburg (NL)
Participants	Five participants were present during the focus group sessions with seniors. The participants consisted of four women and one man with an age range from 79 to 89 years (M=83,8 SD=3,6). All the participants indicated to have Subjective Cognitive Decline. The participants differ in clarity in presence of MCI and levels of physical activity. Three out of five participants live independently at home. Two are a couple living together.

Involved Partner	Vilans
	Careyn
	Five female participants were present during the focus group conducted with healthcare professionals. Four of them working at the residential care center Caryn, situated in Rosenburg. They all work closely with seniors with MCI. Present was a healthcare manager, working 8 years for Caryn, offering care & welfare facilities for seniors with MCI, from subsidized projects. Two nurses, working 30 years and 8 years with seniors with MCI, by giving advice and medical help through occupational therapy and looking together to possibilities to stay independent for as long as possible. Working 19 years for Caryn, also present, the welfare coordinator offering welfare activities and support to seniors with MCI. The last participant works for the municipality of Rotterdam as policy adviser for the program older and wiser, and therefore makes policies to benefit seniors with MCI.

Focus group 1 & 2: Getting further insights in motivation (September 2019)
First focus group session: seniors with MCI

MODULE 0 - Introduction

During the first focus group with seniors their experienced barriers and motivators to engage in physical activity were discussed and explored. When applying for the focus group, the seniors were asked to think about something that motivates them in general. This was done to break the ice starting the focus group and have seniors already think about what motivates them.

First the seniors signed a consent form to record the focus group and use data for research. Next, the participants introduced themselves one by one by telling their name, age, previous profession, physical activity they currently engage in and their chosen motivational object. Next, open discussion was started categorized into four subjects:
1) general interests and enjoyments,
2) engaged movement activities,

3) perceived barriers and motivations,

4) current use of technologies as motivator.

The focus group lasted two hours including one break of ten minutes.

First focus group session: healthcare professionals

First the healthcare professionals received a consent from. Also included were a few short questions about their function in Careyn and their relation to seniors with MCI. During the open discussion similar questions were asked as in the focus group with seniors focusing on their experiences and perception of the experiences of seniors.

Open questions were categorized in the following subjects:

1) context in which seniors engage in physical activity,

2) barriers encountered by seniors to do physical activities,

3) how healthcare professionals try to motivate senior to engage in physical activity,

4) use of technology to motivate seniors.

The focus group ended with a small brainstorm session discussing questions such as: where, when and how should seniors with MCI be motivated to do physical activity.

Second focus group session: seniors with MCI

MODULE 4 - Review and testing of existing app

During the second focus group with seniors with MCI different technological solutions to stimulate physical activity were shown (Table 1).

The Compaan tablet, the Galaxy active watch, and the Watchi were present in real life. Participants had the possibility to interact with these technologies. Next, one by one other technological solution were presented showing videos via a PowerPoint presentation. Using input from the first focus group sessions which motivators are important for seniors, scenarios were constructed using existing technological situations (Table 2).

Technology	Description	Illustration
Compaan	Compaan is a tablet especially developed for seniors who are not capable to interact with a normal tablet or computer. It is possible to video call, play games, send and receive photos, and write messages in a simple way. It also facilitates giving care from a distance and communicate with family and friends.	Source: www.uwcompaan.nl
Galaxy active II	The galaxy watch active II is a smartwatch of Samsung. It is possible keep track of physical activity like step counting and measuring heart rate and sleep quality. Besides these functions, it is possible to call, set reminders, see into your agenda and set an alarm.	Sources: www.digitaltrends.com
Watchi	The Watchi is a smart watch specially made for elderly. The watch has functionalities like calling, messaging, agenda, reminders, GPS tracking and an SOS function. The icons on the watch are large visualized. It also has an additional SOS button for easier access.	Source: www.zorginnovatie.nl
Fit Light	Fit light is a trainer existing of LED lights that can be placed on the table, the ground or on the wall. The lights will turn on and they have to be turned off by touching them with hands or feet. Its is suitable for seniors and people with mental disability. Shown video: https://www.youtube.com/watch?v=yM5oGV06b6U	Source: www.brandunitberlin.de/fitlight/

Wii Fit	The Wii fit is an exergame using a balance board. Seniors have to stand on the board and can use their walker to prevent them to fall. They can play different games like skiing or rolling ball into a hole by shifting their weight from one side to another on the balance board.	
	Shown video: https://www.youtube.com/watch?v=OlDI161wb1g&t=79s	Source https://www.youtube.com/watch?v=OlDI161wb1g&t=79s
Qwiek	Qwiek is an innovative product specially made for healthcare. There are different applications of the Qwiek. The applications are mostly developed for healthcare facilities.	Source :www.zorginnovatie.nl/innovaties/qwiekplay
	The singing pedestrian: This is a pedestrian placed on the ground of for instance an healthcare instance. When someone passes by music starts to play. Movement is a cue to start a melody stimulating dancing.	Source: www.youtube.com/watch?v=T_pdYcAM8Z8
	The digital floor: A beamer displays representations on the floor which people can interact with. Games like soccer can be played with a virtual representation of a ball, and leaves can be swept. *Play:* Qwiek play are games that can be played on a screen, using movement as input. Games like dart can be played or puzzles can be made where arm movements are needed. Shown video: https://www.youtube.com/watch?v=AVSyx3FLKCU	Source: www.zorginnovatie.nl/ innovaties/qwiekplay
Tover tafel (magic table)	The Tover tafel [magic table] is an interactive display on the table. Seniors around the table can interact with representations of fish, leaves and water. This Tover tafel is specially made for people with a metal disorder. Shown video: https://www.youtube.com/watch?v=evh1aQ1vtu0&t=90s	Source: https://www.nrc.nl/nieuws/2018/08/22/mogen-we-met-de-waterbeestjes-spelen-a1613878

MODULE 1 - Storytelling and UX Statement

The following scenarios related to physical activity has been proposed to the participants with the question which kind of technologies they had seen would be most appropriate to use:

a. *You are sitting at home. You did not walk yet today. You know you need to, but you don't really feel like it. Suddenly you get a notification that a friend of yours is walking in the neighborhood at the moment. Because you'd like to have some social interaction you decide to go for a walk too and encounter your friend for a chat. After the walk you feel satisfied because you walked today, and you had some social interaction.*

b. *You love puzzles and feel like doing one. You decide to turn on you tv and put an exergame on. You really enjoy doing the puzzles and additionally you have to move your hand around in the air, which is good for*

your strength. Last time you played against your friend and you lost. So, you want to practice beating your friend the next time.

c. *You have a device that counts your steps. You have set a goal for certain number of steps a day together with a healthcare professional. When looking on the device you see that you are almost there, so you decide to go for a walk. At home you can see that you achieved your goal! Also, it shows statistics of your activity during the week.*

During this session the researchers left out the technology and let the seniors imply how they would want to experience the proposed solution. It was used to let seniors imagine certain situations and analyze their reactions and answers. This provided insight in how technology could be usable to stimulate seniors and when seniors are interested in technological solutions and when they are not.

Second focus group session: healthcare professionals
During the second focus group sessions with healthcare professionals the same technologies were shown as during the focus group with the seniors. Preliminary results and reactions of seniors were presented. A discussion was held to check if healthcare professionals could relate with the answers and reactions of the seniors. This was done as validation of results from the second focus group with seniors. Additionally, functionalities and usability of technologies were discussed.

Results summarized:
A thematic analysis was done to define the most important barriers and motivators for physical activity and how technology could be used as motivator.

The most important results from the focus groups are that seniors and their close ones need to be aware of the benefits of physical activity. Not only to increase motivation towards physical activity but also towards the use of technology as motivator. Additionally, this study suggests a further interpretation on the theory of acceptance and use of technology (UTAUT2): an indirect effect of social influence via price value on the intention to use technology. Results also show lack of competence is the most important barrier to engage in physical activity. Possibilities for social interaction is shown to be the main motivator. However, it should not affect seniors' sense of competence and autonomy. Recommendations from this study are that firstly awareness of beneficial effect of physical activity needs to be promoted.

Second, exergames (video games including physical activity or movement) should be used to increase social interaction, focused on enjoyment.

Third, technologies from home, such as tablet applications, should focus more on competence and autonomy. Here, motivational effect of social interaction should be subtle and be mostly supportive. This research brings us a step closer to increase physical activity among seniors as prevention intervention of cognitive decline.

MODULE 4 - Review and testing of existing app
Co-design Session 1: Evaluating existing concept directions (December 2019)

The co-design team in the Netherlands met in December 2019 to further analyse existing applications and to review working principles within the different themes and (possible) functionalities of the Resilien-T platform:

Nutrition:

From these results we can conclude that the eating habits of the participants are influenced by the amount of hunger they experience and the learned eating habits that they adopted throughout their lives. Overall they experience a lack of hunger and therefore only eat small portions, or forget to eat at all. If they eat, they mainly eat vegetables and fruit and find support in health books from the supermarket.

Only 33% of the participants state that they want to change their eating habits. They prefer eating products they like most. Even if the participants eat in the elderly center they choose the menu they like most. Therefore they do not like the idea of guidance on what they should or should not eat.

Conclusion: Some like the idea of recipe advice. The main problems they address which decrease the usefulness of this advice are:

-        Not being able to cook (not knowing how)

-        There are a lot of recipes available already through television and magazines

-        Does not solve the lack of social contact which is often associated with eating.

-        83% is not interested in the health advantages of the recommended recipes

-        Bad habits, like eating in front of the television, still persist.

-        They want to eat what they like

They seem not interested in tracking their eating pattern.

Cognition:

The participants already try to train their memory with everyday tasks and games such as while doing groceries, watching television and reading magazines. Lingo, crosswords puzzles and Sudoku are popular games. Playing games on a tablet instead of in a magazine or on television is only an option if the insurance company pays for it.

Having contact with relatives/family is stated to be a nice option but not explicitly in combination with games and playing together. The participants emphasize with the person that would receive the results.

Seeing progress and compare with others:

They would like to know which level of memory skills they have but they are afraid that is will only show negative progress due to aging, diseases or medicine. They do not trust the statement that the games will help them improve their memory.

All participants are more focused on their own progress and skills and do not feel the urge to compete and perform better than others. They want to see their own improvement.

3.3 Workshop Activities - Canada

We had four objectives for our workshop at our site:

1. To learn about our participants

2. To engage them in technology interaction and elicit their feedback

3. To have them develop solutions to problems posed by the Resilien-T personas

4. To have them interact with the Compaan environment and give us their preliminary feedback.

3.3.1 Sessions

Participant 1	**Age, Gender:** 75, F **Occupation:** Registered nurse (retired)	**Computer proficiency:** 59/88 **Subjective cognitive decline:** 2/12 Enjoys working, line dancing, golf, spending time with her husband, meeting friends and family. Uses her iPad daily to play games and crosswords, and communicating with friends and family. Sometimes feels that technology makes us lose that human face-to-face contact.
Participant 2	**Age, Gender:** 75, M **Occupation:** Agriculture (retired)	**Computer proficiency:** 6/88 **Subjective cognitive decline:** 9/12 Likes to cut his lawns and clear up the snow. Also enjoys golfing. Unsure about the benefits and problems of using technology.
Participant 3	**Age, Gender:** 84, M **Occupation:** School principal (retired)	**Computer proficiency:** 43/88 **Subjective cognitive decline:** 7/12 Used to be a competitive sportsperson. Still enjoys a good competition. Has low vision and uses technology that magnifies text/parts of a screen to see better. Uses a watch that can recite the time when a button is pressed. Finds it difficult to use technology created for the general population as it does not take into account accessibility.

MODULE 0 - Introduction

We began the workshop by giving participants information about what they can expect during the workshop, and answering any questions they had. After this, we obtained informed consent from the participants before beginning the activities of the workshop. Although four individuals had originally agreed to participate, only three gave us formal consent. Thus, we had three participants in our co-design workshop.

After we received consent, we sought to learn more about our participants. Using a combination of interviewing and questionnaires, we obtained the following information from each participant:

a. Demographic details
b. A description of what they enjoy
c. How they think technology could help or hinder their ability to live well
d. Their self-rated computer proficiency
e. Their self-rated subjective cognitive decline

MODULE 4 - Review and testing of existing app

We had participants interact with apps on Samsung Galaxy Tab devices (1 per participant). For this section, we included the top-performing Android apps based on our Desk Research using the AcTo dementia framework. Participants could choose from 4 apps: (1) Cognitive Training (Peak), (2) Physical activity and exercise (30-day fitness), (3) Diet (LifeSum), and (4) Seniors-focused app (Memory Games). We asked them to list their 1st, 2nd, 3rd and 4th choices from this list. This would give us a sense of what they're interested in using technology for. The participants then played with their two top choice apps and told us what they liked and disliked about them.

Two of the three participants chose the physical activity app as their most preferred app (30-day fitness challenge), because both like to live an active life and enjoy challenging themselves through physical activity challenges. Both participants also chose the cognition app (Peak) as their second choice. The third participant chose cognition (Peak) as their first choice and the physical activity app (30-fitness challenge) as their second choice because they enjoy anything that is framed in the form of a challenge (this participant used to be a competitive sportsperson and was the principal of a school, so enjoys mental and physical activity). All three participants chose the diet app (LifeSum) as their third choice, mentioning that although they do want to track their eating habits, the apps are very cumbersome and take a long time to enter information into or did not have the foods that they normally eat. All three participants chose the Senior-focused app as their last choice stating that an app geared for seniors sounded very scary to them (they may learn that they are not doing so well after all). One of the three participants also mentioned that the seniors' app seemed too condescending.

App	Participant 1	Participant 2	Participant 3
Cognition (Peak)	2	2	1
Exercise (30 Day Fitness)	1	1	2
Diet (LifeSum)	3	3	3
Seniors Focused (Memory Games)	4	4	4

Table 1: App rankings by the participants

Objective 2.2: Technology feedback

Feedback for cognitive training (Peak) app	
PROS	**CONS**
Games were very enjoyable overall.	Font is too small
Has tutorial for games, which is good.	Lighting (contrast) was a problem
The games are engaging.	No options to change font size on instructions
Makes you think.	Instructions are too fast and not very clear.
Speed and timed, so it gives a good challenge.	Feels bad when you get something wrong.
Requires eye-hand coordination	Not all games are easily understandable.
Motivating feedback!	More time needed to learn more complex games, but the instructions don't give enough time to understand.
A large variety of games.	
Feedback for exercise (30-day fitness) app	
PROS	**CONS**
Easy to read and see.	Not too many goal options (only limited to getting "toned").
Visual demo of each exercise.	Not appropriate if injured or in pain.
Possible to see how to complete the exercise correctly from it.	Only one-way communication.
Keeps you focused.	Sometimes quite difficult to know how to start.
Tells you the time remaining clearly.	No tutorial for help on first use.
Feels personalized, as though with a trainer.	Takes a long time to learn how to use.
Useful verbal prompts and feedback from the trainer (an actual human being who has been recorded).	No contrast between foreground (words/videos) and background.
Variety of exercises was good.	Font is too small.

MODULE 3 - User experience and interaction co-design

Participants engaged with the Compaan interface and provided us with a list of what they liked and what they didn't like about it.

Feedback for Compaan tablet	
PROS	**CONS**
Easier to see compared to regular tablets.	Can't see person (video interaction missing).
Everything is bigger.	Similar to iPad
Promotes human/social element and interaction.	Could get used to digital interaction without promoting actual in-person human interaction.
Could be good for communication.	Font needs to be bold and darker against the background.
Looks fun.	Not as portable as other tablets.
Reminders and safety.	
Brighter visuals.	
Bigger text.	
Straightforward to navigate (accessible).	
Good contrast against background.	

Objective 3: Creative problem solving for Resilien-T personas

Participants were introduced to the Resilien-T personas and were asked to brainstorm ways in which technology may be used to support the personas to live well.

Persona: Elizabeth
Light/sound for stove that would indicate when the stove has been on for too long.
Using calendar and reminders to note down and be reminded of appointments.
Persona: Giorgio
Google home type of device

Video based technology that gives visual prompts
Lists for writing down to-do
Connect him to humourous things
Skype/video calling technology.
A way for daughter to set reminders for him through technology.
TV screen in home could be integrated so the reminders flash on the screen.
Multiple options for everything so he feels like he can choose what he wants to do.
Persona: James and Margaret
Technology that helps them collaborate and support each other.
Get information about events from Alzheimer's society
Skype/telephone to keep in touch.
Technology that suggests opportunities to meet and talk to new people.
Medical alert bracelets/GPS/something that supports safety.
Checklists and reminders on app
Portable technology as they like to travel

3.4 Results

This paragraph describes the Co-design Workshop experience as lived by participants. They have generally shown interest for RESILIEN-T scenarios and upcoming development from the project, and all the participants were extremely collaborative, engaged and easy going.

All participants agreed on the need and potential benefit of RESILIEN-T-like socio-technical solutions. Moreover, the link/ interdependency among RESILIEN-T scenarios and their added value emerged clearly.

In all the workshops the PwCI were very positive and interested in hearing about the development of the system as well as being able to use it and share the information with their own. The PwCI who attended the workshop all participated actively and want to come again to continue to have the interaction in the project in the future phases.

Participants have been engaged and stimulated to take part with questions and proposals and for validating the interactions strategies. The users participated in a proactive way, proposing interesting ideas on how to improve the service. The workshops were useful to understand the real needs of users, their motivations, habits, but above all their concerns and frustrations. Users have positively participated at the validation of the scenarios, emphasizing the aspects of the project that are most relevant and useful to them.

GENERAL REMARKS

Highlights:

- ACTIVE LIVING: Nutrition, physical activity and social interaction are connected elements that are needed for a high quality of life.
- SELF-EFFICACY: Encouraging self-efficacy by proposing interaction strategies that are not too intrusive
- SOCIAL RELATIONSHIPS: integration of strategies to encourage social relationships
- MULTI-SENSORY EXPERIENCE: Increase motivation by involving more senses (hearing, touch, smell)
- GOAL-DIRECTEDNESS: Goals are already used in the caretaking process. The goals and pop-ups should be succinctly, specific and should focus on resolving the critical causes of the lack of hunger. The pup-ups should stimulate and simulate an new and healthier eat/drink rhythm. It is important to create awareness in a positive way. Elderly may get a negative experience with the system because of unreachable goals. The difficulty level of the goals should therefore automatically adjust to the skills of the person. It should not be too confrontational and should stimulate a positive mindset.
- PERSONALITY: The professionals state that the usefulness of comparing results depends on the personality of the person. Elderly should be able to choose if they want their results to be compared to others or not so that this function is personalized to his/her needs and personality.
- NOTIFICATION: Pop-ups are favored by the professionals. The reminder settings should be accessible for formal/informal caregivers.
- TO-DO: once the shopping list is finished, you can send a message with the list of foods to your smartphone,
- AGGREGATOR: integrate a loyalty cards aggregator into the service,
- MOVEMENT TRACKING: It is preferred to integrate sensors in existing and widely used products such as a walker, alarm or watch. Requiring elderly to report all their movements will not be effective because also small, domestic movements are important to include. These movements are easily forgotten.
- PERSONALIZATION: Personalization options will make the system more user-friendly. It is important to focus on compliments and positive stimulations.
- ADVICE: Tips and advice should be personalized, focused and linked to personal goals. The tips should not be too repetitive but it is also important to have enough interaction between the person and the system.
- STYLE / TONE OF VOICE: Stressing the health advantages of the functions will not be effective. The professionals recommend linking the benefits to a compliment. This will increase health knowledge. This knowledge should not be too complicated. Formulation is also key. The professionals recommend keeping it small and ensure that stating the benefits has a supporting function.

THEMATIC REMARKS

DIET

Evidence	Insight
Eating habits of the participants are influenced by the amount of hunger they experience and the learned eating habits that they adopted throughout their lives. Two of the participants mention a lack of hunger and therefore only eat small portions, or forget to eat at all. If they eat, they mainly eat vegetables and fruit and find support in health books from the supermarket.	By analyzing personal adopted habits and needs of the person, you can create more awareness on their positive and negative eating habits and provide simple guidance (such as in the health books from the PLUS supermarket).
Only 33% of the participants state that they want to change their eating habits. They prefer eating products they like most. Even if the participants eat in the elderly center they choose the menu they like most. Therefore they do not like the idea of guidance on what they should or should not eat.	Make the "schijf van 5" with preferred products and recipes.
Some like the idea of recipe advice. The main problems they address which decrease the usefulness of this advice are: - Not being able to cook (not knowing how) - There are a lot of recipes available already through television and magazines - Does not solve the lack of social contact which is often associated with eating. - 83% is not interested in the health advantages of the recommended recipes - Bad habits, like eating in front of the television, still persist. - They want to eat what they like They seem not interested in tracking their eating pattern (which is inline with insights of the literature review of UofT).	Adding a social, personalized component to the recipe advice such as a cook mentor (e.g. formal/informal caregiver, friend, neighbor, video message) can stimulate motivation, resolve the above-mentioned bottle necks and provide personalized guidance when preparing meals.
	The recipes should not be to specific, too divergent from their normal meal or too complicated. Personalized recipes could therefore be a suitable application. Another application of these results could be a grocery list with pre-filled categories (not too specific) to guide elderly while choosing their meals or pop-ups with personalized tips.

Specific recipe advice not seem to be the most suitable solution. Pop-ups could be more appropriate for this target group according to the professionals. Nutrition has a high relevance to improve the quality of life of elderly.	Personalized, simple pop-ups based on the individual needs of the elderly.
Recording all details of a meal is a difficult task (even for the professionals who tried it at home). This not seems to be an important function. Relevant pop-ups are more important.	Not let elderly record the details of their meals themselves. An alternative could be a sensor which records the meal details.
In some situations it can be interesting to know specific nutrition details based on the "schijf van 5" but sometimes it is already enough to know whether or not a person has eaten. Tips and feedback from the system should be based on this data.	Personalize the simple input elderly can give; just a yes/no answer to the question whether or not a person has eaten and a simple display of the "schijf van 5" categories which they can check to select the nutrition categories they already consumed.

COGNITIVE TRAINING

Evidence	*Insight*
The participants already try to train their memory with everyday tasks and games such as while doing groceries, watching television and reading magazines. Lingo, crosswords puzzles and Sudoku are popular games. Playing games on a tablet instead of in a magazine or on television is only an option if the insurance company pays for it.	An option could therefore be to integrate popular television and magazine games into the tablet so that they can play their favorite memory training games where and whenever they want.
The participants emphasize with the person that would receive the results.	Personalization settings which can be adjusted by the receiving party. For example, when/how many times the question "how are you doing" is asked to the elderly, so that the (informal) caregiver has the means to respond adequately to the situation.
They would like to know which level of memory skills they have but they are afraid that is will only show negative progress due to aging, diseases or medicine. They do not trust the statement that the games will help them improve their memory.	Emphasize on the positive results and let them experience the improvement of their skills by setting simple goals or milestones.

Single elderly liked the idea of setting reminders if they noticed a decline in their memory skills.	Elderly should be able to set reminders.
All participants are more focused on their own progress and skills and do not feel the urge to compete and perform better than others. They want to see their own improvement.	Based on these statements, the data should therefore be individualized and focus on their own skills and progress. The comparison can therefore, best focus within subjects instead of between subjects.
The professionals are in favor of the displayed memory training games because they see similarities between these games and other popular games played by elderly, such as Candy Crush. There are mixed opinions about the display of the results. The professionals agree that the results should not be to detailed. Analyzing detailed game results would take too much time and would therefore not fit in the current care process. It could be used and analyzed by informal caregivers or the person itself.	General result display focused on personalized, useful information for the person itself and informal caregivers.
Cognitive games have the lowest priority because there are many alternatives. If cognitive games are combined with social interaction the online game environment could be a nice addition to their already existing game list.	vFocus should be less on cognitive games and more on nutrition, physical activities and social interaction.

SOCIAL INTERACTION

Evidence	Insight
The application functionalities are user friendly. The participants struggled with the usability of the tablet. Understanding the functionalities increased substantially over time but the direct interaction (touching the screen) stayed a difficult task.	The sensitivity of the screen should be adjusted to the touch of elderly. Also providing an accessory (such as a touch pointer) for the tablet could increase the direct interaction usability of the tablet.

The participants emphasize with the person that would receive the results.	Personalization settings which can be adjusted by the receiving party. For example, when/how many times the question "how are you doing" is asked to the elderly, so that the (informal) caregiver has the means to respond adequately to the situation.
An English name is not preferred. Social interaction and the main focus on elderly will make elderly more interested in the project.	"Veerkracht".
The simple input of the smileys is favored by the professionals. There are a mixed opinion about the approach with the tablet instead of a personal conversation to find out someone's emotional state.	A mix of emotional state checks from the Compaan and from the formal caregiver in person.

4 Design Concept

4.1 Design Methodology

In particular the scope of this activity is to investigate issues emerged in the analysis with relation to:

- *Concept design and product identity*

   RESILIEN-T requires the assurance of continuity of services to end-users: systems and technologies that the end users will be allowed to test cannot be provided and subsequently removed. Sustainability and persistency of the product might be guaranteed in order to preserve a positive vulnerable community user experience along time.

- *Service design*

   RESILIEN-T requires that product and services development be anchored to clear ownership and responsibility at functional and interactional levels. One of the main RESILIEN-T values is its transactional nature since it mediates the relation between people with MCI and caregivers.

- *Interaction design modalities*

   RESILIEN-T requires finalization of interaction strategies at the same time being kept simple and clearly understood, multifaceted in the interaction, and tailored on human needs and expectations. Human-centred interaction design validation criteria such as usefulness/ perceived utility, ease-of-use, value of information and quality of life have to be considered.

This approach ensures a deep integration among the different WPs: the final result will take advantage of all contributions and manage both technological innovation, user-research and creative design by means of iterative user testing and design cycles.

From a methodological point of view, the target groups involved in the application scenarios will be engaged as members of the design team through participatory processes.

4.2 Design Concept exploration

The objective of the workshops was two fold: on the one hand to discuss and validate the RESILIEN-T use cases defined according to the user research and field analysis held in WP1 and WP2 and, on the other hand, to create a space for further exploration of the potentialities of RESILIEN-T, in particular related to user experience and interaction with RESILIEN-T application.

The user experience co-design has perpetuated the details of how the RESILIEN-T application would work, how people would interact with services in order to accomplish their personal objectives.

The design concept generation activity, defined as the process of composing a desirable concept towards the future, has the dual goal of:

- elaborating the results of the research and co-creation activity as an input for the design,

- providing the design solution to the project instances.

These are the two phases, the problem–driven phase and the inner sense–driven phase, that need to be structured according to the following two factors: the basis of concept generation and ability which enables the concept generation to proceed.

To assist the concept generation, two types of methodological support techniques have been developed: the visual method and linguistic method (Taura, Nagai, 2013). The visual method type is usually based on visual and spatial cognition exploration using images and visual thesaurus resources or graphical media. The visual method type is thought to be effective in assisting a designer's (or design team's) image aspect of concept generation in the shape, interface, or usage scene of a product.
Visual research also allows to gain inspiration from the concept values and perspectives.

The linguistic method type is based on language and uses lexicon technology; it is supposed to contribute more towards activating concept generation at the abstract level, such as the meanings or social values of a product. Both types are considered useful for accelerating or efficiently driving concept generation. In the actual design process, these two phases do not work independently; instead, they realize the design process complementarity, driving evidence-based problem research and design solutions as the main forces of the unique process.

Moreover concept generation is a highly intellectual activity leading to high-level conceptualization of the solutions. The so-generated concept will allow to define the RESILIEN-T system conceptual model (Johnson, Henderson, 2002; Norman 1986, 2013) as the basis for detailed design and development of RESILIEN-T.

This paragraph describes the results of visual research and language exploration activities which have been carried out in the project. The Visual Thesaurus and the Attribute Listing methods have been respectively applied to held visual research, exploration and meaning association in order to further develop the RESILIEN-T Digital Companion design concept and themes emerged from the co-creation activities.

Visual Thesaurus is a type of research undertaken by means of interactive visualizations concerned with harnessing the power of novel interactive techniques with innovative presentations of large quantities of data. In particular, this method relies on software products that allows for the creation of animated displays of words and meanings as visual representations of the language. The visualization places the selected word in the center of the display, connected to related words and meanings. By clicking on these words or meanings, it is possible to explore further meaning. Indeed, Card (2007) argues that visualization is concerned with 'amplifying cognition'. It achieves this through:

● Increasing the memory and processing resources available to people,
● Reducing the search for information,
● Helping people to detect patterns in the data,
● Helping people to draw inferences from the data,
● Encoding data in an interactive medium.

Creative techniques for systematic design such as checklist methods for example, the Attribute Listing Method, are based on the decomposition of the problem. Indeed Attribute Listing is a creative technique that involves breaking the problem into smaller and smaller parts and looking at alternative solutions to these parts.

When the challenge/problem is being divided into many separate parts, the challenge does not change, but the perception of it does and leads to new ideas. Examples of Attributes subcategories can be: physical attributes like shape, form, colour, texture, structure, …; social attributes like responsibilities, taboos, power, ecological; process attributes and psychological attributes: needs, motivation, positive and negative emotions.

As a result of the application of the two methods, the following graphics have been elaborated:
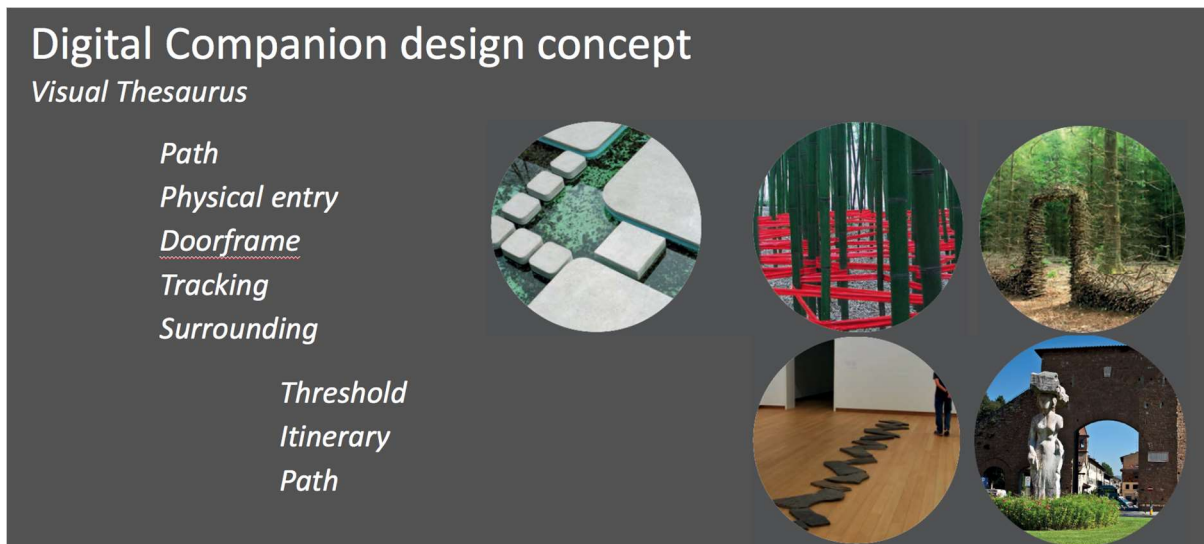

Fig. 1 Digital Companion design concept inspiration

This document suggests the view of the RESILIEN-T Digital Companion as an integrated, consistent and smart service access point: the Digital Companion is the mediator between the individual and the services:

individual < Digital Companion > services

the social mediator between the individual and the community

individual < Digital Companion > community

With the goal to foster:
- Literacy at-large: Cultural literacy, Functional literacy
- Training: improvement of skills and competences, personal and professional development
- Coaching: support to knowledge building and awareness raising about procedures and services

The RESILIEN-T Digital Companion is thought to provide personalized and contextualized coaching services which leverage upon subjective preferences as a starting point and that evolve through time according to changes in life.

The Digital Companion is conceived as an adaptive agent, is able to move in between the following extremes of the dichotomies:

Tool _____ Assistant

Reactive _____ Proactive

Emotional _____ Functional

Context-sensitive_____ User-sensitive

Relational _____ Intimate

In the following table, the concept values are highlighted and described:

Value	Description
Trust	Trust in the tool is one of the key values for the success of the RESILIEN-T Digital Companion: the concept will transfer a trustworthy product identity in order to enhance reliability of services, the owner of the services.
Perceived utility & scope	RESILIEN-T will assure goal effectiveness and perceived utility for the end-users.
Participation	RESILIEN-T will foster participation of communities, peers, schools, service providers.
Diversity	RESILIEN-T will take into account the fact that end-users own different mental models, concepts and cultural variables with relation to integration process and rules.
Ownership	RESILIEN-T will define a strategy to manage ownership of data, devices, and places according to the actual experience of people with MCI in daily life.
Balance	RESILIEN-T service will keep the relationship with the agent balanced with social meetings in person, community building and social inclusion.
Integration	RESILIEN-T will coherently integrate third-party applications and services and firmly address its role as unique access point for diverse services.

4.3 The Resilien-T platform proposal

4.3.1 Personalization - Themes & profiles

From the user research it became clear that the coaching elements of the Resilien-T system needs to be specified according to the user needs'. Not all people from the user group are interested in all themes of Resilien-T (nutrition, physical activity, cognition and social interaction) and to keep people enthusiastic about the system, there is a need for them to be in control of their theme of interest. Therefore, the Resilien-T platform gives the user the opportunity to choose the preferred theme.

Furthermore, the insights from the user research activities also show that not all people are motivated in the same way and that some sort of personalization is required. From the interviews we used the Big-5 personality types to frame the apparent differences in what users want from a coaching system. During the further conceptualization the research partners linked these personality types to gaming profiles (Orji, Tondello, & Nacke, 2018[1]). , as these translate the needs of a personality into elements of an user interface. Some slight adaptations were made, to resemble the users from the interviews and co-design sessions in the different countries. This results in the following four profiles for the Resilien-T platform:

From a small test with users in the Netherlands in February 2020, it was decided that next to choosing a theme (nutrition, physical activity, cognition and social interaction), the users will also choose a personality. In both instances, the user can choose two options; two themes, and two personalities. The system will use this input to show relevant content in a relevant manner for this specific user. As the development approach of the Resilien-T project follows an iterative design process, this could be further evaluated and possibly adapted after the first actual user tests.

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[1] Orji, R., Tondello, G. F., & Nacke, L. E. (2018, April). Personalizing persuasive strategies in gameful systems to gamification user types. In Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems (pp. 1-14).

The following user stories are set, which serve as a basis for the development in WP1.

As a person with MCI, I want….	so that...
To receive easy to understand questions	the Resilien-T platform recognizes who I am and which goal I set
to receive interesting pop-ups	I am helped to reach the goal I set
to be able to reset my profile and goal preferences	the Resilien-T platform can be adjusted when I want to
to be reminded to reset my profile and goal preferences	the Resilien-T platform can be adjusted when I am asked if I want to
receive suggestions to use an existing application that fits my personal goal	I can have the benefits of the possibilities of an pre-selected app

4.3.2 Content

Based on the chosen themes and personalities, the user will receive specified content. This content will be further developed, defined and explained in D2.2. There are some first guidelines set for this content based on the themes and personalities, which we will describe in the form of User stories:

As a person with MCI with "socializer" profile I want…	so that...
to receive pop-ups with personal messages of friends and family	this helps me to set the goals I set
to receive suggestions for social events	this helps me to set the goals I set

| As a family, friend or professional caretaker of a socializer I want…	so that…
to be able to sent a personalized motivational message	I can help my family member/friend to work on the goals they set

%

As a person with MCI with "achiever" profile I want…	so that…
to be able to see an overview of my progression	this stimulates me to work on the goals I set
to receive points and prices when working on my goal	this stimulates me to work on the goals I set

As a person with MCI with "physical activity goal" I want…	so that…
to have the opportunity to use a smart watch	this will contribute to the Resilien-T pop-up suggestions

4.3.3 'Smart' content

Research is not conclusive on what works well in motivating senior with MCI through a digital device on the themes within the Resilien-T project (nutrition, physical activity, cognition and sociak interaction). In combination with the profiles that we set, many assumptions serve the current Resilien-T platform. Therefore it is decided to start with a set of content; generic (for all coutnries) and specific (with cultural adaptations and for example existing videos in ones own languague). By applying this set of content and thoroughly evaluating the actual actions that user perform (e.g. watching a video, answering a pop-up) and how they evaluate this (by means of self-report) in the first iteration of the Resilien-T project; the project will better understand what works well and what not. These insides are collected through keeping logfiles of the system (in a database) and by the user research in the alpha phase of the project.

Eventually this better understanding will serve as a basis for further development of smart algorithms.
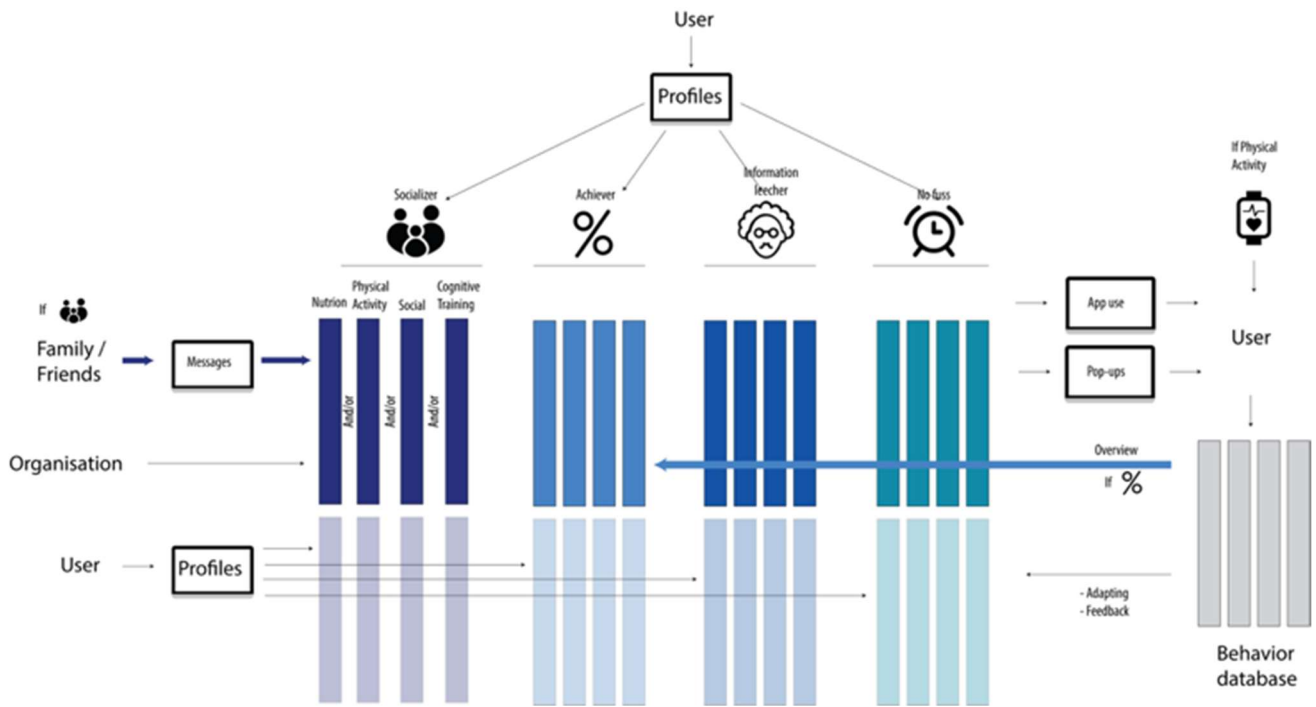
ANNEX 1 - USER RESEARCH - Italy

In the following table the summary table with the interviews' participants profiles.

Participant 1	Husband: 74 years old; MCI Wife: 74 years old They living together, independent in an apartment
Participant 2	Mother: 76 years old; light MCI Daughter: 45 years old They living together, independent in an apartment
Participant 3 Participant 4	Wife: 71 years old; light MCI Husband: 73 years old They living together, independent in an apartment Wife: 79 years old; MCI Husband: 82 years old They living together, independent in a country house.
Participant 5	Wife: 70 years old; light MCI Husband: 72 years old They living together, independent in an apartment
Participant 6	Wife: 60 years old Husband: 68 years old; MCI They living together, independent in an apartment
Participant 7	Wife: 59 years old Husband: 69 years old; light MCI Son: 36 years old They living together, independent in an apartment
Participant 8	Woman: 84 years old; MCI Living alone, independent

Participant 1

Situation

The man is 74 and he lives with his wife who is also 74 years old. He worked with the lathe (worker) and when he talked about his work, he was very proud of it. He was a very active man but in the last years he has difficulties related to a walking hip problem. He couldn't cope with this problem and he began to lose interest in his hobbies (sport, gardening, reading ...). He was very friendly and he liked to be in company, but now he

is often apathetic and lazy and he does not like to leave the house. He doesn't like advice, but sometimes his wife tries to suggest him to go to the garden and to go out. He sometimes seems to lose the main point of the conversation, so his sons advise him to read the newspapers and to train his mind with some activities (rather than watching TV).

Important themes

"I think that have a healthy life is to stay fit and cultivate hobbies and interests.

Looking at these images I think that the most important is to maintain *social relationships* because I like to compare my opinions with other people on different topics. It makes me feel alive.

I should *eat healthy* for my diabetes and I try but it's not easy and frequently I can't do it.

I think that doing physical activity is very important. I have always been a sportsman, but in the last years I suffer from hip pain. I try to do gardening, but sometimes I prefer to give up.

I know that it would be important to *train memory* with reading, crossword puzzles … but these activities bore me. Some years ago I loved reading a lot of books and sports newspaper.

I never *schedule* the day's *appointments* other than medical visits. "

Motivation

"I would like to do physical activity because I know that it would be good for my diabetes but I feel hip pain so I can't walk or do other physical activities. I don't go to the doctor because he told me that he can't operate my hip, but I can do physiotherapy. I think physiotherapy is useless, so I don't want to do anything.

I try to have a healthy lifestyle but often I cannot. "

Advice

"I ask the doctor for advice on a healthy lifestyle and sometimes I follow them"

Forgetfulness

"I never write appointments in an agenda but I write them in some post it. Sometimes I lose my posts and I don't remember my plans, so I started to write them in the calendar. Mainly I write the medical examinations. I also always write the dosage of medicines directly on their box.

Moreover, I always make the shopping list but sometimes I forget it.".

Technology

"I haven't smartphone and I don't be able to use it. I have only a mobile phone. I am not interested in learning the use of the main technological devices (smartphone, laptop …)."

Participant 2

Situation

The woman is 76. She worked as a nurse. She is divorced and she lives with her daughter. She doesn't have a driver's license but she moves independently by public transport. The woman is very active and every day she walks a lot for a long time. She also loves to chat and have company, in fact she looks like a very friendly and smiling woman. She perceived that she begins to forget some things, so her daughter advised her to make the shopping list.

Important themes

"*Relationships* are very important. I make friends easily because I like to be in company.

Every day I *plan the activities* and appointments for the next day.

I love to move and be active and independent. I attend a *gymnastics* course and every day I do stretching and I walk a lot.

I like to *eat healthy* so in winter I make bread and pasta by myself. In the summer I buy high quality of bread.

I read lot, especially the Bible. I really like also doing puzzles and crosswords to *train my me*mory."

Motivation

"I want to keep living independently as long as possible. My fear is that in the future I will be dependent and that I will not to be able to do my housework and to take care of myself."

Advice

"I take advice for healthy lifestyles from the Tv health programs"

Forgetfulness

"Sometimes I forget what I should buy, so I started to make a shopping list. Moreover, I often forgot my mobile phone's pin code, so I link it to some date of birth very significant for me."

Technology

"I don't like very much technology but I able to use smartphone, Internet and I have also Facebook profile. "

Participant 3

Situation

The woman is 71. She worked as a teacher in middle school and this job has probably influenced her interest in being informed about different topics (science, current affairs ...). She lives with her husband. She is a very cultured person. She is talkative, sociable. She is very involved in prevention as a way to avoid the most common diseases, so she never skips the recommended medical screenings. In her theatre activity, she is used to keeping her memory in training. Sometimes she forgets her appointments so she decides to write them in an agenda.

Important themes

"I believe that the lifestyle should be appropriate to the age of the person. For me the *social relationships* are essential to a healthy life. I take good care of relationships with my family. We are a very large family and during the summer we all move to a country house to spend three months together.

I try to follow a *healthy diet* low in fat and carbohydrates to lose some extra kilos, but sometimes I can't cope with some temptations.

I take care of my mind more than my body. In fact, playing in a theatre company, I often have to learn my lines from the script by memory. This is a good exercise to *train my memory*. I also read a lot and I like crossword puzzles and rebuses.

I don't use the agenda to remember the notes, but I have made a paper table with all the days of the year. Every day I write down there the things I have to do.

I know that *physical activity* is important, but I am lazy and I have knee pain. Sometimes I do some walking and rarely I do water aerobics."

Motivation

"I agree with the early diagnosis, so I follow all the visits recommended by the doctor and I write down the appointments in my handmade agenda.

I believe that keeping the mind trained can help to delay cognitive disorders".

Advice

"I look for some information on healthy lifestyle in newspapers and magazines. As I was a biological science teacher, I already know a lot of informations."

Forgetfulness

"I use different strategies to don't forget my appointment. I have a timetable where I put the bills and I mark the expiration dates. I also set the alerts on my smartphone to remind my appointments. I always do the shopping list, sometimes I write it down on my smartphone. Finally, when I leave for a trip I make a paper list with all the clothes that I have to pack.".

Technology

"I always use laptop, smartphone, Internet. I like very much technologies and I often store and modify my photos on my computer."

Participant 4

Situation

The woman is 79.

She worked as a farm hand. She lives in the countryside with her husband. They have a vegetable garden that they grow every day. She doesn't have many social relationships, but she doesn't feel alone because she's accustomed to country life.

The family is very important to her and she is very close to all the family members. She often forgets things and for this reason she takes note of medical appointments

Important themes

"I take care to have a *healthy diet* in fact I cultivate everything I eat. I have the land to farm and I also have some farmyard animals.

It's very important *to keep memory in training*. I like reading and doing crosswords.

I know it's also important to be *physically active* but I don't do so much. However, I often hoe the garden during the week.

I don't like to write a diary or to *plan every day*, but sometimes I arrange in my mind what I have to do the day after.

I live in the country so I don't have many *social relationships* and usually the conversations are mainly with my husband."

Motivation

"My cooking is low in fat because my husband tends to get fat.

I like to read a lot to enhance my speech, because during the day I only talk with my husband and I don't have many social relationships."

Advice

"I listen advices about living healthy on TV programmes"

Forgetfulness

"I often forget appointments so I write my medical examinations on the post it. If I have to take the medicine I leave it on the table, to remember it."

Technology

"I am not interested in the use of technologies. I do not use computer or the internet "I only use my mobile phone to call"."

Participant 5

Situation

The woman is 70. She was an employee. She lives with her husband. She is a very active and energetic person. She loves to travel by camper with her husband. They frequently have long trips.

She is open-minded person and she likes innovations. She has a profile in the mainly social networks.

She is aware that she has forgetfulness and that she needs to train her memory, so periodically she participates in memory training groups.

She is very focus on a healthy diet because she feels overweight. She suffered from depression, but she faced it thanks to the social relationships.

Important themes

"I especially take care of *physical fitness* because I have always been overweight and I suffered for this problem. I have always on a diet, so I am used to taking care of everything I eat.

I always do *gymnastics* twice a week, both not to gain weight and because it makes me feel good. I have a treadmill in my house and every evening I walk for several kilometres. When I'm busy and I can't do my evening walk, I feel guilty.

I like to compare my opinions with people. Talking and chatting with people helps me both to enrich my language and to overcome depression and sadness. I go to the gym or to dinner with friends. Sometimes I also go to have an ice cream with my grandchildren after dinner. I think that travelling also helps people to get together and it increases *social inclusion*.

I'm being treated because I'm aware that I often have memory problems. I like reading a lot but I don't like crossword puzzles even if I know it could be a memory support activity. I also play cards on the computer to maintain my *memory trained*.

I don't want to bring the agenda with me, so I often *write notes* on papers but sometimes I lose them. In addition, two years ago I helped my niece to study and I perceived that this activity really trained my memory."

Motivation

"I've always suffered for my body weight, so to be careful about diet and physical activity it is part of my daily routine.

I aware that I need to keep my memory trained because I often forget appointment or things to do …".

Advice

Sometimes I watch some TV programmes about healthy lifestyle, but I also follow some advices from my friends. I've always been followed by doctors for the diet. Now I meet a psychologist for training my memory, so I take a lot of advices from her.

Forgetfulness

I take part of a group to train my memory because I aware that I am starting to have trouble remembering things.

Technology

"I really like technologies and I always use Internet, laptop, social networks, smartphone. I also use a pedometer that monitors my progress and performances. I can see them through an app on my smartphone."

Participant 6

Situation

The man is 68. He lives with his wife. He worked as a sailor. He has not very flexible character (he said" if I have a point of view, I like to compare myself but I don't care what other people think"). After he retired he suffered a severe depression. The psychologist advised him to keep busy to cope with the depression. He is very religious, so he went to the Curia and he asked for the possibility to help them with their activities. Now every morning he goes to Curia office to take care of the missionaries and to carry out bureaucratic activities. He is quite methodical in his daily routine. Usually in the afternoon he looks after his grandchildren and he goes out with his wife. He likes to have very busy days but after dinner he does not like to go out. He just wants to sit on the sofa for watching films.

Two years ago he had a liver transplant. During the operation there were complications and for a few minutes his heart stopped. Fortunately, he was rescued, but after the operation he sometimes forgot things, probably caused by the complications he had during the operation. He is aware of his forgetfulness and he trains his memory attending ad hoc meetings with a psychologist.

Important themes

"I like to *eat healthy* and I only buy local products. I have my own olive grove and I use my oil to cook. Sometimes I give in to some occasional temptations, but the next day I keep on following my usual diet.

After my operation, I can't do *gym*. I could go for walks but I gets tired of physical.

I need to have a lot of *social relationships* to be happy. I need to discuss and to spend time with colleagues, friends, family, grandchildren. I wouldn't know how to live without social relations.

At the end of the day, I always write a *diary* with what happened during the day. In addition, I always write my appointments on the agenda.

I don't do crosswords and I don't read, but I attend some meetings with the psychologist to *train my memory*. My work in the Curia office also helps me to keep my memory active."

Motivation

"I need to lose some weight, so I follow a diet.

I know I have memory problems after the operation, so I'm working on this issue with a psychologist.

Social relationships make me feel good"

Advice

"I don't believe in the Internet and TV programs advices.

I follow instead my doctor's and nutritionist's advices."

Forgetfulness

"As I have already said, I am aware of the limits of my memory and I am taking care of this problem. For this purpose, I keep my memory in training even with my work in Curia "

Technology

"I like technology so I use smartphone and I have social networks. In the office of the Curia I work with the computer, internet and e-mail."Participant 7

Participant 7

Situation

The man is 69. He was an employee. He lives with his wife and his son. He is a very kind and friendly person. He's a very sporty and active man. He also gives particular attention to his physical and mental well-being. In particular, in the future he fears to lose his autonomy and to have cognitive impairments. For this reason, he follows a healthy lifestyle and he doesn't neglect mental training.

Important themes

I think that *training memory* is very important to conduct a healthy lifestyle. Since I retired, I have time to reading that is one of my passions. I also like to use internet to explore some interesting topics and news.

According to me keeping up *social relations* is essential. In my experience, I can say that looking after my grandchildren is such a way to socialize. For example, when I take my grandchildren to the park I chat with children, parents about themes that remind me when I had baby children.

I have always played *sports* to feel fit. Some years ago I used to run or cycle and actually I do some walks and work out in my house.

I be careful with the food I buy. I often look for local or biological foods. I believe that a *healthy eating* is very important to feel good.

Since I retired I finally feel free to not *schedule* my daily activities, but now it's my daughter who plans it for me, because I looking after my niece."

Motivation

"I strongly believe that if you have a healthy mind you also have a healthy body. In fact, I take great care of my psychological and physical well-being. In order to follow my philosophy, I am aware of my daily diet. Moreover, I also practise sports and I try to keep my mind always active.

I hope to be independent in the mobility and in the care of myself as long as possible."

Advice

"I get advice from internet and newspapers focused on the good practices for having a healthy lifestyle."

Forgetfulness

"I always need to make a shopping list so I don't forget what I should buy. In addition, I write in a paper diary the most important appointments to avoid the risk of forgetting them."

Technology

"I use laptop, Internet (to study some interesting themes), tablet and smartphone."

Participant 8

Situation

The woman is 84 years old. She worked as pastry chef. Her husband died four years ago and she lives alone, but she doesn't suffer from loneliness.

She walks with a walker and she has difficulty both walking around the house and getting out. She has got a close family. Her relatives take care of her, so they bring her groceries at home or they help her with the housework. Her daughters sometimes go out with her to meet her grandchildren and enjoy together. She still able to do the housework and cook but she is very lazy, so she prefers to ask her children to do it. By now she often forgets notes, purchase things, examinations. For this reason, her relatives usually call her to remind the things to do.

Important themes

"I think the most important thing is to do *physical activity* but I can' t do it anymore. I have become lazy and I don't go out very often because I have problems with my leg circulation and knee pain.

I usually eat in a balanced way because *eating well* makes me feel better. When I overindulge then the next meal I try to compensate.

I think it's very important to keep my *mind trained*. I do the crossword puzzles and I read to exercise my mind.

I always plan what to cook the next day and the housework to do. I never write down my *plans*, but I try to keep them in mind.

I always be happy when I am with my family (daughters, son, nephews…)."

Motivation

"I am very lazy, but I'm careful about having healthy food and doing memory training activities."

Advice

"I mainly ask my relatives (daughters, son and nephews) for advice about my well-being."

Forgetfulness

"Sometimes I forget what I have to do or what I have to buy. This is not a serious problem yet."

Technology

"I don't like the technologies in particular the social networks. I have only a mobile phone to call."

Participant 9

Person with MCI: 76 years old; MCI

Informal caregiver: nephew 40 years old

She lives alone

Situation

Rosa has been widow for 11 years. Since she has been on her own, she tends to spend the day at home; sometimes, she feels lonely and stays alone at home all day long, watching television. In general, in the early morning she cleans the house and walks to the store nearby to do her shopping. She likes cleaning the house and helping her grandchildren with the cleaning, the laundry and ironing. Her grandchildren try to encourage her to go out or buys her crosswords, but she finds them difficult to do. Sometimes they go out for a walk together to the beach. When her husband was alive, they played cards with friends and they also kept busy doing voluntary work. During the interview, sometime she tends to repeat the same things many times. She has few friends, in fact, some close friends have died or have family problems.

Important themes

The relationships with her family are very important. "I have an excellent relationship with my nephew and phones her twice a day to know how she is".

"I like to eat healthy, I have a small vegetable garden with some farmyard animals, so I know what I eat". "The physical activities are important, but I am lazy. Sometimes I go out for a walk with my nephew." She also used to go to the gym a few times a week but now she feels tired and doesn't go any more.

Motivation

"For me it is important to follow a healthy diet because as a young man I suffered from overweight. When I met my husband I started eating healthy and I'm still doing so. for me it's important to have a small vegetable garden so I know what I eat."

Advice

"I get information on what a healthy life style should be via the doctor or reading"

Forgetfulness

Several things have changed as compared to the past. She was an active woman, but now she feels tired and often she has continual lapses of memory, so she helps herself by writing the most important appointments on calendar.

Technology

She does not use a tablet or computer. She has a mobile phone and a TV. "I am not interested to learn the use of the technological devices".

Participant 10

Wife 76 years old; light MCI

Husband: 74

They living together, independent in an apartment

Situation

The woman lives with her husband. They are a very independent couple and still active. They like to go to the cinema, theatre and out for dinner every Saturday. They both like going to the seaside and once a year they organize a trip. She has hobbies such as reads many books, watches television in particular political programmes. She goes to the University of the Third Age where she attends painting classes and the gym. A year ago she started to forget what people asked her and some appointments. For this reasons, she bought herself a book of exercises to improve his memory and concentration.

Important themes

The physical activity is very important for her as well as doing cognitive exercises. "every day, I'm going for a walk for at least an hour and I read every day at least a few pages of a book." "I do not to use the agenda, but I try to remember appointments as much as possible." "I do not like to cook, so it is difficult to follow a healthy diet". She and her husband spent time working so they never managed to cultivate their friendships but for them it is not very important.

Motivation

I think having a clear mind is the most important thing to have. for this reasons I buy a several crossword or playing cards.

Advice

I like to use internet to explore some interesting topics and news. I usually read health journals to get information.

Forgetfulness

"sometimes I've forgotten about appointments, but I try not to write anything down, but to keep my mind trained and try to remember by myself as much as possible." Sometimes I do a shopping list when I go to the groceries"

Technology

She can use the smartphone and the computer very well, as well as the tablet and the social network. "I like very much the technology and I've used a course in the past to learn how to use a computer."

ANNEX 2 - USER RESEARCH - The Netherlands

In the following table the summary table with the interviews' participants profiles.

Participant 1	Clearly present MCI. Results are mainly focussed on the opinion of the partner.
Participant 2	MCI is not clearly present. Participant does fit the target group of 'frail seniors' that can use coaching services.
Participant 3	MCI is not clearly present despite the high age of the participant. Participant does fit the target group of 'frail seniors' that can use coaching services.
Participant 4	Clearly present MCI.
Participant 5	MCI not clearly present and is also denied by the participant. Participant does fit the target group of 'frail seniors' that can use coaching services.
Participant 6	MCI not clearly present and is also denied by the participant. Participant does fit the target group of 'frail seniors' that can use coaching services.
Participant 7	Clearly present MCI.
Participant 8	Clearly present MCI.
Participant 9	MCI not clearly present and is also denied by the participant. Participant does fit the target group of 'frail seniors' that can use coaching services.
Participant 10	MCI doesn't seem to be present. Difficult to get answers related to the research because the participant keeps getting off the subject to talk about unrelated topics.

Personalities

The 'bring value today' type
- We have today and we don't know what the future holds
- 'Having to' is out of the question, we only do things because they are important to us today
- We are not putting effort anymore in trying to achieve things we can't do anymore, they don't bring us positivity
- We focus on the positive, what we can still do, what can still bring value
- We want to contribute to society, bringing value to other people is important to us
- We like to be around people

Participants: 3) The day-by-day woman, 5) The 'no obligations' man

The 'vulnerable' type
- We want to spend the day meaningful and useful to prevent negative feelings

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- We want to spend as much time as possible on our hobbies to keep ourselves busy
- We have to 'keep going' in life
- If something doesn't go that well anymore, we feel sad and avoid it
- We are afraid to become lonely and already feel lonely sometimes
- We don't like to be told what to do be confronted with what we can't do
- We are dependent on the company and help of our family

Participants: 7) The confused woman, 8) The out-of-home woman

The 'open minded' type

- We have many interests and activities
- We like to experience and try new things
- We observe what happens around us and like to think and discuss about this
- We like to spend our time creating things, such as tinkering, crafting or drawing
- We are open to the open to the opinion of others and make well-thought decisions based on these, sometimes leading to the middle way (we don't need evidence, just our own reflection)

Participants: 1) The active couple, 4) the overwhelmed man

The 'striving' type

- If something doesn't go that well anymore, we train until we can do it again
- We are 'go-getters', a setback motivates us to put extra effort in achieving something
- We don't want to show that we are suffering or can't do something, we will fix it ourselves
- We like to be surrounded by our family and don't want to be a burden for them
- We want to be independent, we don't like needing help with daily activities
- We want to enjoy life and don't want to restrict ourselves too much

Participants: 2) The lonely woman, 9) The recovery man

The 'curious' type

- We are open to advice and opinions of others
- We are intrinsically motivated to work on our health, we are self-disciplined
- We want to absorb information and knowledge, for example by reading or discussing with people who know what they are talking about
- We want to know what options are out there to help us, what really works, and how and why this works
- We are uncertain about what we know about health and the advice we hear/read, we want to see evidence of certain health benefits
- We want to meet others with similar interests to discuss with

Participants: 6) The insecure woman, 10) The opinionated man Participant 1 – The active couple

Situation

Although the husband was the one with MCI, the wife was answering most of the questions. The husband was very silent and seemed to miss what was being discussed several times. Sometimes the wife repeated the main point of the question to him so he could give his opinion. Both were very active and had many hobbies. They cycle together, swim together when on holiday, the husband does fitness several times a week. They cook together for the elderly in the nearby residential care centre. The husband likes to paint and draw with many colours, he proudly showed some of his work.

Activities

- Drawing and broidering (wife)
- Taking bus trips (together)
- Fitness (husband 3x a week)
- Colouring and painting, when it is not going great (husband)
- Cycling (together)
- Voluntarily cooking and serving meals in the residential care centre (together)
- Swimming (together when on holiday)

Difficulties

- Getting elderly illnesses/constraints
- Needing a lot of medicine
- Having to ask the doctor permission to go on a holiday

Grateful for…

- Being together
- Being able to cycle
- Being able to cook/eat independently
- Being able to do everything we want to do (going on a holiday)
- Having good contact with children

Important themes

Social contact

"We want to stay fit and enjoy the time with the people around us, that is very important to us". "The contact with our children is good, many other people are not that lucky". "If you lose social contacts, you will get lonely".

Nutrition

"We pay attention to what we eat and stopped snacking a while ago, as older people we also eat less. When you get older you start to mind your vitamins more." "We eat fruit and vegetables, with something 'to drink' of course".

Physical activity

"When you get older physical movement becomes very important. You have to keep walking. If you don't move you become as stiff as a poker".

Planning

"When you have so many activities, you have to start planning. I have written in my agenda for example that I have to work there next month, to cook".

"The pictures (of the interview method) are very helpful, then you can clearly express what you mean".

Motivation

- "We want to stay fit and live as long as possible. Last week I saw a woman of 104 years old on the television and she was still fit, also mentally. The mental health is the most important, if you start to forget everything and think 'why do I actually get up in the morning?', then it is enough for me".
- "We really want our brains to keep working properly".
- "We want to feel healthy right now".

(Fear of dementia, positive example of a healthy older adult)

Advice

- "We know what is healthy for us, we can think for ourselves on this theme. We don't need advice".
- "We use so many medicines, it seems to be needed according to the doctor…".
- "We asked the doctor for permission to go on a holiday, because we don't want to end up in a hospital there (abroad)".
- "We often see programs on the television, they remind us of what to pay attention to".
- "One day you can't eat this, the other day you can't eat that. You don't know what is right. So you just eat what you like, and if it is not right, so be it".
- "If people tell me that I can't have something that I like, I will still buy it. I really don't like people to tell me what to do".
- "If a device were to give me advice, it shouldn't push me like 'you have to', but if it says 'it is great weather, let's walk outside, it is okay".

Forgetfulness

- "My agenda and calendar are written full with appointments, otherwise we plan different activities at the same date. If we forget something, then so be it".
- "We have the calendar, but notes everywhere? No, we don't need that".
- "Sometimes we forget the names of the people we cook for, because there are so many".

Technology

- "You need to have a smartphone, but sometimes I really don't know what to do with it. Sometimes I am in the supermarket and I realize I don't have my phone with me. On vacation it is important though, that people can call you there".
- "I can WhatsApp and transfer money, that is already a lot if you ask me".
- "We don't have a computer. It is frustrating that everything has to be done with a computer these days".

Participant 2 – The lonely woman

Situation

The mother had some mobility impairments and had a walker, therefore the daughter opened the door. The mother had fallen recently and was in pain, therefore she sometimes interrupted her sentences. During the interview her pain medication was delivered at her door. Since the loss of her husband several years ago, she has felt lonely. She is struggling to find activities that she likes to do alone. After her fall incident, she asked her daughter to take care of her a few days per week, she didn't feel like she could do it on her own. The MCI was not noticeable in the conversation.

Activities

- Knitting, crocheting and making cards (sometimes in clubs)
- Card games on the laptop
- Doing puzzles

Difficulties

- Feeling lonely since loss of husband
- Physical impairments, needing a walker
- Pain from injuries

Grateful for…
- Being able to stay alive with medicine
- Having fun with family, getting help from family
- Being able to walk, use my hands and eyes

Important themes

Social contact

"I can't cope very well with being alone. I have felt lonely since my husband passed away". "I like to have fun with my family".

Nutrition

"I don't eat that much anymore, but I do eat fresh fruit and vegetables every day".

Physical activity

"I used to walk and cycle a lot with my husband. But at the moment it is physically not possible for me (due to injuries)".

Planning

"The clock, I watch it the entire day, what time it is. What will I do next. When I am ready, what will I do after that?"

Motivation
- "I am very afraid to get dementia. You hear a lot about it and you see it on television. Then you hope that it will not happen to you".
- "I want to keep living independently as long as possible".
- "I do things because I know they are good for me".
- "I want to do things that are fun, not with a specific goal in mind".
- "If I can't do something anymore, for example walking due to an injury, I practice every day until I can do it again. The grandchildren call me the go-getter".
- "I have to keep being able to walk, because I don't cycle anymore and I have never driven a car. So it is necessary, when I have to go somewhere".

Advice
- "I don't need any advice on food, I know what is in everything".
- "I share advice with the women in my hobby clubs. The one does it like this, the other like that, then I try it in another way".

Forgetfulness

"Sometimes I am crafting, then I walk to my cabinet to get something, but when I have opened the cabinet I am thinking: what was I getting?"

Technology

"Sometimes I play card games on my laptop, because you can do that alone, right? I learned using the laptop from my granddaughters. I tried to write all the instructions down and remember it. I also watch videos about making crochet pieces while I am crocheting, then I have to pause it many times because it goes to fast to follow. I also use email and the private chat of Facebook".

Participant 3 – The day-by-day woman

Situation

The mother in law had a walker but this didn't prevent her from leaving her apartment. She said that she was almost never sitting in her apartment, but that she was among the other elderly in the bar located downstairs in the residential care centre. The woman seemed clear-minded, it was easy to have a conversation with her, she was very talkative. She had given a personal touch to her apartment by placing framed photos of her loved ones everywhere around her. Her daughter in law was her informal caregiver, but because she recently got ill she can't be there that often anymore. Due to her age, the woman was not focused on the future anymore but was living day by day. "I do things because they make others or me happy today".

Activities

- Gymnastics
- Visiting the city (on mobility scooter)
- Playing jass (klaverjassen, cardgame) in a club
- Fitness (cycling)
- Drinking coffee, making puzzles and reading the newspaper in the restaurant downstairs
- Chatting with the other residents in the restaurant downstairs
- Taking walks with friends
- Driving with my mobility scooter along the water

Difficulties

- Balance disorder
- Not being able to do things myself (the household)
- Having to eat the tasteless cooked food that reminds me of the war
- Worrying about my daughter in law (informal caregiver) who is ill
- Being dependent of the help of others "I don't want my family to help me too much, they have their own lives"

Grateful for…

- Having good contact with my children, grandchildren and great grandchildren
- The opportunity to live in the residential care centre with help in the household
- Having a beautiful house with a nice view (on the river and the city)
- Still being able to walk independently

Important themes

Social contact

"I have good friends around me. Sometimes we go for a walk together. Before she passed away, I had a friend that would always ask me to do Rummikub together".

"I don't understand the people in the residential care centre that always stay alone in their room. What are they doing in there, all alone? Downstairs in the restaurant you can chat with people".

Physical activity

"I can't walk that well, but sometimes I take a short walk in the neighbourhood, because you have to keep moving. That is also why I cycle sometimes. Otherwise you become as stiff as a poker".

"I don't want to go on bus trips with a wheelchair, I want to move myself".

"If I will end up in a wheelchair, I will drive it straight into the Maas (river in the Netherlands), I really don't want that".

Nutrition

"I don't cook myself anymore, because I am used to cook on gas, not electric. The food they make in the residential care centre is very hygienic, but they don't finish it. They don't add taste".

"Food should be fresh. I still remember the war, when we got cooked food, I get that again now. I think that's really bad. I am furious about the bad food we get, sometimes we even get leftovers from the day before".

"I like good food. When doing groceries I don't pay too much attention to what is healthy. I became 90 years old without all that fuss. […] In my time people didn't really mind what they ate (whether it was healthy), we ate a sandwich with sugar".

"The experience of eating was very different in her generation, they don't like mixing a lot of vegetables together and they are only used to 'al dente' cooked food, they don't like anything else" (daughter in law).

Cognitive exercise

"I really like to watch "1 tegen 100" on television, and I participate. Sometimes my answers are wrong, but I am also right quite some times, even if the person on the show answered incorrect. If there is anything to do in which I have to think, I participate".

"I also participate in "List", in which I have to fill out questionnaires about certain themes, for example politics. I have to read a lot and it takes me a long time, but I don't mind".

Planning (not important, but interesting quotes)

"Planning is not important for me. I will see what tomorrow will bring, everything will be alright. When you plan something, it can turn out very different in the end" (woman). "If anything has to be planned, I will do that for my mother in law. Her generation is not good in planning. In her time the women did just do the chores at home, they didn't plan like we do now" (daughter in law).

Motivation

- "I am always willing to help someone else".
- "I do things because I like to do them. I don't want to have to do this or that, I am allowed to do everything".
- "I don't think about the future, what future do I still have at my age? I seize every day and that is the way I like it".
- "The final years that I am here, I only want to do fun things. When I hear things I don't like, I will turn my back on it".

Advice

"If you talk to ten people, they all have a different opinion about what healthy food is, so I don't want to whine about that".

"Sometimes you ask people how they are doing, and they start an entire story about being ill. Then I tell them to stop, because I don't want to hear it. Everyone has their own baggage".

Forgetfulness

- "I can't finish all the puzzles anymore like before. This makes me realize that my brain is deteriorating. I remember that I knew things for sure before, but now I don't know them for sure anymore".
- "Sometimes my daughter in law tells me things, and when she talks about that again I don't remember that she told me that before".
- "I have to write everything down, my groceries list for example. And then I go to the store, and I don't have the note with me…".

- "Deterioration in health goes with small steps, it goes so slow that you don't notice it. But I can still play jass, so I am alright".

Technology

- "It is important for me to communicate with people by means of my phone".
- "I can play games on my phone, and when I am doing a puzzle from the newspaper I search for solutions on the computer".
- "I can't text with my phone".
- "I can open and read messages on Facebook, but I don't add messages myself. At a certain age that becomes a risk. Before you know it, they have your bank account number".
- "When my mother in law would be 10 years younger, she would probably have a tablet and order groceries online, but here generation is just used to different things" (daughter in law).

Participant 4 – The overwhelmed man

Situation

The couple lives in a house with multiple floors and a garden. Both are still in a good physical state, but the husband has MCI (no diagnosis). During the conversation the man seemed very clear-minded. He sometimes couldn't remember a name or a word, but remembered these later on. However, the situations that he explained he had been in clearly showed signs of MCI. He for example told that when driving a car, he would confuse this with riding a bike and would drive onto the cycling lane. He wasn't as worried about this as his wife was. She forbid him to drive alone, while he was sure no one would get hurt. The husband had a strong opinion about technology and how they are forced to use it and pay expensive bills for it. He wants to be happily together with his wife, live in their house and do the things they love as long as possible.

This participant agreed to test the Probe Tools camera. Seven questions were programmed in this camera. The participant was asked to take photos that formed answers to these questions. The results as shown below are not very reliable, since many faulty photos were taken and often multiple photos were taken to answer the same question. However, it does give an indication of the participant's daily environment.

Activities

- Spanish class
- Male choir
- Darts
- Working in the garden
- Photography
- Working at the archive
- Gymnastics
- Painting

Difficulties

- Illnesses for which you need medication
- Forgetfulness (short-term memory)
- Incontinence at night

Grateful for…

- Being happily together every day
- Living at home independently
- Not having any debts

Important themes

Nutrition

- "I pay attention to which butter I use when cooking or preparing sandwiches" (wife).
- "We eat enough vegetables and pay attention to our weight" (wife).
- "We pay attention to the expiration date in the supermarket" (wife).

Physical activity

- Wife: "it is important, but he doesn't do it. The word 'walking' is not part of his dictionary". Husband: "I just don't get to it, but I find it important".
- "We have gymnastics once a week, he comes with me recently, that is really to be physically active" (wife).
- "If you don't go outside anymore and just keep sitting, then your brain won't work and you are not motivated to do anything anymore" (wife).

Planning

- Husband: "I have to be everywhere in time, how much time will it take to get to the choir by bike? Or to walk? I plan everything in my head". Wife: "no, we write everything down".

Social contact

- "Social contact is fun, that you can talk with each other. That you are informed about all the facts worth knowing, sport and politics".
- "When going to gymnastics you see other people and get in contact with people".
- "I like all the things we do, to expand our network of friends, it keeps you busy".

Cognitive exercise

- "I get Spanish classes from the professional caregiver. It is a lot of fun and also good for your memory. We did Rummikub (meaning Scrabble) in Spanish".

Motivation

- "And that can be good for other people as well, right?" (Helping others)
- "For the memory it is important to keep doing things, it puts your brain to work" (wife).
- "I do puzzles because it is fun and it helps you get through time".
- "Stay healthy, be among the people. Otherwise you become a vegetable (kasplantje)".
- "Brain development, we are working on that of course (Spanish Scrabble)".
- "Being happy together".

Advice

- "I saw something about his medicine on television yesterday, that it is not at all beneficial to use them and that the doctor has a connection with the pharmacist to make profit out of it. The people didn't have any benefit from it. Then I looked at his medicine, exactly the same. So I said, maybe it is better to cut the medicine in half. The cardiologist says that he can't suddenly stop taking the medicine, but if you then see on television that is has so many drawbacks… Luckily we can break it in two pieces, it has a line in the middle…" (wife).
- "We choose the happy medium (de gulden middenweg)" (wife).
- "People give me advice about which type of tea to drink for my health. Well, if that helps and I can change something with it, then I will do it".
- Husband: "cranberries are very healthy for your bladder and kidneys". Wife: "but maybe you will find out later that you have been fooled for years. Because, he also says so, it is one big money matter".
- "We didn't follow a medical education, so then a whole bunch of Latin comes at you, I don't understand a thing of it. The doctor sometimes doesn't notice that he uses difficult words, that we

think: what is he talking about? Well, we just let him talk. And maybe it is something important, that you should actually know at that moment".

Forgetfulness

- "It is very difficult for me, because he forgets things sometimes, then he wears the keys around his neck, but he still puts the entire cord somewhere, then I also don't know where it is" (wife).
- Husband: "I know the traffic rules, but they changed the roads here. It is impossible if you don't think very carefully before you get to the crossroad. For a few years already I have been driving through the village with the bike. And then at some moment I have to take the car. What happens? I drive onto the bicycle path". Wife: "if I hadn't been there, you would have caused an accident. You will not take the care on your own again. We won't do it".
- "Maybe worse things will happen... I don't know...".
- "I like to get advice. A woman from the church told me to use egg shells against the snails in the garden. We hear it here and there, and then we try it" (wife).
- Husband: "notes, yes I find them very important. But you know what the drawback is? I forget where I put the notes...". Wife: "we have a notebook in which we write all the important things". Husband: "sometimes I forget in which notebook it was written down, was it this one or that one?".

Technology

- "He knows how to use the new printer, we installed it together with our daughter in law. I am very impressed with him" (wife).
- "It is a consumer society (wegwerpmaatschappij) these days" (wife).
- "We have technology because it is necessary".
- At the choir people use their phones during the singing. "I find it very disturbing".
- "I send emails for the choir, I make photos and copy files for Spanish class. Then I can make the spaces larger and use different colours for the translations. I get emails from the pharmacy".
- "You are more and more forced to move towards that digital world".
- "Take anti-virus software for example, I installed I don't know how many different ones, and there isn't one that works 100%. My email address has been stolen twice already. It costs a lot of money and time".

Participant 5 – The 'no-obligations' man

Situation

The couple lives in an apartment that is part of the residential care centre of Careyn. The man has had an accident with poisonous gas a few years ago, which caused brain damage. Due to the accident he became forgetful and this is getting worse over time. He doesn't see a bright future for himself 'how much future do I still have, I don't know...'. Upon recommendation of the professional caregiver he has tried several methods and activities to improve his health. However, he didn't feel like it helped him, it would only consume a lot of energy. Therefore he has told the caregiver not to offer these suggestions anymore. He doesn't want to have any obligations anymore, just live his life in a way he can enjoy it, as long as it lasts.

Activities

- Making puzzles
- Cooking for elderly in the residential care centre
- Watching television
- Reading
- Voluntary work, delivering gift cards to elderly on their birthdays, 'avondvierdaagse' (walking event)

Difficulties

- Experiencing serious impairments in daily activities
- Not being able to concentrate or remember new information
- My worsening condition, not knowing if I still have a future
- Coping with interventions that don't work
- Not being able to sport or learn due to impairments

Grateful for…

- Being able to drive the car
- Being able to go on holidays together
- Having good contacts in the flat
- Being able to do the things I like

Important themes

Social contact

- "He has contacts in the flat, that is very important" (wife).
- "He likes to cook for the residents of the two flats here. He made soup with Easter and we had a brunch. He really enjoys doing that" (wife).
- "Having contacts and providing food for the people is very important to him" (wife).
- "Being among the people is important, having a chat together" (wife).
- "Contact with the neighbours is the only thing that I enjoy. Even if I feel sick for two days afterwards".
- "With the avondvierdaagse he is gone for 4 evenings, doing all kinds of activities. […] He walks through the village and sees all kinds of people. They all greet him, he really enjoys that" (wife).

Cognitive exercise

- "I like to do puzzles, but I hate playing games. I can't cope with losing. Puzzling keeps the grey cells awake".
- He wants to train his memory but on his own initiative and at his own pace.

Motivation

- "I would like to contribute to society, help other people".
- "Puzzling gives him some rest. Just doing our own things for a while" (wife).
- "It keeps the grey cells awake (training memory)".

Advice

- "They tried to train his memory, but it made him crazy. He got homework and when he got home he didn't remember it. They said 'you have to do this and that', but he said he couldn't remember it. They said he had to train that, but he said he couldn't. Then I said 'sorry, but this won't work" (wife).
- "The GP assistant (praktijkondersteuner) comes every three months to give us advice. But they go a bit too far, they want to cure you while that is impossible" (wife).
- "When people tell me that I have to do something, I tell them I don't have to do anything. Maybe I am stubborn".
- "We don't like people who pretend to know everything better. You feel your own body the best, you don't need anyone else for that".
- "It should be fun and worth the effort".

Forgetfulness

- "It is difficult to remember pin codes, especially new ones, and passwords as well".
- "When I am watching television and the commercials are over, I sometimes forget what I was watching. I find that pretty annoying".
- "I always have to read the same sentence 10 times and then I think, what am I doing?".

- "We both have an agenda and he writes a lot in his. He finds it important to keep track of what he needs to do. […] He learned that from a care organization, to take notes of important information. He lives his life like that now" (wife).
- "He really likes al the memory notes, they are important to him" (wife).
- "When talking on the phone I don't remember what I was talking about after a silence. I is easier to communicate face to face".

Technology

- "Computers don't interest him. When he plays a game on the laptop and he doesn't know how it works, he gets all 'stupid thing this and that'. When I explain it to him then he is like 'oh right, that was it!'" (wife).
- "He has my old phone, so that he can call me. I want him to be reachable when something happens" (wife).
- "He reads the newspaper on his phone"(wife).

Participant 6 – The insecure woman

Situation

The woman was very interested in the project and wanted to know everything about the tools that we are going to develop. Can it help her? She wants to know what other tools are out there to help her. She reads many books (despite a strong visual impairment) about health and thinks about it a lot. Even though she says she has no memory problems, she has a strong fear of getting dementia. She is highly motivated to work on her health, but she is insecure about whether she uses the right methods. Every time she makes a statement, she asks for confirmation. When she is answering questions or arranging the pictures, she keeps asking 'is this okay?', 'is this how you wanted it?'. The woman lives alone, her daughter lives abroad, but she says that she doesn't always desire company. However, she does ask about getting in contact with fellow sufferers of visual impairment, she moved to Rozenburg to live closer to her sister and she was interested in a robot cat. It seems like she doesn't always say what she really means.

"How do I stay as healthy as possible at my age, physically and mentally? I am trying my best for this. But you can't control everything".

Activities

- Reading books and articles (less with visual impairment)
- Taking walks in nature, the parc
- Yoga and Tai Chi
- Crossword puzzles, the more difficult the better

Difficulties

- Fear of becoming dependent of others
- Fear of getting dementia
- Visual impairment
- Daughter who lives far away

Grateful for…

- Still being independent
- Being able to move and think clearly

Important themes

Physical movement

- "I am an active person. I find physical movement very important. I don't want to think about not being able to move anymore and having to sit in my chair. No, movement is really number one for me".
- "Balance is important when you get older. I do yoga twice a week and Tai Chi once a week".
- "I read an article lately that physical movement is good for your brain".

Nutrition

- "I try to eat as healthy as possible, I am really trying hard for that".
- "I just ordered a book from the library; 'Eat yourself healthy'. It is about beginning Alzheimer. It says that good food can help you. I still have to read it".

Cognitive exercise

- "I do a lot of crossword puzzles, the more difficult the better, to get your brains working".
- "It is a pity that the line dance classes for seniors have stopped here. Because you have to remember a lot. I think it is very good for elderly. Also when you start to forget things, because you really have to remember 'where do I have to go now?'".
- "It might sound weird, but I never take the same route to the supermarket. Maybe this helps to train your memory, I don't know".

Social contact (not too much

- "In the yoga classes you are together, meeting people".
- "I like company, but not too much. I'm not someone who wants people around every day".
- "I think family becomes more important in the future".
- "I moved to Rozenburg because my sister lives here".

Motivation

- "I have come to an age at which I thought 'that might happen to me too' (dementia). So it is always good to be prepared upfront and know about the possibilities (support tools)".
- Preventing undesired situations, such as forgetfulness/dementia and not being able to move
- Social contact with others (for example with yoga classes)
- "Physical activity, training my brain and nutrition have become more important when I got older".
- Advice from articles and the general practitioner

Advice

- From reading articles and books from the library about health
- "Tai Chi is good for your balance. According to the general practitioner it is very good".

Forgetfulness

- Doesn't seem to be the case yet according to the participant

Technology

- "I find communication important. My daughter gave me a tablet. The only thing I can do with it is emailing. Because the woman from Careyn explained me how to do that".
- "My daughter lives in Switzerland and I have only one daughter left. So, communication is important".
- "I don't have internet. When I need to send an email to my daughter, I bring my tablet to Careyn. The woman here helps me".
- "Technology goes way too fast".
- "I have a normal mobile phone, I can text, call and be called. I also have a small camera".
- "Technology is frustrating because I can't see it very well".

Participant 7 – The confused woman

Situation

I had to call the woman several times to find a date that suited her. She had many activities planned of which she didn't know how long they would take. She also had to call back and forth with her son, as she didn't know his schedule. Eventually I arranged an interview by talking to her son. He informed me that his mother would depend on him in the interview, because she wouldn't know what to answer. Therefore he remained as silent as possible. It turned out that she thought she had to go to the hospital that day, but that she had written the appointment at the wrong date in her agenda, therefore she went one day too early. When I asked open questions, the woman had difficulties answering. She forgot what was asked or didn't understand and gave an answer that didn't match the question. Her memory problems didn't bother her that much, but she did notice that others around her were bothered by it.

Activities

- Cycling and rowing in the gym
- Walking with the walker
- Playing card games with others
- Making puzzles and playing games
- Reading the newspaper and books
- Drinking coffee and chatting with other elderly

Difficulties

- Trying to obtain a residence at Careyn
- Having some elderly impairments (difficulties with eating and balance)
- Losing my memory a bit
- Fear of not being able to do what I love due to impairments (visual ability, holding a pencil)
- Fear of becoming dependent (not being able to move, dress or shower)
- Fear of falling (too scared to drive a mobility scooter)

Grateful for…

- Still being here
- Not suffering from anything serious
- Being able to use my legs

Important themes

Nutrition

- "Of course food is important. But I am not very handy with it".
- "I am a bad cook for myself. I know I have to eat more, because I become too thin. Therefore it is important".

Cognitive exercise

- "That is for your memory (puzzling). To dig into your memory. I do that a lot".

Physical movement

- "Otherwise you are going to sit, no that is not good. I just need it, physical movement. […] To be able to use your legs as long as possible".
- "I always liked cycling and now I cycle at the gym for 20 minutes".
- "I walk half an hour to the gym. And when possible I walk to his house every Wednesday (house of son)".

Social contact

- "Contact with other people. You sit with others, you talk as much as you play the card game".

- "I sit with people that sit alone, then I chat with them".
- "I eat with them (residential care centre Careyn) at the table, so that you don't have to eat by yourself. […] I sit alone, that is terribly uncomfortable".
- "That you have to seek contact with others, if that would disappear, that would be bad for me".

Planning

- "You work with the clock in mind. I get picked up by a small bus and then I have to be ready in time".
- "You know that you will be picked up at 10:30 or 10:00 to drink coffee here with the people and then you stay until 12:30, then you get food. I am very happy when I am brought back home at 12:30, 13:00. No, not 12:30… 13:30, 14:00 I meant".

Motivation

- "I am still here. The one day comes after the other. I don't think about it much".
- Doing something because it is essential/necessary. "Getting up, that is because you have to". "You die if you don't eat".
- "To function as long as possible in society".
- "You can't know it upfront, how you will be. I think that you will continue with your life, live it like you live it now".
- "If there are cooking programs on television, I don't know how quick I should turn it off. I can't do it and I will never learn it".
- "What catches my eye, is that you placed this one (picture of balance) all the way here (at unimportant). You got rid of it right away. You fall regularly right? But you don't have the drive to become more stable. Because it is quite a burden for you, to fall regularly" *(son). The mother says this has more to do with her mind and her fear of falling.*

Advice

- Advice from family (son) to eat more
- Screening of eating behaviour by professional caregiver

Forgetfulness

- "I had to be in the hospital yesterday, but I thought it was today. I had written it in my agenda at the wrong date. This is how I am faced with the facts (memory)".
- "The stupid yellow notes. I place them everywhere and then he (son) says: 'write it on a decent piece of paper'. But you have to write things down".
- "I have the note block next to me, so I write everything down. I really have it as reminder. I leave the notes on the block. Otherwise I lose the notes again (when sticking it on an object)".
- "My son notices my forgetfulness more than I do. He makes me realize it".

Technology

- "Phone calling, I am not very handy with that".
- "Receiving announcements. This morning he (son) asked me in which department I was (via phone), that is convenient. You need it".
- "I can email with my daughter but that's it. I never learn it. He (son) does my finances, that is convenient".
- "Iphone, what is that?". "She has one" *(son).*
- "We are practicing with sending a WhatsApp" *(son).* "For me it is a matter of remembering which buttons to use".

Participant 8 – The out-of-home woman

Situation

The woman had a fixed place where she sits inside her home; the chair near the window. All of the stuff she needs during the day were placed in baskets around her seat. She had many decorative objects in her living room. However, the woman is not home very often. She keeps herself busy with hobbies and being among the people. When trying to make an appointment with her she was never at home to pick up the phone. She often goes to the residential care centre to meet with other elderly and really enjoys going on trips with these people that she calls her friends. When the centre is closed and her son and daughter don't visit, she feels lonely. She doesn't like to make appointments with her 'friends' on own initiative outside of the centre. The woman lost her husband a few years ago and also her son has passed away. Her other son is now chronically ill as well. She is already preparing to move to the residential care centre, because she doesn't want to live at home when her children can't be there for her anymore. The MCI of the woman is obviously present. When asked about the bus trip that she went on a few days ago, she doesn't remember where they went nor what they did. She does remember she had a lot of fun though. And when talking about the fun, she unconsciously mentions some details about the trip.

Activities
- Drinking coffee with seniors
- Joining activities organized by the retirement home
- Crocheting
- Puzzling
- Playing games on a computer (stacking stones)
- Watching quizzes on television
- Reading the Bible

Difficulties
- Feeling alone, especially during holidays
  (when the retirement home is closed and her son is away)
- Worrying about her terminally ill child
- Missing her husband and child that passed away
- Vulnerable, not wanting to be a burden ("My son says I should call him when I need something, but of course I don't do it", "If I don't join the seniors club they call me to ask where I am. So I guess it is not like they hate me", "You can cut a lot out of this interview, it isn't a good conversation, I'm just talking".)
- Physical impairments

Grateful for…
- Being able to care for herself
- Having a son that visits sometimes
- Having a daughter that calls her and tells her she loves her

Important themes

Social contact

"My son says I am better off in a retirement home, because if something happens to him (he is ill), I will be alone. I still have a daughter, but she is too busy to visit. I would like to keep living at home, but if I will become completely alone, I don't want to stay".

"We had a day out with the seniors, it was a lot of fun".

"I eat at the retirement home twice a week, when something is organized there, I will join".

"Sometimes I call my friend to grab something to eat in the city nearby".

Cognitive exercise

"If I have to pick one theme as the most important one, then it is puzzling. If I go to the seniors club then those women leave at 12 and we won't eat before half past 12. So then I grab a puzzle book, or I read the newspaper if there is one. But I have to do something".

Motivation

"I don't feel like cooking anymore, because then you eat alone with your plate on your lap in front of the television. Sometimes I set myself to it anyway".

"I have to keep myself busy, to keep my head ordered. I don't want to do nothing".

"I don't want to think about not being able to do something anymore. If I can't care for myself anymore. I hope that the sweet Lord will come to get me when that happens".

"If I don't want to do something, then I don't want it. That's how it works".

Advice

"My daughter in law works at the residential care centre. She says: mom, you could hire a less expensive maid. Then I say: oh really? Why? Because then you don't have to pay that much. Well, that is too bad, because the maid will stay with me. I would rather pay her myself. Bye. And then they say to each other: mom, you won't listen to us. No, I am free to do something myself".

"I need the nurse to help me with my bad arm, to wash my back for example. But other than that I am fine. I really don't need anyone else".

"A friend bought me a bent thing that should help me to wash my back. I said, how should this help me? And she said, well, just try it first. So I will try it once".

"Last time I visited the doctor, he said to me: would you mind a bit what you eat and drink? He said that exactly the wrong way to me. So I turn around and say: please… I am 84, do I still…? I have done that my entire life already. I am not planning on doing that anymore".

Forgetfulness

"I had to withdraw money yesterday and I completely panicked. Then I get nowhere".

"I don't remember what we did on the day out… We went to Zeeland (province in The Netherlands), but don't ask me where else we went, I don't remember. We had a lot of fun, we laughed a lot".

"I have to write things down, otherwise I forget them".

"The separate notes are everywhere, that really isn't good".

Technology

"I play games at the computer (game device) of my daughter".

"I have learned for years to work with a computer at work, but if you would ask me now, I wouldn't remember it".

"I had a smartphone, but I gave it to my daughter because it was too difficult and then I don't use it".

"I like to watch those games (quizzes) on television, I often participate. Most of the times I don't know the answer, but if I have three answers correct I feel like a big girl […] I don't watch everything, then I just turn it off, because I get bored. But about politics, I listen to everything. I always watch Pauw (Dutch topicality talkshow)".

Participant 9 – The opinionated man

Situation

Although this man retired not that long ago, he was still involved in the business. He was late for our appointment and when I called him he explained that he still had to do business with a foreign partner. Therefore we had to plan a new moment for the interview. The man was very talkative and had a strong and quite negative opinion about different aspects of society. Therefore he kept digressing from the interview topic and hardly answered any of the questions. This man did not show any signs of MCI. When asked about

forgetfulness he would only mention the need for a shopping list when doing groceries. The man feels like everything is going well in his life. He doesn't have anything to worry about and still feels healthy.

Important themes

Healthy food is most important for this man. Sometimes he reads something about the benefits of certain types of food. For example he knows that ginger tea is healthy and therefore he drinks it a lot. He also tries to eat fresh vegetables and herbs. He mentioned that chili pepper is very good for the skin and that it has more vitamin C than oranges. In his opinion it is better to consume these natural vitamin sources then to take drugs that have similar effects.

Motivation

A while ago the man ate a lot, too much according to himself. His meals also were not fresh. He did not gain weight but he felt that it was too much. His stool became bad and he felt in his body that something had to change. Therefore he started to pay more attention to how much and what he ate.

Advice

The man doesn't get advice from a specific person or source. He sometimes reads an advice on what is healthy somewhere and then he tries it out. Although he doesn't really enjoy reading and calls himself 'not that well-schooled'. So he gets advice when he casually comes across something interesting.

Forgetfulness

Forgetfulness is not really present in the life of the man. When asked about it he talks about 'being programmed' in certain habits. For example how you arrange your kitchen cabinets or clothes. When you change something in this arrangement, you get confused when reaching for an object that is in a different place than you expected. He also mentioned the need for a shopping list when doing groceries. These are not really signs of MCI.

Technology

The man is relatively young and quite good with technology. He has a smartphone with WhatsApp and a computer at home. However, he doesn't use these devices very often. He prefers to be outside in nature and look at the birds. He has travelled a lot in the past but now has the feeling he has already seen everything. He prefers to buy the things he needs in an actual store instead of ordering it online. He doesn't agree with people who order drugs off the internet because it is cheaper than at the pharmacy. He thinks it is unreliable and dangerous. It annoys him to see the youth using smartphones too much when he uses the public transport. The digitalization of society doesn't bring much good. The youth doesn't learn how to develop itself anymore, they don't learn how to write in school anymore, they all have a scribbled handwriting. He is also negative about social media. 'If you have 200 friends on the internet, who of those is going to help you when you really need something?'.