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Target Group Definition

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Project Number	690211	**Acronym**	CAREGIVERSPRO-MMD
Full title	Self-management interventions and mutual assistance community services, helping patients with dementia and caregivers connect with others for evaluation, support and inspiration to improve the care experience		
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Executive summary:

CAREGIVERSPRO-MMD is a tool integrating a broader diagnostic approach, incorporating the "live-in family" caregiver - people with mild cognitive impairment or mild to moderate dementia" dyad and considering this dyad as the unit of care.

This document describes the target groups for the pilot study: we will pilot the optimised application with 600 dyads to evaluate the clinical and social benefits for PLWD and caregivers, as well as financial benefits for the healthcare system.

This deliverable will also elaborate the strategy of identification/definition of the target groups, the channel to map and engage them, the scenario definition up to the customer profiling.

List of Acronyms

Acronym	Title
C-MMD	CAREGIVERSPRO-MMD platform
GP	General Practitioner
PLWD	People living with Mild Cognitive Impairment and with Mild to Moderate Neurocognitive Disorders.
MCI	Mild Cognitive Impairment
DSM	Diagnostic and Statistical Manual of Mental Disorders
ICT	Information and Communication Technology
CDR	Clinical Dementia Rating
MMSE	Mini Mental State Examination

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1 INTRODUCTION

As with most chronic diseases, a collaborative partnership among PLWD, caregiver (formal and/or informal), health professionals (clinicians (GPs and specialists), nurses, psychologists, pharmacists, etc.) and social professionals (social workers) is needed in order to achieve the highest quality and efficacy in assessment, treatment and support. CAREGIVERSPRO-MMD (C-MMD) platform is a new device in Information and Communication Technology (ICT) developed for the support and assistance of dyads of patients living with neurocognitive disorders and their caregivers.

The C-MMD platform provides support for interactions between the following platform users.

Table 1 : *C-MMD Users description*

Users	Description
PLWD	People living with Mild Cognitive Impairment and with Mild to Moderate Neurocognitive Disorders.
Caregivers	People providing support and assistance to the PLWD, with or without a professional and formal background (e.g. informal or formal caregiver). Those are family members, neighbours, friends as well as paid assistant.
Dyad	In the framework of C-MMD project, PLWD and their caregivers represent the main point of care; their interaction with the platform is also determined by the relationships within the dyad and namely the severity of symptoms and conditions of both members.
Health Professionals	People with healthcare background, managing the health plan of the dyad; they combine and manage health data for clinical assessment, diagnosis and treatment plans;
Social Professionals	People with Social background, managing the social support of the dyad; they deal with the social component of the intervention, in order to improve outcomes in dyad's lives and relationships, with special focus on their social status.

To evaluate the benefits of CAREGIVERSPRO-MMD platform use, a multicentre pilot study will be conducted in 4 countries (France, Great Britain, Italy and Spain) during 18 months.

For this pilot study, it is necessary to define the target groups concerned in order to have reliable results and to minimize dropout rates.

2 TARGET GROUP DEFINITION

The pilot study consists in evaluating the benefits of CAREGIVERSPRO-MMD platform use for the support and assistance of dyads living with neurocognitive diseases. The pilot study will enrol dyads involved in dementia care. In this context, the definition of target group describes groups of people with common characteristics, and similar life situations.

The definition of target group is influenced by many factors listed below:

- The dyad composed of a caregiver and PLWD
- The ability to use an ICT device
- The ability to participate and complete a pilot study

There are different levels of screening. For each level of screening, target groups must be defined. It has been decided to define different levels depending on the way dyads are recruited.

These levels of screening are:

- **Level 1:** screening in the general population
- **Level 2:** screening by professional caregivers of dementia in community (public sectors and voluntary organizations, etc.)
- **Level 3:** screening by medic al doctors

Many questions are raised by this study

- Who selects dyads
- Where the dyads are recruited (or selected): in the general population, memory clinics, day care hospital, general practitioners, etc.
- How to select dyads involved in the project: medical screening, media, newspapers, and Internet.

2.1 Level of screening for target groups:

In order to recruit 600 dyads within a few weeks, it is necessary to decide different levels of screening.

2.1.1 First level: general population

The general population represents the first level. Many dyads, which face the disease, may want to participate in a research protocol. This first level is a general level of screening and a medical evaluation is needed to decide if the dyad should be included in the study.

Table 2: First Level: general population

Target Group	First Level : General Population
Dyad	Composed of a person living with cognitive problems, eventually with a known diagnosis of dementia or MCI and a caregiver (relative, friend, professional) who provides a broad range of assistance

Caregiver	A person who provides support and assistance and accepts to participate and complete the study. He/she has basic knowledge of ICT

Basic knowledge is defined as having minimum knowledge of using a computer or laptop or tablet: to be able to log on, to surf the internet (i.e.: connecting to a search engine and do a basic search), to send a request or an email.

One of the successes of timely enrolment is awareness of the study. A dyad cannot choose to participate if this dyad is not aware of the study.

For this first level, we suggest different ways for recruiting. Information and benefits of the project could be communicated in the local press, media (TV), advertising, Internet via social media (twitter, Facebook, etc.), voluntary associations (Alzheimer's disease, for caregivers, etc.).

This is the first level of screening. Contact should be made with the team piloting the study.

2.1.2 Second level: professional dementia carers in the community

A second level to screen dyads is represented by professionals who take care of PLWD and their caregivers: **public and private care sectors and voluntary organizations**.

This group is represented by social workers, nurses, psychologists, professional helpers, volunteers, etc. They can relay information on the protocol research.

For this second level, we can suggest different ways for dissemination: specific information dedicated to local services, local press, advertising, Internet (email), voluntary associations (on Alzheimer's disease, for caregivers, etc.),

Table 3 : Second level: Professional dementia carers

Target Group	Second level: professional dementia carers
Dyad	People living with cognitive problems, with a known diagnosis of dementia or MCI and who have a caregiver (relative, friend, professional) who provides a broad range of assistance
Caregiver	People providing real support and assistance to the PLWD, with or without a professional and formal background (e.g. informal or formal caregiver). He/she is in good health and accepts to participate and complete the study. He/she has basic knowledge of ICT and internet access.

After this screening, persons who meet the criteria should be referred to the team piloting the study.

2.1.3 Third level: Medical doctors

Medical doctors represent the third level. These professionals are general practitioners, neurologists, psychiatrists, geriatricians, etc. Some of these medical doctors may work in memory clinics, hospital day-care, etc.

These medical doctors will receive specific information on the research protocol via Internet or by post, or in a medical meeting.

A screening of dyads, which are followed in memory clinics, hospital day-care, etc., should be done. The pilot team will contact those meeting the criteria in order to propose their participation in the study.

Table 4 : Third level: medical doctors

Target Group	Third level: medical doctors
PLWD	People living, with a known and established diagnosis of mild to moderate dementia or MCI and who fulfil the inclusion and exclusion criteria and who have a caregiver (relative, friend, professional) who provides a broad range of assistance. The caregiver must fulfil the inclusion and exclusion criteria.
Caregiver	People providing real support and assistance to the PLWD, with or without a professional and formal background (e.g. informal or formal caregiver). He/she fulfils the inclusion and exclusion criteria and accepts to participate and complete the study. He/she has basic knowledge of ICT and internet access.

Basic knowledge required will be defined as having minimum knowledge in using a computer or laptop or tablet: to be able to log on, to surf internet (i.e.: connecting to a search engine and do a basic search), to send a request or an email.

2.2 The Dyad

The dyad is composed of a caregiver and a PLWD who are closely linked regarding disease care. Each member of the dyad must be selected according to the inclusion and exclusion criteria defined in the deliverable D 4.1 entitled “Pilot Operation Manual”.

These inclusion and exclusion criteria are listed in Table 1 for PLWD and Table 2 for Caregivers.

Table 5 : Inclusion and exclusion criteria for PLWD

Inclusion criteria for PLWD
People, aged 50 and over, living in the community, who are able to give informed consent (or the legal tutor).
Diagnosed with mild cognitive impairment (MCI) according to Petersen criteria [Albert MS et al, 2011] (1) or mild to moderate dementia diagnosed according on DSM-IV criteria (Diagnostic and Statistical Manual, 4th edition) [American Psychiatric Association, 1994] (2).
Having a Clinical Dementia Rating (CDR) of 0.5 for MCI, 1-2 for mild to moderate dementia.
Having a Mini-Mental Exam score (MMSE) [Folstein et al. 1975] (3) between 30 and 25 (inclusive) for MCI, and between 24 and 10(inclusive) for dementia.
Having a primary caregiver, familiar (or not), informal (or not) identified and also included in the study.
Willingness to use Information Technology and Communications (ICT) according to the

investigator criteria.
Exclusion criteria
Terminal or severe illness with survival prognosis less than 18 months.
Having delusions, hallucinations, behavioural disturbances, that may interfere with the use of Information and Communications Technology (ICT) tools.
Relevant sensory problems (visual or hearing impairment) or motor disability (such as paralysis of upper limb or disabling arthritis or disabling tremor, etc.) evaluated by the investigator that would interfere with the use of Information and Communications Technology (ICT) tools.
Not speaking the language of the country where the pilot is being conducted.

Table 6 : Inclusion and exclusion criteria for caregivers

Inclusion criteria for Caregivers
People, aged 18 years and over, with no diagnosis or no evidence of mild cognitive impairment or mild to moderate dementia (according DSM-IV criteria) [American Psychiatric Association, 1994], who are able to give informed consent and with an intention to complete the study.
Primary caregivers, informal (or not), familiar (or not) of person with mild cognitive Impairment or mild to moderate dementia.
People with Internet access and basic knowledge and skills in managing internet and social networks, or keen to learn, according to the investigator criteria.
Having a Geriatric Depression Scale (GDS-Yesavage - 15 items) score less than 11 at the time of entry into the trial indicating no severe depressive symptoms.
Having no specific conditions (evaluated by the investigator) reducing their physical abilities below the norm for their age that would limit or impair CAREGIVERSPRO-MMD platform use.
Willingness to use Information Technology and Communications (ICT) tools.
Exclusion criteria for Caregivers
Terminal or severe illness with survival prognosis less than 18 months.
Relevant sensory problems (visual or hearing impairment) or motor disability (such as paralysis of upper limb or disabling arthritis or disabling tremor, etc.) evaluated by the investigator that would interfere with the use of Information and Communications Technology (ICT) tools.
Not speaking the language of the country where the pilot is being conducted.

2.2.1 PLWD

2.2.1.1 Age

The study aims to recruit PLWD aged > 50 years. There will be two different groups.

First, the younger patients will be more likely to have a spouse as caregiver, living with them; most of them will have a professional activity. Younger patients will be more likely to have knowledge of ICT and be willing to participate in the trial.

The second group will be composed of elderly patients. Probably, the caregivers will mostly be their children. We cannot expect to include elderly spouses in a study on ICT as their knowledge is poor and we should focus on children as caregivers.

2.2.1.2 Diagnosis procedures

One of the key points of the recruitment in the pilot study is to have PLWD with a diagnosis of the disease. Only patients with Mild Cognitive Impairment and patients with mild to moderate dementia will participate in the study.

Table 7 : Diagnosis procedures

A diagnosis of dementia according to DSM-IV criteria	A diagnosis of dementia, according to DSM-IV criteria (Diagnostic and Statistical Manual, 4th edition) [American Psychiatric Association, 1994](2) should have been done according to the clinical practice before inclusion. This is necessary in order to eliminate differential diagnosis that could lead to drop-out (see annex 1). The diagnosis must have been done by a medical doctor trained (neurologist, geriatrician, psychiatrist, etc.). The level of severity of the disease must be determined by medical doctors or psychologists using CDR and MMSE done by a trained professional.
A Diagnosis of mild cognitive impairment (MCI) according to Petersen criteria	A Diagnosis of mild cognitive impairment (MCI) according to Petersen criteria [Albert MS et al, 2011 (1)] (see annex 2) should have be done according to the clinical practice before inclusion. The diagnosis must have been done by a medical doctor trained in this practice (neurologist, geriatrician, psychiatrist, etc.).

Remark: No biomarker study will be necessary for this study.

2.2.1.3 Aetiology of dementia

For the pilot study, aetiology of dementia is not necessary as inclusion criteria. However, in order to have homogeneous groups it has been decided to avoid including PLWD with severe behavioural disturbance or delusions or hallucinations evaluated by a medical doctor after questioning the caregiver.

2.2.1.4 ICT knowledge

No ICT knowledge is required for PLWD but an interest or some knowledge in ICT would be appreciated.

Most younger PLWD may have already used a computer, smartphone, software, and Internet.

2.2.2 Caregiver

As for the PLWD, it is important to determine the target group for caregivers. There are many criteria.

First, the caregiver is defined as any relative, partner or friend who has significant personal relationship with the PLWD, and provides a broad range of assistance. He/she may live with or separately from the person receiving the care. The caregiver will be the main reference for recruitment and the study.

The target group is people who meet the inclusion and exclusion criteria and who accept participating and completing the pilot study. Two main inclusion criteria must be taken into account: absence of severe depression and absence of severe illness that would limit the use of ICT. This will be deemed by the team piloting the study.

2.2.2.1 ICT knowledge

As the caregiver will be the main contributor on the platform, it is necessary that he/she has sufficient knowledge on ICT. Only basic knowledge is required as the platform is developed with simple and easy design.

Basic knowledge will be defined as having minimum knowledge in using a computer or laptop or tablet. Caregivers should be able to:

- Switch-on and switch-off a computer
- Log in and log out of a platform
- Surf internet (i.e.: connecting to a search engine and performing a basic search action),
- Send a request to an administrator or send an email.

2.2.2.2 Willingness to use ICT

In order to participate and complete the study, it is important that the caregiver declares his/her willingness to use the platform and complete the study.

A high level of dropout has been observed in previous studies but there is no reliable scale to evaluate the willingness to complete a study.

The RAQ 7 item-scale (Research Attitude Questionnaire) is used to assess the willingness of patients to participate in a study. This scale is not validated for testing an ICT device in dementia (4) and no cut-off is defined. This scale may be a useful tool to help pilot teams to select dyads when a doubt is present.

The willingness to use ICT and to be active on the platform will be evaluated by the pilot team.

2.3 Selection process for inclusion

The process to select dyads in the study is detailed in table 8.

Table 8 : Selection process for inclusion

Steps	Check / Action	Result
Step 1	First-second level: Dyad meeting criteria and willingness to participate to an ICT study.	Contact with the pilot team (email, phone, etc.)
Step 2	Medical appointment	Person with a diagnosis of MCI or mild to moderate dementia (PLWD) confirmed
Step 3	Did the patient and the caregiver give informed consent after receiving information on the study and do they have ICT abilities?	Dyad completed
Step 4	Evaluation of the severity of the disease (CDR, MMSE) by medical team or psychologist	The level of severity of disease is defined, inclusion and exclusion criteria are verified
Step 5	Verification of inclusion and exclusion criteria for caregiver including: ▪ Does the caregiver have ICT knowledge? ▪ Does the caregiver have the willingness to complete the study?	Inclusion in the study if all these conditions are present

3 CLINICAL TRIALS IN DEMENTIA

Difficulties in recruitment for study in Alzheimer's disease are frequent and some studies fail to enrol in time. The time to enrol 600 dyads (200 in Spain, 200 in Italy, 100 in France, 100 in Great Britain) is short and it is necessary to define before the study what kind of dyad could be preselected before being enrolled.

3.1 Barriers to achieve enrolment

In dementia, researchers face multiple challenges in order to achieve enrolment in clinical trials whereas researchers understand the need to develop trials. Only one third of 24 multi-site trials were able to enrol volunteers within one year in phase II or III studies (5).

The barriers are multiple.

Table 9 : Barriers to achieve enrolment

Barriers	Description
Awareness of trials	Those who are not aware of trials cannot participate. Many individuals affected by dementia do not know they can participate in clinical trials or where to find information on studies in their area.
Physician challenges	Like people living with dementia and their families, low physician awareness of dementia clinical trials and other studies is a significant challenge to enrolment.
The disease	Dementia is characterized by difficulties in comprehension that may impact informed consent process. Patients may deny their cognitive impairment.
Coexisting conditions	In dementia clinical trials and other studies, Alzheimer's can complicate the management of other comorbid health conditions and many people with Alzheimer have one or more of them. High frequency of other medical problems that may be exclusion criteria such as medications. Patients must be stable before inclusion.
Informed consent	Difficulties to obtain informed consent for people who are not aware of their disease and risk that patient decline proposal even if a legally authorized representative agrees.
Cultural and linguistic differences	Having understood oral and written information before signing informed consent is necessary. An evaluation of clinical practices at 36 centres in 15 European countries revealed language barriers and education levels affected adequate cognitive assessment and delivery of services for patients with ethnic and minority backgrounds.
Study	The burden due to visits and study pattern is a reason for refusal to participate
Previous inclusion	A dyad with previous inclusion in a research study is a reason for non-

in research study	inclusion
Requirement to enrol two people	For dementia study, a PLWD and a caregiver or a knowledgeable informant is often needed.(6)

PLWD who do not have a caregiver or a knowledgeable informant cannot participate in the study. The role of the caregiver is essential at inclusion, but also to monitor and for follow-up. The decision of caregivers to participate or not in the trial is as important as the PLWD's decision. However, spouses are more likely to accept participating in a trial.

In the four countries participating in the pilot study, the percentage of different types of caregivers is listed in table 10.

Table 10 : proportion of different types of caregivers

Level	France	UK	Italy	Spain
Partner	44	42	25	28
Adult children	37	46	65	55
Other	13	12	10	17
References	[Association Française des Aidants, 2016](7)	Local Memory Clinic data of University of Hull	[Spadin, 2007] (8)	[Rivera, 2009] (9) [España, 2008] (10)

Only 33% of trial study partners are not spouses (11). Spousal caregivers may have greater motivation than children caregivers who are more likely to be working and have less time to spend in a research study. The barriers for caregivers are multiple such as logistics (transportation, frequency of visits, etc.) but emotional and attitudinal factors may play a role (4,12). Some caregivers cite the doubts of benefits of their participation for the PLWD as reason for refusing participation. The fear of burnout is one of the reasons of refusal.

Other participant barriers:

- Time off work
- Transportation costs
- Childcare
- Out of-pocket expenses
- Not wanting to change current medical treatment
- Not wanting to change physicians
- Mistrust of medical research

- Fear of stigma associated with a disorder/disease, etc.

3.2 Factors impacting trial completion

At any time, PLWDs and caregivers can withdraw their consent to participate in a clinical study as it is stated in regulatory and ethical guidelines.

So, good retention begins before enrolment by recruiting participants who are likely to complete the study. In medication trials retention rate are about 70%. In ICT studies, dropout rate is high and must be taken into account.

The success of CAREGIVERSPRO-MMD pilot study hinges on ability to recruit and retain dyads. Losing subjects is a threat to the power to detect a platform effect and, potentially, this may have impact on the validity of the study.

In observational studies with PLWD a percentage of dropouts up to 55% has been reported at two years of follow-up [13,14]. In studies applying ICT in a similar way to CAREGIVERSPRO-MMD, a 40% rate of PLWD dropouts has been recorded at 12 months [15].

With respect to caregiver studies with interventions based on internet around 28% rate of dropouts has been reported at 6 months [16] and 33% at 12 months [17].

Then, after a search in the literature, we will consider a 60% rate of dropouts in people with Mild Cognitive Impairment, Mild and Moderate Dementia and a 40% rate of dropouts in caregivers.

3.3 High level challenge mitigation

Key factors must be taken into account for successful trial implementation and completion.

Table 11 : Key factors for successful trial implementation and completion

Key factors	Description
Clear communication	Information must be clear, adapted to the person concerned, detailed. A sheet explaining the trial is given to each member of the dyad. A period of reflection is proposed. Information must describe benefits/risks of the study Dyads are informed that they will be randomized in control vs platform group. The consequences of this randomization are explained. Outcomes must be explained Data collected are explained

Consistent follow up	The schedule of the trial must be explained and pilot teams have to verify the dyad's ability to attend appointments. Data collected are explained
Predefined roles and responsibilities	The role and responsibilities of the pilot team is explained Dyads accept their responsibilities and the role of each member of the dyad is explained
Appropriate planning and timeline management	Planning of the trial is explained and appointments are managed with dyads' wishes.

4 Strategy for enrolment

4.1 Identify Communities

Social marketing and community-based approaches provide a solid foundation for organizing recruitment activities for clinical trials with older adults. We will identify communities with which we would like to engage and establish long-term relationships in order to facilitate our C-MMD study. We consider we could use qualitative focus groups to assess the needs and preferences of potential participants. We will develop plans to share the study results in formats most useful to the different communities involved, including participants, families of participants, consumers, and referring practitioners. Targeted communities are the following and aligned with the section *«2 TARGET GROUP DEFINITION»*:

- Potential participants and their family members
- Referring physicians
- Community-based organization directors
- State mental health directors
- Civic organizations
- Advocacy organizations
- Community centres
- Health clinics
- Media

4.2 Benefits of participation

The consortium will work with communities through focus groups, interviews, and surveys to develop a list of benefits (as well as barriers) for participating in the C-MMD research study. The list of benefits can be communicated to potential participants, and specific benefits can be emphasized when speaking to different audiences.

When communicating with PLWD, C-MMD clinical teams might emphasize that the study aims to improve the understanding of a disorder and improve their quality of life. When speaking to family members, C-MMD clinical teams will explain that the study will not require a PLWD to change his/her current treatment program and will help caregiver to deal with burn-out.

About barriers and mitigation measures, C-MMD teams will create a FAQ sheet addressing potential concerns in order to clear up misconceptions.

4.3 Recruitment tool

The recruitment tool will be adapted to the target audience (potential participant vs. caregiver vs. community referral source) and conduct pilot tests and make sure all staff who communicates with potential participants receive proper training.

Many ways to communicate on the study will be used such as: radio ads, newspaper ads, flyers, newsletter articles, FAQ sheets, web sites, public service announcements, press releases, letters to the editor, interviews on TV or radio, etc.

Information about C-MMD clinical trial will be uploaded to ClinicalTrials.gov.

4.4 On-line strategy to support enrolment

New channels of communication will be used to give information on the project such as networking.

The C-MMD team will build a brand and use visual communication materials to disseminate a relevant and coherent message. A communication strategy based on a clear brand identity can help to create instant recognition, provide an assurance of quality across services, act as a valuable platform for launching new services, and ensure the delivery of a coherent message across all media of communications. The Pilots have sought to create a 'trust and confidence' brand through a range of visual communication aids, such as taglines and logos. For example, a short memorable tagline will help catch caregivers and PLWD' attention and prompt them to take part in the initiative.

5 Strategy for engagement

Two stages are important during the pilot study: recruitment and completion of the study by the whole dyad.

The first step is to develop awareness of the trial. Those who are not aware of trials cannot participate.

Positive PLWD, caregiver, health and social professional engagement is crucial to achieve business results and the completion of trials.

5.1 Strategy for PLWD

5.1.1 Improving consent

For many patients, obtaining informed consent can be a barrier. In order to improve enrolment in the study, inclusion and exclusion criteria are non-restricting in this study. There is no barrier depending on disease (except for terminal illnesses), medications or aetiology of dementia.

One of the difficulties is represented by the fact that people are not aware of their disease or deny their disease or have comprehension impairment. The risk is that a patient may decline study inclusion even if a legally authorized representative agrees. The necessity of clear communication and demonstration of the positive aspects of their participation is a key point.

To improve enrolment in study, PLWD are more likely to participate if:

Table 12 : Key factors to improve enrolment for PLWD

Key factors	Description
Clear communication	▪ They receive clear information about the trial. This information must be adapted to the level of their disease (a brochure with questions and answers - FAQ - will be given to PLWD), ▪ Expected outcomes for PLWD will be discussed, ▪ Direct individual benefits of the use of the CAREGIVERSPRO-MMD platform is discussed with PLWD and caregiver. Direct return on investment is clearly explained with patient and their caregivers, ▪ They are clearly informed of ethical procedures and data protection ▪ Adverse events are scarce compared to a drug trial. This will be explained to the PLWD and caregiver.
Consistent follow up	The study design is well established and frequency of follow-up is detailed. We determine visits each 6 months. This corresponds to regular follow-up.

5.1.2 Communication

Communication must be adapted to language and comprehension impairment. As PLWDs have memory problems and fail to recollect things, persons or events, a brochure of the study will be given. During the project, PLWDs will receive information on the trial. If the PLWD is enrolled in the control group, he can still expect to receive access to the platform once participation in the clinical trials ends.

5.1.3 Engagement

An engagement experience is informative, constructive, and mutually beneficial. Most importantly, PLWDs and stakeholders should thoroughly vet their engagement strategies at the earliest possible stages. The Dialogue participants identified the following types of questions that both researchers and PLWDs will consider when evaluating their engagement approaches:

Table 13 : Engagement questionnaire for PLWD

Q 1	What are we trying to achieve?
A1	C-MMD will determine specific goals of the engagement for PLWD
Q2	Who are we trying to engage?
A2	Explain who the target population or stakeholder group is and using that assessment to inform selection of whom best to engage
Q3	When should we engage?
A3	Identifying what points along a given process are optimal for each engagement
Q4	How should we engage?
A4	Selecting the methods most suitable for each engagement
Q5	What is the expected impact?
A5	Developing or identifying metrics (outcomes or endpoints) that can be assessed to determine whether an engagement achieved the original goals
Q6	What was the actual impact?
A6	Implementing frequent checkpoints during and following the engagements to encourage communication, collect data on the outcomes/endpoints, and promptly address any issues

Furthermore, such consideration will offer a greater likelihood that an engagement or engagement strategy will achieve maximum impact and likely be considered meaningful by both patients and stakeholders.

5.1.4 Build confidence and trust for PLWDs

To engage patients effectively and build their confidence, we will focus on the following keys: credibility, literacy, expectation management, accessibility related to people.

5.1.4.1 Credibility

We will build credibility, and speak to patients in a trusted voice. The industry has seen great results when recruitment materials include testimonials from patients or caregivers, who have participated in focus groups or trials. In addition to testimonials, there are several other ways to build credibility:

1. Taking empathy into account
2. Creating and providing tools that give a feeling of being a stakeholder in the disease care
3. Creating and providing tools to make it easy for a PLWD's circle of care to be more involved in their loved ones journey, can further expand a sense of empathy and engagement.

5.1.4.2 Literacy

According to the Department of Health & Human Services, only 12% of U.S. adults possess proficient health literacy. One approach that is effective in addressing the challenge of health literacy is creating interactive infographics of trial protocols. These infographics provide a simple visual depiction of often complicated schedules that make the information easier to understand. These infographics are not only useful for patients, but also for site staff and investigators.

5.1.4.3 Expectation Management

FAQ responses are written and presented by nurses or other patients.

5.1.4.4 Accessibility

Clinical trial materials are appropriate to age, disease, sensory impairment. This material is shareable and supported by multiple devices.

5.1.4.5 Reliability

CMMD-Pro will provide information that are sensitive to cultural and gender nuances, and will avoid imagery and design approaches that are out of touch with the patient population.

5.2 Strategy for caregiver

5.2.1 Improving consent

For many caregivers, obtaining informed consent can be a barrier. In order to improve enrolment in the study, inclusion and exclusion criteria are large in this study.

One of the difficulties is represented by the fact that the caregivers are critical partners and support assistance in the consent process. The burnout due to the caregiving may be a reason to decline participation.

To improve enrolment in the study, caregivers are more likely to participate if:

Table 14 : Key factors to improve enrolment for Caregivers

Key factors	Description
Clear communication	▪ Caregivers receive clear information about the trial. This information must be adapted to the role of the caregiver in the study and to the level of disease (a brochure with questions and answers – FAQ -could be given to caregivers) ▪ Expected outcomes for caregivers and PLWD of the trial are discussed, ▪ Direct individual benefits of the use of the CAREGIVERSPRO-MMD platform are discussed with caregivers. Direct return on investment is clearly explained with caregivers. ▪ They are clearly informed of ethical procedures and data protection ▪ Adverse events are scarce compared to a drug trial. They are explained to the caregiver.
Consistent follow up	The study design is well established and frequency of follow-up is detailed. We determine visits each 6 months. This frequency corresponds to the regular follow-up.

5.2.2 Communication

Caregivers may be surprised to learn that enrolment of their loved one into a clinical trial also means a real commitment on their part.

If the caregiver is enrolled in the control group, he can still expect to receive access the platform once participation in the clinical trials ends.

5.2.3 Engagement

Table 15 : Engagement questionnaire for Caregivers

Q 1	What are we trying to achieve?
A1	C-MMD will determine specific goals of the engagement for PLWD and caregiver

Q2	Who are we trying to engage?
A2	Explain who the target population or stakeholder group is and using that assessment to inform selection of whom best to engage
Q3	When should we engage?
A3	Identifying what points along a given process are optimal for each engagement
Q4	How should we engage?
A4	Selecting the methods most suitable for each engagement
Q5	What is the expected impact?
A5	Developing or identifying metrics (outcomes or endpoints) that can be assessed to determine whether an engagement achieved the original goals
Q6	What was the actual impact?
A6	Implementing frequent checkpoints during and following the engagements to encourage communication, collect data on the outcomes/endpoints, and promptly address any issues

Furthermore, such consideration will offer a greater likelihood that an engagement or engagement strategy will achieve maximum impact and likely be considered meaningful by both patients and stakeholders.

5.2.4 Build confidence and trust for caregivers

To engage patients effectively and build their confidence, we will focus on the following keys: credibility, literacy, expectation management, accessibility and that relates to people.

5.2.4.1 Credibility

The C-MMD team will build credibility, and speak to patients in a trusted voice. The industry has seen great results when recruitment materials include testimonials from patients or caregivers, who have participated in a trial. In addition to testimonials, there are several other ways to build credibility:

1- Taking empathy into account
2- Creating and providing tools to make it easy for a caregiver's circle of care to be more involved and give a feeling of stakeholder in the care,that can further expand a sense of empathy and engagement.

5.2.4.2 Health literacy

According to the Department of Health & Human Services, only 12% of U.S. adults possess proficient health literacy. One approach that is effective in addressing the challenge of health literacy is creating interactive infographics of trial protocols. These infographics provide a simple visual depiction of often complicated schedules that make the information easier to understand. These infographics are not only useful for patients, but also for site staff and investigators.

5.2.4.3 Expectation Management

FAQ responses are written and presented by health professionals.

5.2.4.4 Accessibility

Clinical trial materials are age appropriate, shareable and supported by multiple devices.

5.2.4.5 Reliability

C-MMD will provide information that is sensitive to cultural and gender nuances, and will avoid imagery and design approaches that are out of touch with the patient population.

5.3 Strategy for medical doctors

Depending on the role of each professional, different strategies will be adopted:

1- Screening of the total active file of patients with neurocognitive impairment who are followed by psychologists or specialists involved in the pilot study. Professionals will screen :
   - In memory clinics
   - In hospital day care
   - In hospitalization (rehabilitation, acute care, etc.)

If patients meet the inclusion and exclusion criteria, the team will identify if the patient and the caregiver accept to participate in the study.

2- Information will be sent to health partners in close proximity to the pilot study (medical doctors, psychologists, nurses, etc.). These health partners will screen their active files of patients with neurocognitive disorders:
   - In memory clinics
   - In hospital
   - In hospital day care or day care centres
   - In the community

If a PLWD and his caregiver meet the inclusion criteria, the health professional will propose to the dyad to participate n the study. This professional will contact the team involved in the study. The criteria will be checked. If the criteria are verified, an appointment for the dyad will be booked with the pilot team.

3- Information will be sent to other health professionals (general practitioners, neurologists, psychiatrists, geriatricians, nurses, psychologists, etc.) in order to

promote awareness of the study. They will receive and disseminate information on the trial (flyers, newsletter articles, information on web sites, public service announcements, press releases, etc.)

At each stage, the role of the pilot health team is:

- To screen active files of patients with neurocognitive impairment
- To be actively involved in reminding nearby health and social professionals in order to achieve inclusion in time.
- To verify the inclusion and exclusion criteria
- To give clear information on the CMMD-Pro Platform and the study protocol
- To discuss outcomes, benefits/risks, role and responsibilities of each partner;
- To verify the willingness to complete the study
- To describe the timetable of the study
- To verify the ability to use ICT
- To obtain informed consent
- To follow completion of the study and deal with issues (dyads that do not use the platform, dyads which want to withdraw informed consent, etc.)

5.4 Strategy for social professionals

In neurocognitive disorders, the role of social workers is important; they often have close links with medical teams and dyads. In the pilot study, they may play different roles for participation and completion of the study.

The role of social workers may be:

1. screening the total active file of patients with neurocognitive impairment who are followed
    - By social workers in the community
    - In hospitalization (rehabilitation, acute care, etc.)
    - In memory clinics or day care centres
2. giving information in order to promote the awareness of the study. They will receive and disseminate information on the trial (flyers, newsletter articles, information on web sites, public service announcements, press releases, etc.)

If patients meet the inclusion and exclusion criteria, the team will identify if the patient has a caregiver who accepts to participate in the study.

The role of social worker is to motivate the dyad to participate and complete the study.

If a PLWD and his caregiver meet the inclusion criteria, the health professional will propose to the dyad participation in the study. This professional will contact the team involved in the study. The criteria will be checked. If the criteria are verified, an appointment for the dyad will be booked with the pilot team.

It is essential that the pilot team has close links with social workers. There will be communication between professionals and dyads throughout the study. This is essential in the follow-up.

6 Strategy for Retention

The first step is to find the «high-risk» dyads in the study : strategies useful to investigators wishing to retain these “high-risk” dyads in the study protocol include: screening patients for drop-out risk prior to randomization and tracking them closely throughout the study.

The RAQ 7 item-scale (Research Attitude Questionnaire) (Rubright) is used to assess the willingness of patients to participate and complete a study. This scale is not validated for testing an ICT device in dementia and no cut-off is defined. This scale may be a useful tool to help pilot teams to select dyads when a doubt is present.

6.1 Categorizing participants

Initial randomization screening of participants on both demographic and psychological variables (e.g. caregiver employment and educational status, caregiver depression, PLWD quality of life, etc.) may help identify those at greatest risk for study withdrawal or poor study protocol adherence, permitting the C-MMD clinical team to develop retention strategies aimed at this high-risk group.

Categorizing participants into separate groups based on completion status (on-time completers v. those with erratic study attendance) is a useful data analytic strategy.

6.2 Possible risk mitigation strategies

Measure to minimize participant burden and drop-out:

Table 16 : Retention risk mitigation strategies

Measure	
Flexible appointment scheduling	For “high-risk” dyads, propose flexible agenda.
Providing incentives	People can keep tablet provided by the Consortium once study is done. For the control group dyad: if the dyad is enrolled in the control group, it can still expect to receive platform access once participation in the clinical trials ends.
Social support	High-risk dyads will benefit from social support
Contact between appointments	High-risk dyads will be contacted between appointments If a dyad does not use the platform during one month, a phone contact will be made in order to solve this issue Create reminders for appointments

Provide a detailed orientation session	Improved communication for high-risk dyads.
Provide user-friendly platform	Integrate personalised software Gamification strategies to motivate end-user to use the platform
Provide contents	Providing useful contents, personalised to caregivers and PLWD is necessary to minimize drop-out

It is likely that the same factors predict patient clinic attendance and adherence with the medical regimen. Consequently, identification of these risk factors as part of routine care may help the C-MMD clinical team better address the particular challenges faced by high-risk dyads.

7 ANNEXES

7.1 Annex 1: DSM-IV Criteria APA 1994

A. Development of multiple cognitive defects expressed through:
    a. Memory impairment
    b. Impairment in one or more of the following cognitive domain
        i. Aphasia
        ii. Apraxia (impaired ability to carry out motor activities despite intact motor function)
        iii. Agnosia (failure to recognize or identify objects
        iv. Executive functioning (planning, organization, abstraction…)
B. Cognitive deficits cause significant impairment in daily function (social, occupational) and imply a significant decline from previous level of functioning.
C. The course is characterized by gradual onset and continuing cognitive decline
D. Cognitive defects are not due to
    a. Other central nervous system conditions that cause progressive deficits in memory and cognition
    b. Systemic conditions known to cause dementia
    c. Substance-induced conditions
E. Deficits do not occur exclusively during course of delirium
F. Disturbance not better accounted for by another Axis I disorder (eg major depressive disorder, schizophrenia)

7.2 Annex 2: MCI- Albert-Petersen 2011

A- Complaints concerning a change in cognition in comparison with previous level. This complaint can be obtain from the patient, their family or from a skilled clinician
B- Impairment in one or more cognitive domain- Scores are below 1 to 1.5 standard deviation below the mean for their age and educational level. If repeated evaluations are available, a decline in performance should be evident over time.
C- Preservation of independence in functional abilities despite mild problems with complex tasks (paying bills, cooking…)
D- Not demented: No significant impairment in social and occupational functioning

7.3 Annex 3: Research Attitude Questionnaire - 7 item

- I have a positive view about medical research in general
- Medical researchers can be trusted to protect the interests of people who take part in their studies

- We have some responsibility to help others by volunteering for medical research
- Society needs to devote more resources to medical research
- Participating in medical research is generally safe
- If I volunteer for medical research, I know my personal information will be kept private and confidential
- Medical research will find cures for major disease during my lifetime

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