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DEVELOPMENT OF METHODOLOGICAL GUIDE RELATED TO THE WORKSHOPS

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INTELLECTUAL OUTPUT 1

INDEX

1.

1.1 PROJECT OVERVIEW

The Erasmus+ funded "Bridge"programme is a 3 year pan-European initiative that aims to develop a set of serious games acting on cognitive and behavioural symptoms of dementia. The design of these tools will involve younger and older people.

People with dementia are often excluded from intergenerational social activities due to prejudices and stereotypes, that's why young people could play a significant role to prevent the stigma commonly related to the disease and the consequent loneliness and social exclusion experienced by the patients.

Through different steps, the project consortium will design, produce and test the serious games targeted on people with dementia. The process will lead to the release of at least 8 fully working games.

Serious games are a well-known non pharmaceutical practice for acting on cognitive symptoms of dementia with Mild and Moderate Symptoms as they contribute to the stimulation of cognitive abilities of patients affected by the disease. These are also called "training games" since they're designed for a specific purpose and applied to learning scenarios. It is of keen importance to highlight that relevant literature review has identified a lack of similar approaches in behavioural symptoms of dementia.

The Project Bridge web-platform will feature news, blogs, project's findings and updates, such as reports, policy briefs as well as opportunities for collaboration, e.g. events announcements,workshops and face to face training sessions.

The project, though a number of planned workshops, will also contribute to raise the awareness in young people as well as young volunteers on dementia and related disorders. These events will include a targeted training curricula designed to help them to face the challenges associated to the disease and consequently prepare them for interacting with patients. After that, they will participate in the game co-design process: they will co-design and play several games in collaboration with game-designers, software developers, healthcare professionals, people with dementia (pwD) and caregivers.

The programme, currently in its first phase, is delivered in partnership with 5 European partners, namely Panellinia Omospondia Nosou Alzheimer kai Sinafon

Diatarachon (Greece), Anziani e non solo Società Cooperativa Sociale (Italy), Asociatia Habilitas – Centru de Resursesi-Formare Profesionala (Romania), Challedu (Greece), and University of Western Macedonia (Greece).

By adopting a transnational approach in the project through the cooperation of organizations and institutes at European level, the consortium will:

- Exchange knowledge and experiences from a variety of disciplines and institutions across Europe.

- Build upon the efforts of local institutions to increase awareness about dementia in members of general public.

- Create and promote games for cognitive and behavioural symptoms of pwD.

- Create tailored content in games as a result of the collaborative work between healthcare professionals, members of general public, university students, and game-designers.

- Contribute to multiplier effect at European level.

The project has the following main outcomes:

- Increase the awareness of young adults about dementia.

- Create awareness and motivation about the importance and possibilities of games as a tool for improving the quality of life of pwD.

- Engage young people over 15 in volunteering.

- Empower generation bonds through playful intergenerational activities and workshops.

- Involve professionals, volunteers and pwD in the creation process of suitable games.

The main outputs of the project are:

- **DEVELOPMENT OF METHODOLOGICAL GUIDES RELATED TO THE WORKSHOPS.**

A methodological guide concerning the creation of intergenerational workshops and events, the needs and specifications of games focusing on training on pwD and best practices on such interventions will allow the multiplication of the results of the project. All the project outputs will be based on this methodological guide. Health practitioners along with product/game designers will identify the key points of such interventions. In addition, they will plan the content of the various workshops held, identifying the needed resources. Moreover, brief guidelines on the content of the delivered prototypes of games will be highlighted.

- **DEVELOPMENT OF PROTOTYPES OF GAMES FOR PWD.**

All actors involved in pwD care along with the young volunteers and game/product designers will meet up and develop their own game prototypes through workshops. The games prototypes will serve as a more enjoyable way to act on symptoms (cognitive and behavioural) of pwD. Moreover, the implementation of the workshops will enable social inclusion of pwD by being involved actively in game design that will meet their needs. Furthermore young volunteers' active involvement will contribute to the bridging of intergenerational gap and the increase of volunteering in actions concerning 3rd age people.

1.2 METHODOLOGICAL GUIDE OVERVIEW

In this report, we organized the development of the Co-Created Methodological Guide. This Methodological Guide developed with the direct participation of psychologists, programmers and game-designers, with the main objective of determining the key contents, methodologies and tools needed for creating and improving the critical competences of pwD through the exploitation of games for increasing the Quality of Life.

What is included?

1. Specification of key points of games to be created, and set of evaluation criteria according to:

   A.   Impact and applicability to the cognitive symptoms in dementia(Table 1, Annex I)

   B.   Impact and applicability to the behavioural symptoms in dementia (Table 2, Annex I)

2. Key competences related to the exploitation of games by pwD

3. Key points addressing to youth, students, game-designers who will take part in the workshops and pilot testing.

4. Determination of specifications and approach of the Training Materials for e-platform addressed to workshop participants except from pwD.

5. Determination of technical specifications and approach of the e-platform in terms of accessibility, usability and applications to be included.

The evaluation has be done including a country based analysis, in order to reflect as better as possible the national needs and specificities. The O1 will be useful for ensuring the quality and results of O2 "Games Development", O3 "e-platform".

This Intellectual Output is relevant in two ways:

1. Through the involvement of End Users (pwD, young people) in the development of the specifications, it is ensured that the project matches the requirements and needs of pwD collective and young people/students on each country. In other words, the project development is not only be based in the previous knowledge of partners and generic information given by the end users previously to the project.

2. The selection and categorization of cognitive and behavioural symptoms in dementia, in defining the key points and results of the games and platform created.

The development of this Output was done through the next activities:

ACTIVITY O1-A1. DESIGN OF THE CO-CREATION WORKSHOPS

Methodology, information and tools for driving the game-design workshops were developed and agreed among partners. Partners collected and share basis, recommendations and tools for ensuring the creation of games-prototypes that improve behavioural and cognitive symptoms. Psychologists in collaboration with game-designers designed the key points of co-creation workshops and materials. The materials developed for the workshops (including games, activities, text-based informations and presentation) have been adapted to the stakeholder addressed (Persons with Alzheimer, families, young volunteers and designers) It also included the development of workshop coordinators so as to help them in the implementation of the workshop methodology. All the materials produced have been revised and verified by the partners. Workshops' and Coordinators' materials have been revised and verified by the partners.

ACTIVITY O1-A2. DEVELOPMENT OF KEY POINTS OF GAMES TO BE CREATED

Partners found best practises and tools used to create games within intergenerational workshops. Psychologists in collaboration with game-designers determined the key factors that a game can be addressed. They analysed the key points that can enlarge the effectiveness of a game on cognitive or behavioural symptoms of pwD. All partners agreed and verified the key points and factors that will enhance the effectiveness of the prototype-games that will be created in the workshops.

Partners defined the requirements of the platform according to the impact that the project aims to create in aspects of inclusion of pwD and improvement of competences of pwD, but also youth volunteers and caregivers. All partners shared the schematic approach and they agreed on a complex specification for the e-Platform.

Objectives of the Methodological Guide

✓ design and development of the goals of the workshops (intergenerational and game creation workshop)

✓ analyse the met and unmet needs of pwD and their caregivers as well as healthcare professionals in order to create key points and objectives of the workshops

✓ include key points and objectives for the prototypes of the serious games that are going to be developed through the bridge workshops

✓ determining the key contents, methodologies and tools needed for creating and improving the critical competences of pwD through the exploitation of games

✓ reflecting the national needs and specificities as good as possible by evaluation in a country based analysis.

2.

2.1 TEMPLATE OF "BRIDGE GAME JAM" WORKSHOP

A. Objectives/ Aims of the workshops

1. GENERAL GOALS

■ PwD and their carers along with the young volunteers, game/product designers and health care professionals meet up and develop their own game prototypes.

■ Enjoyable way to act symptoms of pwD and also improve the quality of life of pwD.

■ Enable social inclusion of pwD by being involved actively in game design that meet their needs.

■ Young volunteers' active involvement contribute to the bridging of intergenerational gap and the increase of volunteering in actions concerning 3rd age people.

■ Enhance knowledge about dementia.

■ Create awareness of the importance and possibilities of 'Serious Games' as a tool for improving quality of life and well-being.

■ Change public views and break the stigma that our society currently has on dementia and raise awareness of the capabilities of people living with the condition.

■ Engage in games that promote mental and cognitive stimulation, mild physical exercise and social interaction.

■ Young people, game designers, people with mild cognitive impairment and carers will challenge themselves to master new and sometimes complex skills.

■ Play with fun and enhance mood.

■ **Number of games**

At least **5 to 6 prototypes** of games will be created in each country through the workshops. The number of game prototypes that will be developed on each workshop depends on the complexity of the games and the available time. In one large event with about 50 people working on the development, 10-12 games can be developed. In a medium event with about 30 people, 5-7 games can be developed. If there is just a small workshop with about 12 people, 3-4 games or ideas of prototypes games are enough.

The appropriate number of participants for a workshop in the first phase of Bridge project, in which we want to create 5-6 games, is: 3-6 pwD, 3-6 carers, 6-9 young volunteers, 3-6 game designers, 2-3 health professional (Table 1). These people will be divided in 2-3 groups and each group will be consist of 1-2 pwD, 1-2 carers, 3 volunteers, 1 designers and 1 health professional.

The minimum number of participants in a small workshop, creating one group of people, is: 3pwD, 2 carers, 3 volunteers, 1 designer and 2 health professionals.

■ **Evaluation process**

Assessment of participants

The health professionals/dementia practitioners can evaluate the cognitive abilities and the mood of the participants through a neuropsychological assessment. One assessment can be held before the workshops and a second assessment can be organized after the end of the workshops. The most appropriate tools that can be used for this process are:

Cognitive dimensions

■ Mini-Mentalal State Examination (MMSE)

■ Montreal Cognitive Assessment (MoCA)

■ Clock Drawing Test (CDT) Mini-Cog (contains CDT)

Depression and Anxiety symptoms

■ Geriatric Depression Scale (GDS)

■ Beck Depression Inventory (BDI)

■ Hamilton Anxiety Rating Scale (HAM-A)

■ Beck Anxiety Inventory (BAI)

■ State-Trait Anxiety Inventory (STAI)

Functional status

■ Functional Cognitive Assessment (FuCAS)

■ Functional Rating Scale for Dementia (FRSSD)

Behavioral Symptoms

■ Neuropsychiatric Inventory (NPI)

■ **Assessment of the workshops**

An immediate feedback is needed, during the workshop, with key questions regarding the first impact, the expectations and the future things to be done according with their needs. Multiple aspects of the workshop will be evaluated (how good the games were, how much fun the whole experience was, etc). In the Annex III, there is a proposal of two different questionnaires that can be appropriate for the feedbacks regarding the level of satisfaction and support during the workshop. The first is addressed to pwD and their care partners and

the second to health professional, game designers and young volunteers. Based on the feedbacks we receive we will improve our future workshops.

Furthermore, an online questionnaire will be filled in after the event in order to collect additional information. An on-line questionnaire is preferred as it allows to analyse answers more efficiently. However, we should also offer an offline questionnaire for those who do not have access to the internet (especially old people and people with dementia).

We will also use a questionnaire that can be appropriate for the feedback regarding the level of perceived utility of the game developed during the workshop.

B. Participants' profile and their role

1. AGES -NUMBER OF PARTICIPANTS AND THEIR NEEDS

The workshops will include people with Dementia (pwD), older people, relatives, carers, health professionals, young people or students and designers.

Table 1: Number of participants in the workshop and their needs.

PARTICIPANTS	AGE	NUMBER	PROFILE	SPECIFIC NEEDS
PwD	65+	3-6	Older people and people who are diagnosed with dementia / major neurocognitive disorders (people with a mild and moderates degree-MMSE score in the range of 20-28).	• Health/social difficulties • Get in contact with their carers and young people • Improve/Maintain their abilities& functional independence • Improve their quality of life
Carers	25-70	2-6	Informal caregivers and relatives of pwD	• Decrease burden level,stress and emotional load • Knowledge and skills about dementia
Young volunteers	16-30	3-9	Young people or students. Other people from local community	• New knowledge and skills • Fun environment to socialize
Designers	20-45	1-3	Game designers with technical knowledge in game development	• The guidance from health care professionals in order to build good games • To be informed and to understand PwD • Material, wifi, time
Health professionals	25-60	2-3	Health care professionals with experience with pwD/ dementia practitioners (doctors, psychologists, nurses etc)	• To be very well trained in this specific area • New tools for their work

2. ROLE OF EACH GROUP

Each partner will hold an innovative workshop where parallel sessions will be held to work on the different cognitive areas and behavioural symptoms (Annex I).

Table 2: The role of each group in the workshop.

PARTICIPANTS	ROLE- TASKS
PwD	Take part in the gamming sessions (mixed group introduction games, game-testing observation). Talk to health care professionals, carers and young volunteers when they face a difficulty.
Carers	Support pwD. Take part in the gaming sessions and if they want in game creation to explain their everyday needs and the needs of the pwD.
Young volunteers	To be aware of the PwD emotional and cognitive problem's and to know how to meet their needs in the most appropriate way, without de-priving him of the activities that sustain / stimulate his need to function independently. Interact with pwD and play games with them. Help the designers and the carers-pwDs in game design and organization of the event.

Designers Team leaders!	Collaborate with health professionals in order to develop the best working programs / applications to satisfy the PwD cognitive and emotional needs. **Lead the team to create new games**. Explain rules of games and principles of game creation. Make effort to conclude with a certain game prototype. Observe the procedure and keep notes. They will also explain to the rest of the participants the technical details of specific technologies used in game development.
Health professionals	To be very well trained in this particular field in order to meet PwD cognitive, behavioral and emotional problems. One health professional will organise the presentations and the others should support the participants as they interact in the groups. Contribute to the design of the prototypes by sharing their knowledge about the abilities of pwD, explaining the fields that interest them to exercise them and giving examples of exercises and activities the usually perform. In case of lack of designer, they may exceptionally take the role of team leader.

C. Recruitment process

1. WHERE WE CAN FIND THE PARTICIPANTS

■ Dementia and Alzheimer associations and other institutions can help us find **pwD and also carers.** Also, health professionals, who take care of pwD like psychologists, social workers, occupational therapists, medical doctors – geriatrics, psychiatrist, medical rehabilitation, and neurologists can contribute to the recruitment process and find pwD and caregivers.

■ We can find **young volunteers** in schools, colleges,universities and higher education institutions, especially of health-social care departments (psychologists, social workers, nursing, medicine, ergotherapists). We can also use social media to promote our project and attract people that want to volunteer.

■ We can find **designers** in IT departments, related universities, colleges, school, technological educational institutes and companies of game development and game design.

■ We can find **health care professionals** in health-care related higher education institution departments, like medical school, psychology and nursing schools. We will prefer health professionals with previous experience with pwD.

2. HOW TO ATTRACT THEM IN GETTING INVOLVED

■ PwD by explaining and providing them with a great and welcoming environment of the event and offering games that are fun to play and spend their time. Also analyse the good effects of playing a game for their health and their social life.

■ Carers by explaining that playing games could improve the health and life of the pwD and could make their lives with pwD more pleasant .They will have the chance to include the gaming session in every days activities and also improve their skills.

■ Young volunteers engaging them in a nice environment and volunteering project that is not only work but also fun. Also, provide them with a certificate for their participation. Finally, persuade them that they will cultivate their skills on how to spend creative time with their elderly in a useful and fun way.

■ Designers by explaining them that their games will be used to support pwD all over Europe and they will be used in many different countries. The creation and the development of this kind of games focus on a special group is an attractive challenge. Additionally, they will cooperate and have the guidance of specialists concerning the needs and abilities of the pwD and they will learn new things and improve their skills.

■ Health professionals by explaining them that they will develop new tools for their work and they will share their knowledge and experience with young people who want to contribute supporting pwD. They will also take part in an innovative workshop and they can get ideas for organizing similar workshops.

D. Duration and Physical requirements of the workshop

1. DURATION

The workshop will be held in 2 days and will last approximately 4-5 hours per day. It is envisaged that each part of the workshop will have different duration depending on the content and the purpose. In exceptional conditions, and if the organisation can't implement this 2 days workshop, there is another choice of 1 day workshop (see Annex II).In general, the duration of the implementation of the workshops should be ideally 8-10 hours. This is the most appropriate duration to produce a prototype of a game or just the general idea and do some first in-team play-testing.

The presentation should not be very long with total duration not exceeding 1.5 hour.

Game prototype development can last several hours (2-10) depending on the complexity of the game.

The play-testing sessions can last 1-2 hours depending on the number of games to be tested.

2. SPACE CHARACTERISTICS

The location should be easily accessible in order to attract more participants. The space has to be familiar for elderly people/people with dementia in order to let them feel comfortable and participative. The space where the workshop is performed should be large enough (depending on the number of participants) to accommodate the corresponding number of participants and not too crowded. It should be equipped with round tables for the groups and with comfortable chairs, to facilitate the visualization and dialogue between people. It is recommended that participants be seated around a round table since the linear location may lead to the isolation of one or more members, negatively affecting the level of interaction. The environment should be cozy and quite. We need also appropriate working materials in the designated space for cognitive stimulation. Computers (desktops, laptops or tablets) are required for digital games. In the case of digital online games, networking (ethernet / Wi-Fi) is also required. It should also have a kind of rest/snack area ideally with sofas, which can be used as socialization areas. Also in the main hall there should exist a projector and screen viewable by everybody and maybe a microphone with large speakers. In general it is good to have a place with enough sunlight, and colourful (not extremely). Ideally a "library of games" and computer equipment is desirable.

E. The procedure of the Workshop

Each workshop should run as follow:

1. Introducing the workshop's objectives *(60-90 minutes, all the participants except pwD)*

Using a specific presentation slides the health professionals should introduce the content and the aim of the workshops and provide a background on the development of this idea. A template with basic information about dementia, serious games and benefits, how to interact with pwD, how to develop games targeting pwD will be provided to the partners. Since young volunteers may not have experience dealing with pwD prior to the workshop, it is important that health care professionals and carers guide young volunteers on how to approach pwD and how to handle to specific situations. They should also use this time to provide an outline of the information they are looking to collect from the participants and the goals of these workshops. Finally they will explain the role of each person.

2. Prior to the beginning of the workshop *(15 minutes)*

Before the workshop has started, the professionals should provide the participants with an information sheet and ensure they have their informed consent to take part in this workshop. They should also gather demographic data on the participants (Annex IV). The training session should not begin until this data has been collected.

3. Creation of mixed groups *(10 minutes)*

The health professionals share a colourful card with a specific colour to each participant depending on his/her category (young volunteer, carers, designer, pwD). This will be useful for creating the right mixed group including all the different categories of participants. After that, the health professionals give advice to the participants for the appropriate creation of the mixed groups and how many people of each category should take part in a group. When the 2-3 groups (following the specific formation of groups)will be ready, participants start the interaction and each of them share some information for him/herself. This will enhance the empowerment of the team.

4. Interaction in the group *(30 minutes)*

The team leader - game designer should ask the participants of his/her team to share and talk about their needs, the games that used to play in the past and that are used to play now (questionnaire Annex III). He/she also writes down all these information in different categories depending on the age. The team leaders try to facilitate the communication and promote the collaboration and the cooperation.

5.Start playing *(60 minutes)*

The participants of each team start playing existing games and talking about new ideas that can be included.

6. Break *(15 minutes)*

This time should be used by participants to have refreshments. After this collaboration and the collection of the needs and preferences of pwD, their contribution is ended for the 1st day and they can leave the workshop.

7. Start creating new games

In this step, the groups consist only of the team leaders (designers), young volunteers and health professionals. The

DEVELOPMENT OF KEY POINTS OF GAMES TO BE CREATED (O1-A2)

3.

1. Explaining the rules of each game *(15 minutes)*

PwD come back again and participate in the second part "play the new games". Team leaders-game designers give advice for the procedure and explain in details the rules of each game. It is important that pwD play all the games created by the teams, one after the other. In particular, if there are only 3 pwD in the workshop, it is crucial collecting their feedback about the games.

2. Play the new games in groups- Observation *(60 minutes)*

The participants in each group start to play the new games. The team leaders have to promote dialogue, active participation and motivation. The team leaders and the health professionals also observe and takenotes about the interaction of pwD with the games and the young people and collect creative ideas resulting from such interaction. This information will be used to improve in the design, the content and the rules of the games. We encourage to create a rotation of groups of pwD in order to play **all the games** and take feedback from all pwD.

3. Break and Improvements of the games *(30 minutes)*

PwD and carers take a break and the other participants try to improve the games.

4. Presentation *(30 minutes)*

Each team presents the games (aims, content, rules, etc) that have been created to all the participants of the workshop. They also explain which cognitive and behavioural symptoms were covered by each game.

Each person of the team said a 'one word feedback' about his/her experience.

5. Give feedback *(20 minutes)*

The final minutes will be intended to share perspectives, proposals and impressions among the participants. Team leaders should ask pwD and carers a few questions about their experience of playing these games (questionnaire Annex III).The team leaders encourage the participants to give feedback about their experience as well as discuss among the group the benefits and the difficulties of each game. The attached discussion guide can be used by the team leaders to promote and support the discussion.

6. Answer a questionnaire *(20 minutes)*

A questionnaire to get workshop feedbacks and to collect informations about their mood will be provided by the health professionals or game designers. Attendants (pwD, carers, young volunteers) should fill in the questionnaire about their experiences in the workshop, the benefits and the limitations of this procedure. This information is valuable in order to improve future workshops (Annex III). Moreover, another questionnaire will be filled in by health professionals,

game designers and young volunteers to get feedbacks about their experience.

7. Conclusions and Farewell

In exceptional conditions, and if the organization can't implement this 2 days workshop, there is another choice of 1 day workshop. This version will not create prototype games, but a template including key elements (development, design) of the prototype game (Annex II). The prototype game will not be tested.

3.1 OBJECTIVES OF THE O1-A2

■ Include key points and objectives for the prototypes of the serious games that are going to be developed through the Bridge workshops;

■ determining the key contents, methodologies and tools needed for creating and improving the critical competences of pwD through the exploitation of games;

■ set of evaluation criteria of the prototypes gamesaccording to:

    C.   Impact and applicability to the cognitive symptoms in dementia *(Table 1)*

    D.   Impact and applicability to the behavioural symptoms in dementia *(Table 2)*

3.2 METHODOLOGYOF THE O1-A2

1. Template with Serious games

■ including games of projects and other activities

■ Specific information for each game (title, description, digital/physical, symptoms, link)

2. Partners have to find best practises and tools used to create games within intergenerational workshops. Collect and sharegames (at least 10) focus on improving behavioural and cognitive symptoms.

3. Compare the games and finalize.

4. Revised by the partners

5. Key points for ensuring the creation of games-prototypes for the workshops. Psychologists in collaboration with game-designers, will determine the key factors that a game can be addressed. They will analyse the key points that can enlarge the effectiveness of a game on cognitive or behavioural symptoms of pwD.

6. Revised by the partners

3.3 RESULTS OF THE O1-O2

A. Key objectives for prototypes games

The prototypes games of Bridge Workshops should have to focus on the main benefits of Serious Games (SG) in dementia:

Table 3: Benefits of using SG in dementia support

COGNITIVE BENEFITS	SOCIAL BENEFITS	EMOTIONAL BENEFITS	PHYSICAL BENEFITS
Memory	Socialization	Sense of enhanced mood/un	Exercise
Observation	Team work	Enjoyment of listening music	Sense of balance
Attention	Collaborativeworking	Enjoyment the challenge	Fine motor skills

Language skills	Generation of ideas	Satisfaction	Restoration of aesthetic-motor function
Calculation skills	Social interaction	Reminiscence	Avoiding stiffness in the joints
Concentration	Stimulated communication	Sense of achievement	Improve cardiovascular and respiratory function
Coordination	Friendly Competition	Alleviationofboredom	Preservation of motor independence
Problem solving skills	Associationwith younger people	Self-confident	
Reasoning skills		Receptive	
Creativity		Self esteem	
Cognitive stimulation		Sense of belonging	
Stimulated perception			

There are some specific challenges in using Serious Games with people with dementia. They don't have the necessary technological knowledge and the ICT is not familiar to them. Some games materials can cause additional difficulties. PwD have cognitive and physical deficits, which can make the use of Serious Games more complicated. Table 3 below summarizes this data.

Table 4: Challenges of using SG in dementia support

GAMES		PEOPLE	
TECHNOLOGY	**MATERIALS**	**COGNITIVE DIFFICULTIES**	**PHYSICAL DIFFICULTIES**
Use of iPad	Small materials	Maintaining attention	Hand dexterity
Touch screen	Rotating shapes	Guessing the words	Visual problems
Moving and navigating	Long words	Matching the pieces	Mobility issues
Sensor (Kinect,Nitendo Wii)	Specific words	Lack of vocabulary	Complicated movements
	Similar colour	Conflicting tasks	Balance
	Graphics off-putting	Too many stimuli	Faster pace
	Small letters	Competition	Pick up materials
	Cards difficult to read	Large groups	Positioning
	Cards difficult to pick up	Noisy environment	
	Difficult instructions		
	Purpose unclear		
	Difficult calculations		
	Quite short game		
	Not enough time		

B. Key contents for prototypes games

■ Attractive and fun games.

■ Clear objective and easy to understand.

■ Games associated with past hobbies, such as keeping accounts.

■ Games which enhance problem solving, decision making and visual processing, etc, like Sudoku, card games, dominos and crosswords, etc.

■ Adventures games.

■ Role playing and storytelling.

■ Trigger conversation about events that are meaningful.

■ Enhance the relation between caregiver and pwD(as the caregiver gets to know the person and interact with them in a pleasant and relaxed context).

■ Create brain games from Activity of Daily Living. Unlike commercial games, most dementia games designed for cognitive stimulation have adopted a more realistic frame in which games tasks are grounded in activities that pwD carry out during their daily life. Using a familiar environment makes players more comfortable with the game and

diminishes confusion and time needed to learn it.

Some examples of prototype cognitive games:

1. Many games used cooking activities such as making tea and toast. In this tablet game "Kitchen and Cooking" a player interacts with simple cooking scenarios such as making a pizza by following a number of steps in the right order and choosing the right ingredients. Game tasks are developed to use different skills and cognitive functions such as object recognition, planning and spatial abilities (Manera, 2015).

2. *SmartAgeing* is a 3D serious game aiming at the detection of MCI and assessment of pwD cognitive impairment. Such games are designed to replace standard cognitive tests, which are not very motivating and lead to a great deal of frustration and anxiety. In *SmartAgeing*, players interact with a 3D house via a touch screen. Game tasks are structured sequentially, for example, users have to find a telephone number, memorize and then dial it and finally remember to turn the television off(Tost et al. 2014).

3. A game of gifts purchase for people with mild cognitive impairment (to early dementia) that addresses executive functions like abilities to plan and meet goals. Players had to buy gifts for imaginary relatives based on some criteria from a number of available shops and stay within budget. Performances were assessed, for example, by comparing players' gifts against initial lists. In the game module, players are shopkeepers attending to customers buying different food stuffs paid with food stamps. Players have to remember what the client ordered and calculate the invoice (Lopez-Martinez et al., 2011).

4. *CogStim*Game aimed to stimulate memory and language though various fun mental exercises such as a name-face matching game, as forgetting people's names is a common occurrence in dementia(Kim et al. 2011).

5. Game based on simple card mechanics and includes a platform that supports intergenerational gameplay. A prototype which is based on a matching pair card game that can be played individually or against an opponent. The level of complexity is increased by using more cards or decreasing the time that cards are visible. Players at the early stage of dementia were able to play on their own in both modes, while the more severely impaired needed assistance to play (Garcia et al., 2014).

6. Casual games called *Fight Alzheimer* for mobile phones, inspired by traditional cognitive training and brain game mechanics. Players have, for example, to sort letters and numbers, find hidden words or reconstruct proverbs (Balasi et al., 2014).

7. *Anecdote* (2015) is a simple board game divided around four life periods "childhood, adolescence, adult life and life in general". To progress in the games, players have to tell a story related to the appropriate theme. To stimulate further reminiscences, players are also given objects to touch and feel, or even to taste. Reminiscence games seem to operate on two bases: personal memories (or life story), and social memory based on sociocultural events.

8. *Memoir Monopoly* (2014) is the closest we found to board games. The game used four IPad synching and sharing screens to simulate the board game; tangible round tokens were utilized for interaction. The games include different ways of reminiscing through music, photos and also quiz like games, etc.

9. The prototype *What remains?* developed by Cadamuro and Visch (2013) is more like a gamified storytelling tool for caregivers aiming at facilitating transition from home to care home. Thus, it is used with people with more advanced dementia than is usual for these games. After gathering life story elements, twenty pictures are pre-selected for specific reminiscing sessions. Users are first asked to move, connect, and group pictures, and then prompted to reminisce and tell stories about them.

10. *Snakes and Ladders* board game organizes personal content starting from the present and going back in time on a journey of discovery. In another sketch, players are represented by a tree containing different fragments of memories and thus players can meander and explore the forest together (Luckner et al., 2013).

11. *Supermarket* (Zygouris et al., 2015) is designed to mimic daily shopping in a supermarket, one of the most common activities of daily living. Participants are asked to buy specific products in specific quantities as they browse in a three dimensional supermarket. This game is aimed at training a multitude of cognitive processes such as executive function, attention, calculus ability and spatial navigation.

Many similarities there are with the Greek Intergenerational Games which have been created in Bridge Game Jams Events in 2018. For example, the game called "Burger" is a tabletop speed game -making a burger according to the

recipe-order. This game focuses on improving the cognitive dimensions and more specific the memory, attention, perception and executive function. Another one digital game is "Find the lyrics", with hit song melodies and unknown lyrics in which the players try to find them. In these events the Greek team also created games that focus on orientation and cultural knowledge. "The treasure of the island" is one example, which is a tabletop social interaction game -going around Euboia island learning about customs, myths, songs and other popular tradition and try to remember it (the stories included were narrated by pwD).

In the Annex VI you can find the proposed prototypes games focus on cognitive and behavioural symptoms in dementia that all partners of this project collected.

C. Key methodologies for prototypes games

- Simple rules and easy to follow.

- Good use of rewards at the end of each level.

- Interesting and engaging design.

- Recognizable graphics, shapes and materials.

- Different levels of difficulty that can be tailored towards the players.

- Play mostly in a group and more rarely alone. Iterative methodology was selected as design methodology.

- There are benefits of the development team.

- Availability of games. Games must be easily available.

- Different ways of game play must be proposed in each game in order to increase its adaptability to the needs of pwD, caregivers, trainers of pwD and facilitate their use

- Simplify the rules and reduce the amount of instructions.

- Understand the physical characteristics of the players beforehand and adapt the games to the physical abilities of them. If a player has mobility issues or uses a wheelchair then they can be offered materials that do not require them to move around. Players with dexterity issues should not be asked pick up the cards in a card game. They could participate through verbal interaction.

- Emphasize the objective of each game. Including a 'how-to' video demonstration for each of the selected games may be a useful tool for facilitating this process.

- For developing practical information for professionals and relatives about each of the games proposed, the following table should be completed for each game.

The table 4 describes the main information that need to include in the description of the prototypes games that will be created in Bridge Workshops.

Table 5: Specific information for each game

NAME OF THE GAME			
CLASSIFICATION			
Cognitive dimension	**Behavioural Symptoms**	**ICT**	**Players**
· Memory · Orientation · Attention · Perception /gnosia · Language · Calculus · Praxis · Executive functions	· Irritability, Aggression and Anger · Anxiety and Agitation · Depression · Sleep Issues and Sundowning	· Digital Game · Physical game · Both of them	· Individual · Pair · Group cooperative · Group competitive · Other

4.

Definition (*Briefly explain what the game consists of?*
Duration *(Mean/recommended duration)*
Objectives *Game goals* *Areas and dimensions that can be improved with this game*
Participants *Participants' profile (diagnostics, dementia level, physical and cognitive status, etc.)* *Number of participants (explanation and variations)*
Material and requirements *Materials needed to develop the game*
Support needed *Explain the role of professionals / caregivers (instructions, supervision, motivation, help)*
Starting point: *All that professionals and caregivers should know and respect throughout the session for the game to be used correctly.*
Development *In detail how the game is carried out step by step (instructions for use).Use here: Text, Images, Video / tutorials, Presentatio*
Variants of the game *Other ways to play the same game (more or less participants, analog / digital, with more or less assistance, etc.)*

D. Key tools-materials needed for creating prototypes games

Most playful interactions were based on real-life objects and natural phenomena.

- Use simple games in the beginning. Start with non-technological (classic) games. Desktop computers and iPads are associated with a work/burocratic environment for many people. Consider starting with something more relevant to their everyday lives.

- Use large writing materials and shapes.

- Colourful and attractive material.

- Easily to read materials.

- ■ Use more pictures, not letters.

- ■ Use bigger cards with less detail on them.

- ■ Prefer colour that are dissimilar. For instance, the use of cards with black and white photos is effective at any stimulation program, for the development of basic visual functions.

- ■ Use simple figures that are well known from everyday life.

- ■ Adapt the level of difficulty by using words with fewer letters or by presenting less jumbled words in games where this is appropriate.

- ■ Categorize the words that players are required to find.

- ■ Categorize the answers (e.g. Objects of clothing) to recognize the words more easily.

- ■ Use phrases/sentences that are familiar to people to motivate them and provide a sense of reminiscence.

- ■ Use a projector screen in order to facilitate visualization and to encourage collaborative working.

- ■ Use a reward system so players are aware when they have answered a question correctly.

List of materials: dices, cards, pawns, white cardboard, pencils, pen, markers, balls of foam, blankets, coloured paper, A4 paper, cut paper, glue, plaster, scissors, cubic, post-it, large flip chart paper, balls, cubes, coloured cardboards, foam paper, printed images, photos, balloons.

E. Evaluation criteria, impact and applicability to the cognitive and behavioural symptoms

Dementia is an umbrella term for different pathologies leading to different kinds of cognitive impairment. For example, memory is less affected in the early stage of Lewy Body and Frontotemporal Dementia. Misdiagnosis, difficulties in assessing transition between stages (especially between MCI and early dementia), or large variations in abilities at the early stage can affect results. Thus, for quantitative evaluation of cognitive games, we need to establish players' cognitive profiles, testing players' abilities or impairment for the cognitive functions evaluated (e.g. before /after). With a neuropsychological assessment, the dementia stage (early vs more moderate) and even types of dementia should be carefully considered and included in the evaluation. Understandably, differences in cognitive impairment or dementia stage can have severe impacts on usability issues, game performance, and emotional reactions.

Key features of the game system are the inclusion of a player's cognitive profile and adapting the game to player performance.

Apart from the dementia profile, we might want to consider socio-demographic factors such as age, gender or education, as well as factors such as computer literacy and gameplay experience. The comprehension of gameplay of older people is influenced by the lack of game experience.

The prototype games need to cover cognitive dimensions and behavioural symptoms which defined in the project, that are of special interest for PwD(memory, orientation, attention, perception/gnosis, language, calculus, praxis and executive functions).

Thus to assess the benefits and effectiveness, short-term and long term, of games for dementia more thoroughly, we need to look more closely at current methodological issues regarding evaluation. We might have to establish a benchmark for the user profile and game evaluation with harmonised procedures and standardised variables. Examples of evaluation methods:

Quantitative: Time to understand the game play, time to do a specific action, duration of the game-how much time did the pwD keep playing the game, records of time to control the progression of the user in its execution. It will be better if the game can give an assessment, a report or some kind of score.

Qualitative: How the user received instructions, if he seemed interested, motivated, obstacles and difficulties encountered, doubts that arose from the professional or caregiver, difficulty in recognizing pictures, colours etc.

To better comprehend the design of cognitive games and compare different design strategies, we recommend developing a detailed cognitive map for games linking cognitive functions to game tasks and game mechanics.

4.1 OBJECTIVES OF THE O1-A3

■ Determination of specifications and approach of the Training Materials for e-platform addressed to workshop participants except from pwD.

■ Determination of technical specifications and approach of the e-platform in terms of accessibility, usability and applications to be included.

■ Determination of the IO3 BRIDGE web Platform (O3-A1. Analysis of platform requirements and design, O3-A2.Development of ICT Tools, O3-A3.Development of e-platform, O3-A4. Development of material that will be uploaded to the website, O3-A5 Translation of web platform)

4.2 METHODOLOGY OF THE O1-A3

1. The coordinator with the contribution of the UOWM sends to the partners a questionnaire "Development of key points for e-platform". There are 4 categories of questions: Platform Implementation, Technical Details, Content Management and Accessibility Features.

2. Partners answer the questionnaire and share the schematic approach.

3. The coordinator, based on the results from this questionnaire, define the requirements of the platform according to the impact that the project aims to create in aspects of inclusion of pwD and improvements of competences of pwD, but also youth volunteers and caregivers.

4. All partners revise the final report and agree on a complex specification for the e-Platform.

4.3 SUMMARY OF THE RESULTS OF THE QUESTIONNAIRE

1. PLATFORM IMPLEMENTATION

Questions in this section relate to the main features that will be implemented on the platform. The main features determine who will use the platform, how they will use the platform and what services the platform will provide.

1.1 How many types of users will the platform support?

User types classify users and may also confer roles that grant access to protected areas of the website. User Types can classify users based on geographic region, area of interest, or any other classification that is meaningful to the project. For example, the user type "student" may be able to participate in MOOCs but not in other parts of the platform, such as content management and file sharing.

The platform has to support the **Content Manager** and **Students** (mainly students of social and health science). It can also support some **general users**, such as health professionals, carers, game designers/ developers, members of organisation for pwD and young volunteers. Finally, it will be useful to support the **Partners** and the **technical manager**, to operate system and provide technical service.

1.2 Will registration be required in order to access the platform or specific parts of the platform?

By requiring user registration on the platform we can collect analytics like "how much time does each user spend on the website?" and "what is the average age of our audience?". However, login pages require a significant interaction cost. Users must remember their credentials (if they have an account) or take the time to create a new account. Therefore, we should use registration and login forms only if users will benefit significantly from the presence of these forms.

All partners agree with this proposal and underline that, it will be better if this registration be created for the **partners**, the **content manager** and **Students**. Also, there is the proposal to have a registration only on specific parts of the platform, e.g. on learning webinars if we make those such that we provide them online certificate.

1.3 What personal data do we collect during registration?

We decided to collect the **Name, the E-mail, the Location/Region, the Age, the Gender, the educational level/profile and the occupation** (multiple choice, heath professionals, students, carer, other).

1.4 How will users be approved on the platform after registration?

All users will **automatically** be approved.

1.5 Discussion forum implementation on the platform.

We agree to have a discussion forum or message board, which is an online discussion site where people can hold conversations in the form of posted messages. Unlike chat rooms and instant messaging services, these messages are often longer than one line of text and are at least temporarily archived.

1.6 Who will moderate the discussion forum?

Forum moderators are users (or employees) of the forum who are granted access to the posts and threads of all members for the purpose of moderating discussion and also keeping the forum clean (neutralizing spam, spambots and pirated content). Moderators also answer users' concerns about the forum, general questions, as well as respond to specific complaints. Common privileges of moderators include: deleting, merging, moving of posts and threads, banning, unbanning, suspending the members. Moderating an online forum can be a very time consuming process.

Partners and **Content Managers** can be the moderators of the discussion forum.

1.7 File sharing implementation on the platform.

File sharing is the practice of sharing or offering access to digital information or resources, including documents and multimedia (audio/video).

We decided to share files only between **Partners** and **Content Managers**.

1.8 Characteristics of file sharing.

There are certain characteristics that define a file sharing platform. Hotlinking allows users to create temporary or permanent links for files hosted on the platform. Any user who knows the specific link can access the corresponding file. These generated links can either be permanent or have an expiration date. Another characteristic of a file sharing platform is the authorization of secure downloads only (https). Enabling secure only downloads allows users to access the platform in a secure manner minimizing the risk of a Man In The Middle attack (MITM). Users accessing the platform using old and outdated software may experience difficulties using the platform.

There are different opinions between partners. The first one is to have a **Hotlinking files with expiration** for user feedback in games development process and the second one to **enable secure downloads only.**

1.9 Which types of users can use file sharing?

File sharing can lead to high bandwidth usage and slow response time of the platform. It is important to specify which user types will be able to use file sharing. **Partners** and **content managers** are the appropriate people to be the users for the file sharing.

1.10 Implementation of a blogging platform.

A blog is an online journal or informational website displaying information in the reverse chronological order, with latest posts appearing first. Implementing a blogging platform can allows specific user types to share their views or progress on an individual subject of the project. We will include a **blogging platform** in this project.

1.11 Newsletter implementation on the platform.

A newsletter is a printed or digital report containing news (information) of the activities of a business or an organization that is sent regularly to all its members, employees or people who are interested in. Implementing a newsletter will allow us to notify registered users on a regular basis about important events of the project.

1.12 Newsletter categories.

The platform can support multiple categories of newsletters. Each type of user will receive content tailored to them. In this project we will create **one newsletter for everyone**.

1.13 Implementation of RSS feed on the platform.

RSS (Really Simple Syndication) is a type of web feed which allows users and applications to access updates to online content in a standardized, computer-readable format. These feeds can, for example, allow a user to keep track of many different websites in a single news aggregator. In this project, we decided the **implementation of RSS feed** on the platform.

2. TECHNICAL DETAILS

The questions in this section relate to the technical details of the platform, such as "supported file types" and "file hosting location". These features determine the platform's limits and how the platform can be used.

2.1 Select the file types that will be supported on the platform:

All file types (Office, Image, Audio, and Video) will be supported in the bridge platform.

2.2 Where will the video content be hosted?

Since the most space consuming file types are video files (.avi, .mp4, .mkv), it is important to decide where the videos will be hosted. There are two main ways to upload a video on the platform. We can either choose to upload it via a video hosting service such as YouTube or Vimeo or we can choose to host it independently, directly on our platform. Hosting the video directly on our platform gives us full ownership of the content without relying on third parties. However this might lead to poor playback on certain browsers, mobile devices and requires a lot of bandwidth. High bandwidth usage may lead to slow response time of the platform.

We will follow the use of **third party services**.

2.3 Where will MOOCs be hosted?

There are two main ways to implement MOOCs on our platform. We can either choose to use a third party website or we can choose to host it independently, directly on our platform. Hosting content directly on our website gives us full ownership of the content but may lead to high bandwidth usage and slow response time of the platform.

Most partners prefer to have **a Self-hosted on the platform** (estimated work days required for implementation: 14)

There was also one proposal for the Use of a third party website.

ANNEXES

content.

3.2 Which user types will be able to notify users via Newsletters and RSS feeds?

Partners and specific privileged users will be the main users.

3.3 Which user types will be able to contribute and upload courses regarding MOOCs?

Partners and specific privileged users will be the main users.

3.4 Who will be able to view and participate in MOOCs?

Specific approved users will be the main users.

3.5 Will MOOCs support self-assessment?

The MOOCs will support self-assessment

3.6 What type of questions will MOOCs contain?

A question can be accompanied by several possible answers from which the candidate must try to choose the correct one. Questions can have only one correct answer, or multiple correct answers that the candidate must select.

The questions in the MOOCs could be **multiple choices** (only one correct answer).

3.7 Will MOOC questions be randomized every time?

In order to prevent memorization of questions and answers, every time a candidate runs a test, the order of questions and answers will be **shuffled**.

3.8 Will MOOC participants be able to evaluate each course based on their experience?

The MOOC participant will have this chance.

4. ACCESSIBILITY FEATURES

Questions in this section relate to the Accessibility Features the platform will provide. Accessibility features are designed to help people with disabilities use technology more easily.

4.1 High contrast theme implementation

High contrast themes are useful for users who have an eyesight disability, since they heighten the colour contrast of text, borders, buttons and images on the screen, in order to make them more visible and easier to read and identify. We will use high contrast themes in this platform.

4.2 Closed-captioning (CC) Implementation

CC is a process of displaying text on a computer screen or other visual display to provide additional or interpretive information. CC helps to convey audio information to deaf users in visual form. We decided not to use CC process in this platform.

4.3 Text-To-Speech (TTS) Implementation

TTS is a form of speech synthesis that converts text into spoken voice output. TTS systems are developed to aid the visually impaired by offering a computer-generated spoken voice that "reads" text to the user. In this platform, we will include TTS form.

4.4 Combine audio channels offering Mono audio

Usually, audio files contain two channels of information, one for each ear. People suffering from hearing loss may miss some information due to their disability. We can use software to combine both channels into one single Mono channel. Mono audio systems transmit right and left audio signals through both earbuds and headphones so users with limited hearing in one ear will not miss part of what they are listening to. We will not use Combine audio channels in this platform.

ANNEX I: CATEGORIES OF COGNITIVE AND BEHAVIOURAL SYMPTOMS

Table 1: Functional limitations associated with impairment in different cognitive domains

	COGNITIVE DOMAINS	EXAMPLES OF CHANGES IN EVERYDAY ACTIVITIES
1	Memory	Difficulty recalling recent events, repeating self, misplacing objects, losing track of actions already performed, increasing reliance on lists, reminders.
2	Orientation	Getting lost in familiar places, more use of notes and maps.
3	Attention	Normal tasks take longer, especially when there are competing stimuli, easily distracted, tasks need to be simplified.
4	Perception/gnosis	Loss of judgment, loss of recognizes previously learned information such as objects, people, or places collected from our senses.
5	Language	Word-finding difficulty, use of general phrases or wrong words, grammatical errors, difficulty with comprehension of others' language or written material.
6	Calculus	Difficulty holding information in mind to do mental calculations or dial a phone number.
7	Praxia	Difficulty using familiar tools and appliances.
8	Executive functions	Difficulty with multi-stage tasks, planning, organizing, following directions, keeping up with shifting conversations.

Adapted from: American Psychiatric Association: Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition. Arlington, VA, AmericanPsychiatricAssociation; 2013

Table 2: Behavioural symptoms in Dementia

	BEHAVIOURAL SYMPTOMS	EXAMPLES OF CHANGES IN EVERYDAY ACTIVITIES
1	Irritability, Aggression and Anger	Physical or verbal outbursts. They can occur suddenly, with no apparent reason, or result from a frustrating situation.
2	Anxiety and Agitation	General emotional distress, restlessness, pacing, shredding paper or tissues, may become upset in certain places or when focused on specific details.
3	Depression	Apathy, loss of interest in activities and hobbies, social withdrawal, isolation, trouble concentrating, impaired thinking
4	Sleep Issues and Sundowning	Sleeps chaotically, dozing during the day and wandering at night. Changes in the sleep-wake cycle may contribute to the increased confusion, called sundowning, which often occurs in the later afternoons.

Alzheimer Association https://www.alz.org/alzheimers-dementia/treatments/treatments-for-behavior

RECRUITMENT

The workshops will include people with Dementia (pwD), older people, relatives, carers, health professionals, young people or students and designers.

Each partner will hold an innovative workshop where parallel sessions will be held in order to work on the different cognitive areas and behavioural symptoms (Annex I). each workshop should involve at least 2-3 mixed groups, which should consist of around 1-2pwD/elderly, 1-2 carers/relatives, 3 volunteers including young people or students and 1 game designer (**team leader**). Each workshop will be attended by at least 2 health professionals/ dementia practitioners (in case of luck of designer, they may take as an exception the role of team leader). The health professional will support the participants as they interact in the groups and also guide the designer in the game creation explaining the needs of pwD. At least **3 to 4 ideas for prototypes** games will be created in each country through the workshops. The number of game prototypes that will be developed on each workshop depends on the complexity of the games and the available time.

DURATION:

The workshop will be held in 1 day and will last approximately 6 hours. It is envisaged that each part will have a different time duration depending on the content and the purpose.

WORKSHOP PLAN:

Each workshop should be run as follows:

1. Introducing the workshop'sobjectives(60-90 minutes, all the participants except for pwD)

The health professionals provide an outline of what information they are looking for in order to collect them from the participants. In addition, they will explain what they would like to create with these workshops. Also, they will explain the role of each person. Since young volunteers may not have experience in dealing with pwD prior to the workshop, it is important that health care professionals and carers should guide young volunteers on how to interact with pwD and how to react to specific situations.

2. Prior to the beginning of the workshop (15' minutes)

Before the workshop has started, the professionals should provide the participants with an information sheet and ensure they have signed their informed consent to take part in this workshop. They should also gather demographic data on the attending participants. The training session should not begin until this data has been collected (Annex IV).

3. Creation of mixed groups (10' minutes)

The health professionals share a colourful card with a specific color to each participant depending on his/her category (young volunteer, carers, designer, pwD). This will be useful for creating the right mixed group including all the different categories of participants. After that, the health professionals give advice to the participants for the appropriate creation of the mixed groups and how many people of each category should take part in a group. When the 2-3 groups (following the specific formation of groups)will be ready, participants start the interaction and each of them share some information about him/herself. This will enhance the powerfulness of the team.

4. Interaction in the group (30' minutes)

The team leader should ask the participants of his team to share and talk about their needs, the games that used to play in the past and that are used to play now. He/she also writes down all this information in different categories depending on the age. The team leaders try to make the communication easier and promote the collaboration and the cooperation.

5. Start playing (60 minutes)

The participants of each team start playing existing games and talk about new ideas that can be included

6. Break (15' minutes)

This time should be used for participants to have refreshments. After this collaboration and the collection of the needs and preferences of pwD, their role is completed for the 1st day. In this step they can leave the workshop.

7. Start creating new games

In this step, the groups consist only of the team leaders (designers), young volunteers and health professional. The game designer-team leader encourages people to think about basic thematic-main mechanism/ type of game they want to create. He/She gives some ideas about possible mechanisms from his/her experience and what is possible to design/develop within the limited time of the event as a prototype. The team starts to test ideas with basic material and decide which game will be developed finally. It is important that health professionals give advices to game designers on the abilities of people with dementia, their needs and the activities that help to keep their cognitive skills and reduce their behavioural symptoms, so that the prototypes of games are not only fun to play but actually treat symptoms of pwD and improve their quality of life. Each group needs to focus on at least 2 areas of cognitive functions (memory/orientation/calculus etc) and 2 behavioural symptoms (Annex I). This will vary in each group depending on the 8 cognitive areas and the 4 behavioural symptoms. They have to choose and include from all the different cognitive and behavioural dimensions. After that, they work on the creation of a template for each game (Annex V). It will not be the final prototype game, but instead it will be a document, which will include details regarding the creation and the design of each prototype game.

ANNEX III: ALL THE QUESTIONNAIRES FOR THE OF THE WORKSHOP

1. QUESTIONNAIRE DAY 1USED BY TEAM LEADERS

STEP 4 - INTERACTION IN THE GROUP

The team leader - game designer should ask the participants of his team to share and talk about their needs, the games that they used to play in the past and the one theyare used to play now. He/she also writes down all this information in different categories depending on the age. The team leaders try to make the communication easier and promote the collaboration and the cooperation.

1. Which kind of games did you play when you were a child?

2. Which kind of games do you use to play now?

3. Which kind of games do you usually play with your son/grandson?

4. Which kind of games would you like to play now?

5. Have you ever played games using ICTs?

6. If yes .Is iteasy for you to play games using ICTs (computer, tablet, video)?

7. Do you prefer ICT games or traditional board games?

8. Do you prefer to play games alone or in group?

9. Do you think that it's useful that someone can help you when you are playing a game? (To explain the instructions, to solve doubts during the game, to solve conflicts between the participants, to act as a judge)

10. Do you prefer games that have images rather than words or numbers?

11. Do you think you need "big games" (with larger pieces, bigger images and words, etc) in order to see them better?

12. Is it better for you to play in a special room with a quiet environment?

13. Other relevant topics…

Some of these questions will be adapted bythe team leaders, in order that the pwD are able to understand them.

2. QUESTIONNAIRE DAY 2 - USED BY TEAM LEADERS& HEALTH PROFESSIONALS

STEP 2 - PLAY THE NEW GAMES IN GROUPS- OBSERVATION

The participants in each group start to play the new games. The team leaders have to promote dialogue, active participation and motivation. The team leaders and the health professionals also observe and keep notes about the interaction of pwD with the games and the young people and collect creative ideas resulting from such interaction. This information will be used for making improvements in the design, the content and the rules of the games.

Observation guide

Purpose of the observations:

These observations aim to gather 'in-the-moment' data when people with dementia and/or their care partners are playing the Prototypes Games and activities. Information should be noted by the team leaders-game designers supporting the activity (please note any comments made to support these questions).

Information to note:

Game: _____

Name of person/people playing the game: _____

1. Did people appear to enjoy engaging with the game?

2. What did people seem to enjoy about the game?

3. Do you think the game had any benefits for the person/people playing?

4. Did people improve on the game as they continued to play?

5. Did people find anything particularly difficult when playing the game?

6. Did they ask to make any changes to the game to make it easier for them to play?

7. Would you run the game in a different way if you used it again?

8. If yes, then what changes would you make and why?

9. Please note any other important observations?

3. QUESTIONNAIRE DAY 2 – USED BY TEAM LEADERS

STEP 5 - FEEDBACK FOR THE GAMES DEVELOPED DURING THE WORKSHOP

Discussion guide for people with dementia and carers

These questions should be asked to the participants (both people with dementia and carers) immediately after they have played one of the games.

Game identification/ Name of game:

Name of participant:

Information: Thanks for playing the game. I was just wondering if I could ask you a few questions about your experience of playing this game. The information you provide will be extremely useful for the research project.

1. What did you think of the game? (open with this question and then use the prompts below to obtain more information)

      a. What did you like about the game?
      b. Were there any particular features of the game that you liked? (music, graphics, colour?)
      c. Was there anything you didn't like about the game?

2. Do you feel the game offered you any benefits?

    a. If yes then what sort of benefits were these? (physical, mental, social benefits?)

3. Did you experience any difficulties when playing the game?

    a. If yes, then what were these difficulties?
    b. Could anything have been done to help you overcome these difficulties?

4. Do you think there was there anything that could be done to improve your experience of playing the game?

5. If you were to play this game again on your own, what instructions would be helpful?

6. Would you recommend we place this game on the e-platform that we are developing?

4. QUESTIONNAIRE FOR PEOPLE WITH DEMENTIA AND THEIR CARE PARTNERS

These questions should be asked to the participants (both people with dementia and their care partners) immediately after the workshop.

Name of participant: _____

1. Do you feel the workshop offered you any benefits (physical, mental, social benefits)?

☐ Strongly agree ☐ Agree ☐ Somewhat agree ☐ Neutral ☐ Somewhat disagree ☐ Disagree ☐ Strongly disagree

2. Was the cooperation with young people satisfied /pleasant?

☐ Strongly agree ☐ Agree ☐ Somewhat agree ☐ Neutral ☐ Somewhat disagree ☐ Disagree ☐ Strongly disagree

3. Do you think that the people supporting you today?

☐ Strongly agree ☐ Agree ☐ Somewhat agree ☐ Neutral ☐ Somewhat disagree ☐ Disagree ☐ Strongly disagree

4. Do you think that it is important to organise similar workshops?

☐ Strongly agree ☐ Agree ☐ Somewhat agree ☐ Neutral ☐ Somewhat disagree ☐ Disagree ☐ Strongly disagree

5. Do you think there was there anything that could be done to improve your experience of taking part in similar workshops?

6. Do you consider that the "Game creation" used in this session facilitate:

☐ Greater participation ☐ Cognitive training ☐ Slowing down of cognitive impairment

☐ A collaborative work ☐ Social skills development ☐ Mood enhancement

☐ Motivation in users ☐ Generating ideas

7. What abilities do you consider can be enhanced in subjects when participating in Bridge workshop?

☐ Troubleshooting ☐ Communicative ☐ Participation ☐ Interaction ☐ Permanent Dialogue ☐ Focusing on care ☐ Collaborative work

8. During the group session, you consider that:

☐ You have learned from the other participants ☐ You have contributed to the group ☐ Knowledge was built collectively ☐ You learned other perspectives on the subject

☐ It was difficult to relate to the group ☐ Participation was difficult ☐ Other (please specify): _____

9. How do you evaluate the Team leader's role in collaborative work:

☐ Promotes active participation ☐ Promotes collaborative work ☐ Promotes generation of ideas ☐ The complementation of ideas

☐ Stops participation ☐ Not relevant

Other (please specify) _____

10. How do you evaluate the importance of the Team leaders to enhance and sustain the level.

☐ It is a determinant ☐ It is a support ☐ Does not influence ☐ Other (please specify) _____

11. Do you know about other games that have not been used and that you consider interesting for this project?

Thank you for your cooperation

5. QUESTIONNAIRE FOR HEALTH PROFESSIONALS/GAME DESIGNERS/YOUNG PEOPLE

Name: _____

A. Questions for the workshop

1. Do you find the workshop interesting? What did you like more?

2. Did people appear to enjoy engaging with the co creation of the games?

3. What did people seem to enjoy about the workshop?

4. Do you think the workshop had any benefits for the person/people participating?

5. Did people find anything particularly difficult in the workshop?

6. Did you make any changes to the workshop to make it easier for the people?

7. Please note any other important observations?

B. Questions for Prototypes Games for pwD

1. Do you have any experience of using Prototypes Games or activities with people with dementia?

- If yes, then what experience?

- What type of games or activities have you used?

- Do you use them individually with people with dementia or in groups?

- Do people like them? If yes, what do they like about them?

- Do you have any difficulties when using them with people with dementia? If yes, how do you over-come these difficulties?

- Do you think these games have any benefits for people with dementia and/or their care partners? If yes, then what sort of benefits?

2. What information/training do you think is needed to encourage people with dementia and their care partners to use Serious Games or activities?

ANNEX IV: DEMOGRAFIC DATA FOR PARTICIPANTS IN THE WORKSHOP

DEMOGRAPHIC QUESTIONS FOR EACH PARTICIPANT ATTENDING THE WORKSHOP

Please ensure this information is collected for every participant at the workshop

Please choose one:

☐ Person with dementia ☐ Care Partner ☐ Game designer ☐ Health professional ☐ Young volunteer

1. Name:	2. Age:	3: Gender:
4. Highest educational qualification:	5. Occupation/previous occupation:	

6. Type of dementia (only ask to people carers of pwD)

7. Years since diagnosis of dementia (only ask to carers of pwD):

8. Interests- what do they like to do?:

9. Previous experience with games to train/stimulate cognitive functions: ☐ Yes ☐ No

If yes, then what games have they played?

10. Previous experience with co-creation workshops: ☐ Yes ☐ No

if yes, then what types of workshops?

NAME OF THE GAME

CLASSIFICATION			
Cognitive dimension	**Behavioural Symptoms**	**ICT**	**Players**
· Memory · Orientation · Attention · Perception /gnosia · Language · Calculus · Praxis · Executive functions	· Irritability, Aggression and Anger · Anxiety and Agitation · Depression · Sleep Issues and Sundowning	· Digital Game · Physical game · Both of them	· Individual · Pair · Group cooperative · Group competitive · Other

Definition (*Briefly explain what the game consists of?*

Duration *(Mean/recommended duration)*

Objectives
Game goals
Areas and dimensions that can be improved with this game

Participants
Participants' profile (diagnostics, dementia level, physical and cognitive status, etc.)
Number of participants (explanation and variations)

Material and requirements
Materials needed to develop the game

Support needed
Explain the role of professionals / caregivers (instructions, supervision, motivation, help)

Starting point:
All that professionals and caregivers should know and respect throughout the session for the game to be used correctly.

Development
In detail how the game is carried out step by step (instructions for use).Use here: Text, Images, Video / tutorials, Presentations, Animations

ANNEX VI: PROTOTYPES GAMES FOCUS ON COGNITIVE AND BEHAVIOURAL SYMPTOMS IN DEMENTIA.

A. PHYSICAL GAMES

	NAME	LINK	COGNITIVE SYMPTTOMS	BEHAVIOURAL SYMPTOMS
1	CLAY EMOTION PEOPLE ACTIVITY	https://generationsworkingtogether.org/downloads/5b1e757652795-OLDSCOOL_TOOLKIT_.pdf	4,8	1,2,3
2	GENERATION GAMES	https://www.generationgames.com/	2,3,8	1,2,3,4
3	NATURE FOR CARE, CARE FOR NATURE	http://www.natureforcare.eu/index.html	2,3,8	1,2,3,4
4	TAKE UP GRAFFITI	http://www.spiegel.de/international/0,1518,778978,00.html	3,7,8	2,3
5	ON THE BUS WITH GRANNY	http://www.aeneas-project.eu/docs/OnTheBusWithGranny.pdf	1,2,3,8	2,3
6	"GIOVANI NEL TEMPO"	http://www.giovaninieltempo.it/il-progetto/	1,2,3,4,5,8	2,3
7	"OL'BOYS"	https://www.olboys.it/	1,2,3,4,5,6,7,8	2,3
8	BURGER	https://www.dropbox.com/sh/011dyv2t84iprwr/AACn0Dv9t8PbZg5i-ru3-RGBaa?dl=0	1,3,4,8	2,3
9	AROUND POLIS	https://www.dropbox.com/sh/011dyv2t84iprwr/AACn0Dv9t8PbZg5i-ru3-RGBaa?dl=0	1,2,3,4,5	1,2,3
10	TOM THUMB (KONTOREVITHOULIS)	https://www.dropbox.com/sh/011dyv2t84iprwr/AACn0Dv9t8PbZg5i-ru3-RGBaa?dl=0	1,2,3,6	2,3
11	THE TREASURE OF THE ISLAND	https://www.dropbox.com/sh/011dyv2t84iprwr/AACn0Dv9t8PbZg5i-ru3-RGBaa?dl=0	1,2,3,4,5	1,2,3
12	HOME SWEET HOME	https://www.dropbox.com/sh/011dyv2t84iprwr/AACn0Dv9t8PbZg5i-ru3-RGBaa?dl=0	1,2,3,4,7	2,3
13	DANCING WITH THE LETTERS	https://www.dropbox.com/sh/011dyv2t84iprwr/AACn0Dv9t8PbZg5i-ru3-RGBaa?dl=0	3,4,5,8	1,2,3
14	THE EDGE OF THE RAINBOW	https://www.dropbox.com/sh/011dyv2t84iprwr/AACn0Dv9t8PbZg5i-ru3-RGBaa?dl=0	1,3,4,6,8	1,2,3

	NAME	LINK		
15	Take fresh stuff (pare kala pare freska)	https://www.dropbox.com/sh/9vbqbgim0hrwfgq/AABAjzLtJiAuu_nUlRHquW01a?dl=0	2,3,4,8	1,2,3,4
16	The farmer's basket	https://www.dropbox.com/sh/011dyv2t84iprwr/AACnODv9t8PbZg5iru3-RGBaa?dl=0	1,5,8	2,3
17	Hansel and Gretel	https://www.dropbox.com/sh/011dyv2t84iprwr/AACnODv9t8PbZg5iru3-RGBaa?dl=0	1,3,5	1,2,3,4
18	Bridge of memories	https://www.dropbox.com/sh/9vbqbgim0hrwfgq/AABAjzLtJiAuu_nUlRHquW01a?dl=0	1,4	1,2,3,4
19	zoographies	https://www.dropbox.com/sh/9vbqbgim0hrwfgq/AABAjzLtJiAuu_nUlRHquW01a?dl=0	1,3,4,7,8	1,2,3
20	Festival (xasoume-kerdisoume)	https://www.dropbox.com/sh/9vbqbgim0hrwfgq/AABAjzLtJiAuu_nUlRHquW01a?dl=0	1,2,3,4,5,8	1,2,3,4
21	Hangman	https://play.google.com/store/apps/details?id=com.simapps.hangmanro	3,5	2,3
22	Numerical Pyramid - BrainTraining	https://play.google.com/store/apps/details?id=godlinestudios.brain.training&hl=en-US	3,6,8	1,2,3,4
23	Road Construction - MyroTyromotion	https://tyromotion.com/en/produkte/myro/	2,3,7,8	1,2,3,4
24	Train Ride -MyroTy-romotion	https://tyromotion.com/en/produkte/myro/	2,3,7,8	1,2,3,4
25	Remember Square - BrainTraining	https://play.google.com/store/apps/details?id=godlinestudios.brain.training&hl=en-US	1,2,3,4	1,2,3
26	Rain Fall - BrainWars	https://play.google.com/store/apps/details?id=jp.co.translimit.brainwars&hl=ro	2,3,7	1,2,3,4

B. DIGITAL GAMES

	NAME	LINK	COGNITIVE SYMPTTOMS	BEHAVIOURAL SYMPTOMS
1	Wonderopolis	https://wonderopolis.org/	1,3,5	1,2,3,4
2	"X-Torp"	http://www.innovation-alzheimer.fr/azgame-en/	1,2,3,4,5,6,7,8	2,3
3	"Games for Olders Active Life"	http://goaltoscana.cbim.it/index.php	1,2,3,4,5,6,7,8	1,2,3,4
4	"Verve"	https://gv2.scss.tcd.ie/VERVE/index.html	1,2,3,4,5,6,7,8	2,3
5	"Playtime Project"	http://aal-playtime.eu/	1,2,3,4,5,6,7,8	2,3

6	"AktivDaheim (active@home)"	http://aktivdaheim.at/en/project/	1,2,3,4,5,6,7,8	2,3
7	Find the lyrics	https://www.dropbox.com/sh/9vbqbgim0hrwfgq/AABAjzLtJiAuu_nUI-RHquW01a?dl=0	1,3,4,5,8	1,2,3,4
8	Superdog	https://www.dropbox.com/sh/9vbqbgim0hrwfgq/AABAjzLtJiAuu_nUI-RHquW01a?dl=0	1,2,3,8	2,3
9	Amaze Labyrinth	https://www.dropbox.com/sh/9vbqbgim0hrwfgq/AABAjzLtJiAuu_nUI-RHquW01a?dl=0	1,2,3,8	1,3
10	Do it logically	https://www.dropbox.com/sh/9vbqbgim0hrwfgq/AABAjzLtJiAuu_nUI-RHquW01a?dl=0	3,4,6,8	1,3
11	Around the village	https://www.dropbox.com/sh/9vbqbgim0hrwfgq/AABAjzLtJiAuu_nUI-RHquW01a?dl=0	1,2,3,4,8	1,2,3,4
12	Find it- catch it	https://www.dropbox.com/sh/9vbqbgim0hrwfgq/AABAjzLtJiAuu_nUI-RHquW01a?dl=0	3,4,8	1,2,3,4

C. PHYSICAL AND DIGITAL GAMES

	NAME	LINK	COGNITIVE SYMPTTOMS	Behavioural SYMPTOMS
1	Past, Present and Future	https://generationsworkingtogether.org/case-studies/past-present-and-future	1, 5	2,3
2	Match pairs	https://en.wikipedia.org/wiki/Concentration_(game)	1,3 4	1,2,3
3	LARGE PIECE JIGSAW	https://en.wikipedia.org/wiki/Puzzle	3,4,7	2,3,4
4	Zest Workshops	https://brightshadow.org.uk/zest-workshops/	1,3,5,8	1,2,3,4
5	Cheers (kala krasia)	https://www.dropbox.com/sh/9vbqbgim0hrwfgq/AABAjzLtJiAuu_nUIRH-quW01a?dl=0	2,3,6,8	2,3
6	Break the Block - BrainWars	https://play.google.com/store/apps/details?id=jp.co.translimit.brainwars&hl=ro	2,3,4,8	1,2,3
7	Math Pieces	https://play.google.com/store/apps/details?id=com.nebulabytes.math-pieces&hl=ro	3,6,8	1,2,3,4
8	Find the Number - BrainTraining	https://play.google.com/store/apps/details?id=godlinestudios.brain.training&hl=en-US	3,7	1,2,3,4