

SOCIABLE DELIVERABLE D1.4

“Use Cases Elaboration”



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Abstract

This deliverable elaborates the main functional characteristics and requirements of the SOCIABLE platform and pilot services. Scenarios and use cases are used as vehicles for characterizing the functionalities of the SOCIABLE platform and services. The presented scenarios include the main workflows associated with the SOCIABLE care services, as the later will be offered in the scope of the pilots. At the same time use cases present functional requirements of the SOCIABLE system at a finer level of granularity. In this context, use cases are associated with one or more scenarios. The presented SOCIABLE scenarios play a major role in the definition of the pilot services, as well as in the organization of the project pilots. In particular, the details of the presented scenarios can provide a sound understanding about the various actors engaged in the pilots along with their role. Also, use cases detail the functionalities of the SOCIABLE platform, which is a key prerequisite for integrating the SOCIABLE platform and deploying the required cognitive training, social activation and health record management services. As a result, the present deliverable serves as valuable inputs for several other (on-going) activities in the project relating to service definition (WP2), services technical specification and integration (WP3/WP4), as well as the pilots preparation (WP5).

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Executive Summary

The main objective of the SOCIABLE project is to pilot a set of novel cognitive training and social activation programmes for aged users, based on the combination of the human care and support factor with innovative ICT enabled services and independent living technologies. To this end, SOCIABLE will offer a motivating and ergonomic play environment enabling elderly users to engage in cognitive training and social interaction activities, while at the same time providing health professionals with a wide range of tools for managing the health records of the older adults. This deliverable elaborates the main functional characteristics and requirements of the SOCIABLE platform and pilot services. Scenarios and use cases are used as vehicles for characterizing the functionalities of the SOCIABLE platform and services. Prior to illustrating scenarios and use cases, the deliverable introduces the SOCIABLE pilot concept along with the key processes and workflows comprising this concept. This sets the scene for the detailed description of the pilot scenarios and use cases. Furthermore, the deliverable includes definitions of terms that are also associated with the description of scenarios and use cases. These definitions are also part of the scenarios and use cases background.

The presented scenarios include the main workflows associated with the SOCIABLE care services, as the later will be offered in the scope of the pilots. At the same time use cases present functional requirements of the SOCIABLE system at a finer level of granularity. In this context, use cases are associated with one or more scenarios. Note that the elaboration of scenarios and use cases takes into account the main end-user and care service provider requirements articulated in earlier deliverables of (the WP1 of) the project. Specifically, the presented scenarios take into account the nature of existing care services offerings, deal with both individual and group activities, provide medical record management tools to the health professionals, include cognitive training games that target multiple cognitive training skills and provide a wide range of social activation applications aiming at boosting relaxation, joy and improving the mood of the elderly.

Cognitive training games and social activation services have a prominent position in the definition of the SOCIABLE use cases. In particular, each cognitive training game can be seen as a special individual use case of the SOCIABLE platform. This is illustrated in the deliverable, which also presents a set of sample cognitive training games as use cases of the SOCIABLE platform. Nevertheless, it is noted that an exhaustive presentation of all the cognitive games to be employed/used in SOCIABLE is out of the scope of this deliverable. Similarly to cognitive training games, the deliverable describes the functionalities of social activation services, without however delving into exhaustive details.

Overall, SOCIABLE scenarios play a major role in the definition of the pilot services, as well as in the organization of the project pilots. In particular, the details of the

presented scenarios can provide a sound understanding about the various actors engaged in the pilots along with their role. At the same time the use cases detail the functionalities of the SOCIABLE platform, which is a key prerequisite for integrating the SOCIABLE platform and deploying the required cognitive training, social activation and health record management services. As a result, the present deliverable serves as valuable inputs for several other (on-going) activities in the project relating to service definition (WP2), services technical specification and integration (WP3/WP4), as well as the pilots preparation (WP5).

1. Introduction

SOCIABLE will pilot a set of novel cognitive training and social activation programmes for aged users, based on the combination of the human care and support factor with innovative ICT enabled services and independent living technologies. To this end, SOCIABLE will build a surface computing infrastructure and related applications enabling:

- Aged users to access a motivating play environment based on mixed reality interfaces technologies and play-related-therapeutic tools with a view to preventing the evolution of dementia through pleasant cognitive training-gaming activities for elderly people.
- Health professionals and medical experts to access an automated tool for collecting measurements that support the assessment of the cognitive status (improvement or deterioration) of people with mild dementia.
- Activation and/or increase of the quality and quantity of elderly people's social interactions with other members of the ageing society, as well as with relatives and family.

The SOCIABLE surface computing platform will serve as a vehicle for piloting a novel paradigm for cognitive training and social activation. This paradigm involves introducing and using the SOCIABLE platform in the scope of current cognitive training and social activation services. Specifically, the SOCIABLE ICT platform is expected to boost and improve the effectiveness of current care services through: (a) Facilitating health professionals in designing, monitoring and assessing cognitive training and social activations interventions, (b) Providing a pleasant environment, which will motivate the elderly to actively engage in cognitive training and social activation activities.

The present deliverable is the last deliverable of WP1 ("Requirements and Use Case Definition") of the project. Earlier deliverables of WP1 have focused on the description of key user and care service provider requirements, while also providing an outlook on key requirements for the project's pilots. This deliverable focuses on a detailed description of use cases that are associated with the operation and use of the SOCIABLE platform in the scope of the project's pilots. Use cases are associated with wider operational scenarios involving the SOCIABLE platform. Hence, this deliverable provides also a detailed and formalized description of the baseline scenarios of the SOCIABLE system and pilots. These scenarios extend and enrich the pilot scenarios outlined in earlier deliverable D1.3. Note that the scenarios and use cases which are presented in this deliverable are subject to a common formulation, expressed through common templates for scenario and use cases description. Therefore, the deliverable includes also a description of the templates, along with background information that is mandatory towards understanding scenarios and use cases.

Prior to elaborating on use cases and scenarios the deliverable provides the overall description of the SOCIABLE pilot concept. This concept is a prerequisite to understanding the background information required for drafting scenarios and use cases. Specifically, the SOCIABLE concept presentation allows the reader to understand the setting, the actors and the variations of the SOCIABLE cognitive training and social activation interventions. In addition to the SOCIABLE concept, the deliverables provides a list of terms and concepts that are associated with the SOCIABLE pilots. This list serves as the "SOCIABLE glossary", which facilitates look-up and clarification of the phrases that comprise the SOCIABLE jargon. These phrases are extensively used in the scope of scenarios and use cases.

It should be noted that among the objectives of this document is to illustrate basic business/applications entities, their relationships and use cases associated with the SOCIABLE (surface computing) gaming environment enabling cognitive training and social activation for senior citizens. Along these lines, the document outlines also the main users and applications of the SOCIABLE surface computing platform. Overall, this deliverable will serve as a basis for the detailed technical specification and development of the SOCIABLE gaming environment and applications over the selected surface computing platform. Use cases will also play the role of requirements i.e. features that the SOCIABLE system should have and functionalities that the system should do. In this respect, the use cases presented in this deliverable will be used as requirements for the SOCIABLE system, while also being accompanied with a code for future reference. Requirements and use cases will be used to trace various elements of the project in accordance with the project RUP (Rational Unified Process) compliant approach (Quatrani 2002), which is elaborated in Deliverable D9.1. Hence, use cases in SOCIABLE will be used to drive/trace various processes in the project including design & implementation, change management, project management, quality assurance and testing. Therefore this deliverable will serve as valuable input for several tasks of the project, such as technical specification (WP3), implementation (WP4), as well as technical support and change management during pilot operations (WP6).

The structure of the deliverable is as follows: Section 2 following this introductory paragraph introduces the SOCIABLE pilot concept. Section 3 introduces the SOCIABLE terminology, along with main entities (i.e. actors, systems, legal entities) associated with the SOCIABLE pilots. Section 4 emphasizes on the description of main SOCIABLE scenarios, based on a common background and formalism that is also presented in the same section. Section 5 deals with the main topic of the deliverable, namely elaboration of use cases and requirements for the SOCIABLE system. In this section, use cases are also linked to the scenarios. Finally, Section 6 concludes the deliverable.

2. The SOCIABLE Pilots Process

2.1 Overview

The main objective of the SOCIABLE project is to pilot a novel paradigm for the provision of cognitive training and social activation services to older adults. This paradigm involves the blending of conventional care services with the use of a surface computing platform and facilitates:

- Medical experts and other health professionals in managing the medical records of the elderly in a well structured fully electronic manner. Computer based access to the medical records, facilitates information management and reporting at various control points within a given cognitive training programme.
- Medical experts and other health professionals in designing and customizing cognitive training and social interaction activities to the needs of their patients.
- The elderly in undertaking cognitive training exercises and social interaction activities, in the scope of a motivating play environment which is empower by the SOCIABLE surface computing platform. Note however that conventional (i.e. pen & pencil) gaming activities are likely to take place as well, during the course of a SOCIABLE session (as shown in Figure 2).
- Overall, the organization and the productivity of the cognitive training and/or social activation sessions.

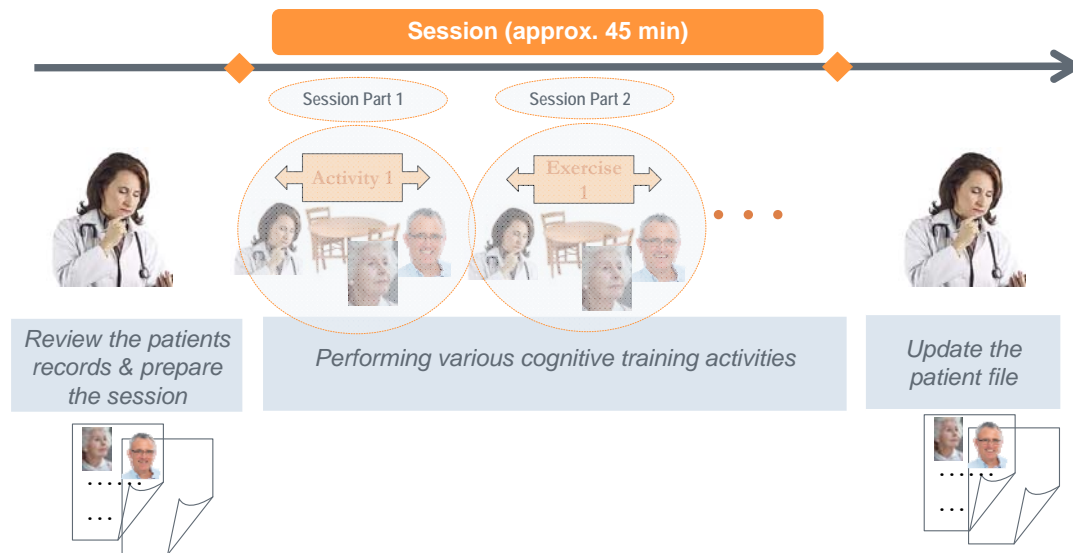


Figure 1: A conventional session for cognitive training and/or social activation (without use of the SOCIABLE platform)

As a result, the pilots will introduce the SOCIABLE care services platform in the care service provisioning process. Following this introduction, several processes that were part of the conventional care service provisioning paradigm (which is illustrated in Figure 1), will be supported from the surface computing platform (as shown in Figure

2). Note however that Figure 2 refers to sessions taking place within care or leisure centres of the SOCIABLE pilot sites. In addition to these session, SOCIABLE will design and pilot in-home services, which will be based on the deployment of lower-cost TabletPCs within the various homes.

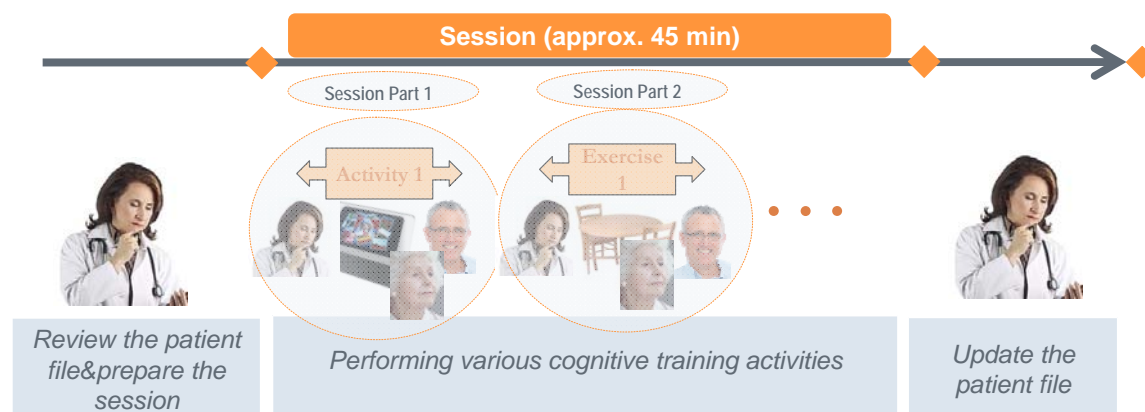


Figure 2: Introduction of the SOCIABLE platform in the cognitive training and/or social activation services

In terms of the SOCIABLE platform, services in both care centers and homes are supported by a SOCIABLE Service Provider. The SOCIABLE Service Provider deals with technical, integration and hosting issues associated with the ICT Services in the platform. Typically, a SOCIABLE Service Provider may support one or more care centers and several associated in home deployments (as shown in Figure 3). Likewise, a SOCIABLE Service Provider may serve one or more care services providers (i.e. SOCIABLE pilot sites). In the scope of the SOCIABLE, technical partners (e.g., CEDAF, SingularLogic, UPV) will be typically acting as SOCIABLE Services Providers, while pilot sites represent providers of care services. The following table (Table 1) depicts SOCIABLE Service Providers and associated care services providers in the scope of the SOCIABLE pilots. Furthermore, the following section clarified the terms service and care services provider, in the scope of the overall SOCIABLE terminology.

SOCIABLE Service Provider	Care Service Provider(s)
SingularLogic	HYGEIA, SPC, TRONDHEIM
CEDAF	COFO, FSL, AUSL
UPV	PREVI

Table 1: SOCIABLE Service Providers and Care Service Providers

The SOCIABLE pilots will therefore involve elderly visiting and using SOCIABLE in care centers, as well as elderly using SOCIABLE from their homes. The main processes comprising the pilots are introduced in the following paragraphs. Note that the emphasis on the description of the processes, is on the functionalities of the SOCIABLE platform, which must be adequately described by the scenarios and use cases which are illustrated later in this deliverable.

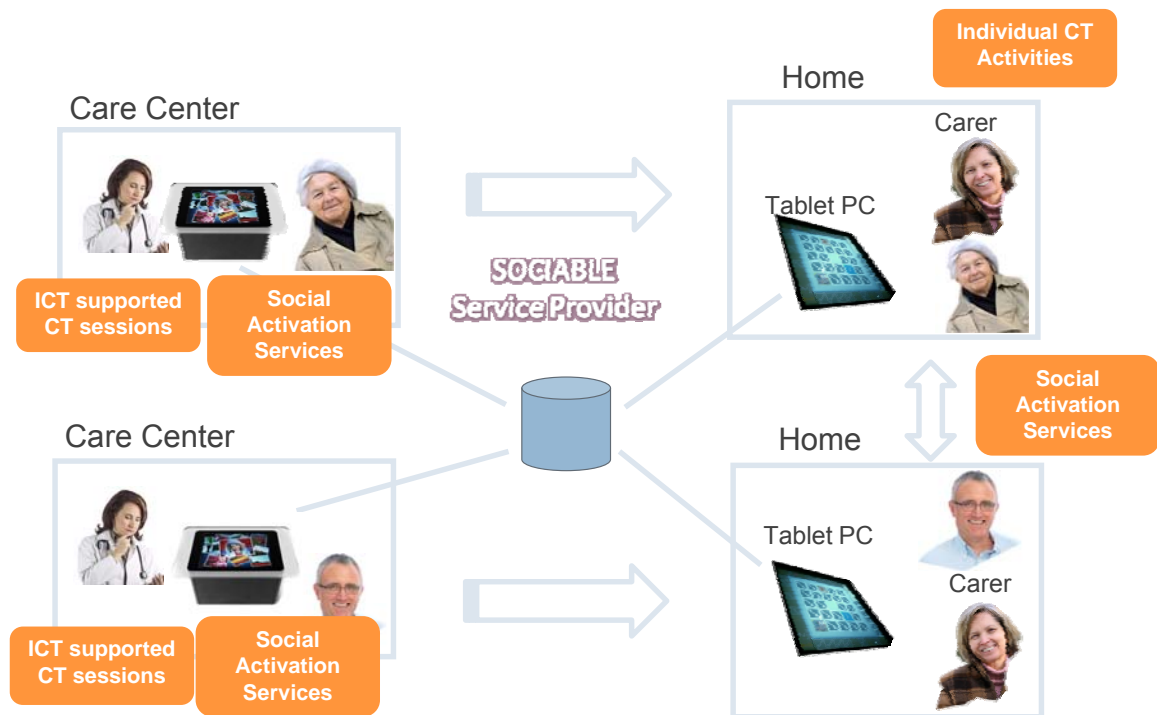


Figure 3: A Service Provider is in general in charge of SOCIABLE deployments across several homes and care centers, which fall within the provider's jurisdiction

2.2 Cognitive Assessment and User Selection

The cognitive assessment and user selection processes are applied prior to enlisting any elderly user to the SOCIABLE programme. In particular the cognitive assessment process hinges on an in-depth assessment (described in detail in SOCIABLE deliverable D2.1) which allows the evaluation of the cognitive functions, the affective status and the functional abilities of the elderly. The tests are performed by a medical expert in a conventional way, i.e. without using the surface computing platform. In order to run the tests, the older adult provides a series of personal data after giving his/her written consent for the use of these data within SOCIABLE. On the basis of all the available information (medical and social history, results of the cognitive, affective and functional assessment, blood tests, brain imaging), the elderly is classified to one of the three target elderly groups of the SOCIABLE project.

The older adult is accordingly included in the programme, as soon as he/she satisfies the inclusion criteria specified in the project (see Deliverable D2.1). On the contrary, in case the older adult meets one or more of the exclusion criteria, it is excluded from the SOCIABLE programme.

As outlined, the SOCIABLE platform is not used to facilitate the conduction of the required cognitive, affective and functional assessment. However, it is used to manage the elderly health record. Hence, at the user's inclusion stage, the health

professional registers the elderly with the SOCIABLE platform and records the values of the assessment, as well as other demographic and medical data.

2.3 Play Activities for Cognitive Training and Social Activation in the scope of SOCIABLE Session

SOCIABLE sessions come into flavours:

- Sessions, which take place in care or leisure centres for the elderly. In the scope of these sessions, the elderly is accompanied and supported/supervised by a medical expert or a specialised employee of the centre (typically some health professional). Note that the elderly participate in these sessions either individually or in groups. A SOCIABLE session includes:
 - Manual (non-ICT supported) activities, organized for individuals or groups of elderly.
 - ICT supported activities (with the SOCIABLE platform). These activities can be organized either for individuals or for groups and they might be: (a) Simple games/exercises taking advantage of the ergonomic interface of the SOCIABLE surface computing platform (e.g., multi-touch functionality), (b) Mixed reality games/exercises, which provided over the SOCIABLE platform as well.
- Individual play Activities that are performed at the homes of the elderly with (or without) the support of a formal (or informal) carer.

Play activities in the scope of the above session comprise cognitive training games, as well as activities boosting social interaction. During a session the elderly will engage in one or more of these activities according to the design of the session. The SOCIABLE platform will provide tools enabling medical experts and health professionals to specify the play activities to be included in a given session, as well as tools for assembling programmes on the basis of sets of sessions.

A variety of cognitive training games will be deployed on the SOCIABLE platform on the basis of:

- Existing cognitive training activities of the SOCIABLE medical experts. Such activities will be ported and deployed over the SOCIABLE platform, with emphasis on activities that could benefit from the surface computing platform and the associated play environment and user interfaces.
- Computer-based cognitive training games used in the relevant literature and practice. These will be games already used for computer-based cognitive training, such as games developed in ElderGames (<http://www.eldergames.org>) and Happy Neuron (<http://www.happy-neuron.com>) projects.
- New ideas and concepts that the partners will implement exclusively for the SOCIABLE project. To this end, SOCIABLE has established a game development and deployment process, which involves games experts (AIJU), SOCIABLE technical partners (SingularLogic and CEDAF), as well as medical experts (AUSL,

HYGEIA, FSL). Note that the SOCIABLE platform will be extensible in terms of deploying additional games.

By and large the SOCIABLE cognitive training games and services will target the generalization of gained benefits to their everyday life, based on a rich set of different activities ranging from abstract tasks to analogues of everyday activities.

The SOCIABLE platform will include a social activation system, enabling the elderly to engage in participatory activities, sharing information and experiences (e.g., in the scope of their biographical Book-of-Life), while at the same time facilitating them to come closer. Activities within the social activation system will be part of the play sessions, possible in conjunction with cognitive training activities. In general, each session will be appropriately configured by the medical expert on the basis of the needs of the elderly participating in the sessions.

Both types of play activities will be implemented as self-sustained application modules that are hosted and run within the SOCIABLE platform. As already outlined the SOCIABLE platform will take provisions for installing and deploying cognitive training games and other play activities in a way that renders them fully transparent to the rest modules of the platform.

At the end of each game a set of scores will be recorded in the platform, notably relating to time and performance (e.g., correct answers) of the elderly. These scores will be used to assess the progress of the elderly individuals during the course of their participation in the SOCIABLE programme. The inclusion of these scores within the SOCIABLE platform will facilitate medical experts and health professionals in producing relevant reports. Hence the SOCIABLE consortium will thoroughly design mechanisms for the interaction between the games and the platform, in terms of the standardized "data" that will be exchanged between each game application and the platform.

2.4 SOCIABLE Validation and Evaluation

The validation and evaluation of the SOCIABLE platform are key processes associated with the pilots, since they will aim at assessing the SOCIABLE platform and approach from a medical and techno-economic perspective. The SOCIABLE platform will provide functionalities for easing medical evaluation, as outlined in the sequel.

From a medical perspective SOCIABLE will opt (in line with international literature) for a standard cognitive evaluation, which will be based on measuring modifications in the elderly users' cognitive performance. Measurement of cognitive performance will rely on the treatment of various elderly groups using both conventional approaches and the SOCIABLE approach. The envisaged groups will likely include:

- A group that will receive treatment based on conventional methods, which will represent the control group.

- A group that will be treated purely based on the SOCIABLE surface computing platform.
- A group that will participate in hybrid session involving both the SOCIABLE ICT platform and the conventional techniques.

By comparing the control group to the other groups, SOCIABLE will gauge the medical benefits of integrating SOCIABLE into existing practices. Furthermore, the SOCIABLE evaluation approach will also include the detection of significant differences on tasks targeted during the sessions (practice effects). The storage and management of scores resulting from the games will be invaluable for this purpose. At the same time, the SOCIABLE evaluation will also leverage pre- and post- training scores on measures of impairment in based on the standard set of SOCIABLE neuropsychological tests.

In order to support the above-mentioned evaluation tasks, the SOCIABLE platform will maintain an electronic record for the patient, including its medical and social history, the values/scores at all his/her neuropsychological tests, as well as all the scores achieved during his/her play activities. The platform will provide tools and techniques for easy processing of all these values. The platform will not however keep data to facilitate the techno-economic evaluation of the SOCIABLE platform.

Please note that the detailed SOCIABLE approach to validation and evaluation will be reported in the scope of Deliverable D7.1 "Results Validation Plan" (due 31/10/2010). The above-mentioned evaluation processes were however presented in order to emphasize the functionalities that boost the medical evaluation of the SOCIABLE pilots.

2.5 The Complete SOCIABLE Workflow

In-line with the processes described in the previous paragraph Figure 4 illustrates the complete workflow of a SOCIABLE cognitive training and/or social activation programme. As already discussed the main milestones associated with a SOCIABLE pilot programme are:

- The cognitive, affective and functional assessment of the elderly prior to his/her inclusion in the programme.
- A number of play sessions comprising the cognitive training and/or social activation programme. The typical duration of a programme is 3 months. In the scope of this programme the elderly attend to two sessions per week. The typical duration of a session is 45' min.
- The assessment of the elderly cognitive status and social interaction characteristics following the successful conclusion of the programme.
- A follow-up assessment of the elderly, outside the scope of the SOCIABLE programme (but of course within the SOCIABLE project), in order to evaluate/assess the longer term impact of the SOCIABLE intervention.

As outlined in Figure 4, the SOCIABLE platform is used in the scope of all the above milestones of the SOCIABLE pilot workflow.

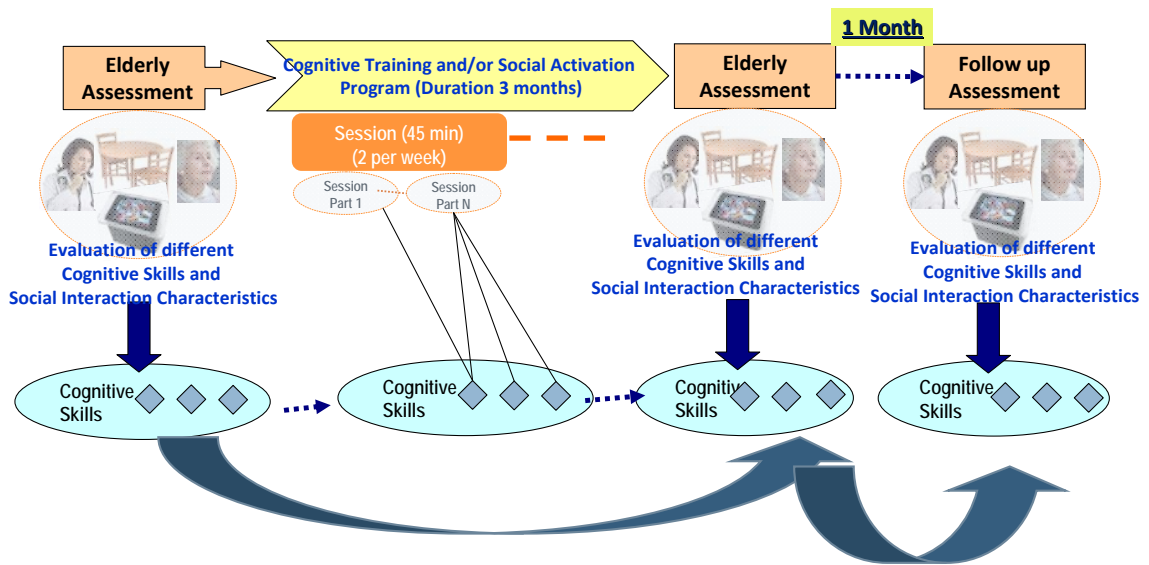


Figure 4: Complete Workflow in the scope of a SOCIABLE Intervention (Cognitive Training and/or Social Activation Programme)

Along this pilot workflow, following sections of this deliverable will describe more fine-grained scenarios involving the SOCIABLE platform. All these scenarios will be taken into account, both for deploying the SOCIABLE services and for conducting the pilots. Furthermore, later sections resolve the various scenarios into even more fine-grained use cases.

3. Terminology and Main Entities

In the sequel we establish terminology to be used throughout this deliverable, especially in the description of scenarios and use cases. Furthermore, we also outline the main entities associated with the SOCIABLE platform and applications:

- **SOCIABLE platform:** The surface computing platform, which hosts all the SOCIABLE applications and module. SOCIABLE will use the Microsoft Surface platform. In most contexts, the term SOCIABLE platform implies both the surface computing platform and the modules/applications deployed over the platform.
- **SOCIABLE module:** A functional unit of the SOCIABLE platform offering a subset of SOCIABLE functionalities. The SOCIABLE platform architecture is modular and defines the structuring principles of the modules that comprise the platform.
- **SOCIABLE application:** A program (e.g., C# program on MS Surface) representing a distinct and self-contained application of the SOCIABLE platform. An application can typically be a cognitive game or a social interaction application (such as the "Book-of-Life"). The SOCIABLE platform should be extensible in terms of the applications it contains (i.e. it should permit the deployment of additional applications, as well as the removal (undeployment) of applications).
- **Aged/Elderly User:** Refers to the elderly end-users of the SOCIABLE platform. These belong typically in three groups, which are outlined in a following paragraph.
- **Medical Experts:** Medical experts are specialists (e.g., geriatric internists, geriatrics psychiatrists, neurologists, neuropsychologists, nurses, social carers) that are in charge of the aged/elderly users. Medical experts design/configure individualized programmes for the elderly users/ patients they are in charge.
- **Carers:** Carers (in the SOCIABLE context) are individuals involved in the provision and/or supervision of care services notably cognitive training and/or social activation programmes. Carers maybe employees at hospitals or municipalities, who offer their services at care centres, leisure centre and/or at the elderly homes.
- **Health Professionals:** Health Professionals are a broader group comprising medical experts, carers, doctors and other professionals involved directly or indirectly in the provision and support of the SOCIABLE care services.
- **SOCIABLE Care Centre:** A (public or private) hospital or municipal care (or leisure) centre, where the SOCIABLE platform is deployed in order to support SOCIABLE based programmes and interventions. Typically, the SOCIABLE Care Centre hosts at least one dedicated (for the Care Centre) instance of the SOCIABLE platform. This instance is dedicated to the elderly individuals/patients that are registered in the specific care centre.
- **SOCIABLE Service Provider:** An entity hosting, providing and supporting SOCIABLE ICT services. The SOCIABLE Service Provider may also act as an Application Service Provider (ASP) offering SOCIABLE services and applications based on a SaaS (Software-as-a-Service) model.

- **SOCIABLE Pilot Site:** Almost synonymous to the care/leisure centre above. Refers to the care centres participating in the SOCIABLE project, namely:
 - HYGEIA (private) hospital in Greece.
 - The Social Policy Centre (SPC) of the municipality of Kifisia in Greece.
 - The Welfare Policies Service of the City of Forli in Italy.
 - Forli's Local Sanitary Organization - Morgagni Pierantoni Hospital (Geriatric department) in Italy.
 - The Fondazione Santa Lucia hospital in Italy.
 - The Care Center of TRONDHEIM Kommune in Norway.
 - Hospitals and Care Centres in Spain to be contacted by PREVI.
- **SOCIABLE Program:** A programme or intervention offered based on the SOCIABLE approach, using the SOCIABLE ICT platform. Typically, a SOCIABLE program can be a cognitive training programme and/or a social activation programme.
- **Cognitive Training Programme:** A cognitive training programme is designed to assess and improve (through training) the cognitive skills of an elderly individual. A cognitive training program has a typical duration of several months and comprises many training sessions.
- **Social Activation Programme:** A social activation programme is designed to improve/activate the life and contacts of an elderly individual. A social activation program has a typical duration of several months and comprises many training (social activation) sessions.
- **SOCIABLE Session:** A specific appointment of the elderly in the care centre or hospital, with the goal of cognitive improvement and/or the enhancement of the elderly social interaction. The carer and/or medical expert are likely to participate in this appointment. Typically, 2-3 sessions may occur within a week, according to the target programme. A training session typically comprises one or more play activities (e.g., cognitive games or social interaction activities).
- **Cognitive Training Game:** A cognitive training game is specially designed in order to train the cognitive skills of the elderly with the goal of alleviating their cognitive decline. Games can be based on paper and pencil. In the SOCIABLE context cognitive games are in most cases ICT based and make use of the SOCIABLE ICT platform. Examples of cognitive training games can be found at the following URLs:
 - <http://www.happy-neuron.com>
 - <http://www.brainmetrix.com>
 - <http://www.mindball.se/>
 - <http://playwithyourmind.com>
 - <http://www.braintreemanagement.co.uk/braintreetraining/computergames.htm>

Note that a cognitive training game targets typically one or more cognitive skills. The performance of the user on a specific game is recorded on the basis of a score.

- **Cognitive Skill:** One particular cognitive property of the elderly individual which is usually trained/improved in the scope of a cognitive game. A list of common

and important cognitive skills, which will be used in the scope of the SOCIABLE platform and programmes follows:

- MEMORY
 - WORKING MEMORY
 - SHORT TERM MEMORY
 - LONG TERM MEMORY
 - EXPLICIT (DECLARATIVE) Memory
 - Semantic Memory
 - Episodic Memory
 - Prospective Memory
 - IMPLICIT (NON-DECLARATIVE) Memory
 - Procedural Memory
- ATTENTION
- PERCEPTION
- LANGUAGE
- REASONING
- EXECUTIVE FUNCTIONS
- PRAXIS
- **Social Activation\Interaction Activity:** A social interaction activity is part of a SOCIABLE session and is likely to be combined with one or more cognitive games in the scope of the session. The social activation activities to be included in the SOCIABLE sessions include: (a) The Book-of-Life, which will be used to create an individual memory space composed by several audiovisual stimuli related with their own life and to share it with other users in order to create a collective memory space, (b) Communication applications, enabling the elderly to communication via ICT means (e.g., videoconference, e-mail, chat). These application aim at boosting the social activity of the elderly, (c) A social matching application, which will support social care providers to identify elderly people that they did not know each other yet they fulfil specific "social" matching rules.

4. SOCIABLE Pilot Scenarios

4.1 Scenario Definition Approach

4.1.1 Scenario Elements and Definition Template

Scenarios in general are widely used by organizations of all types to understand different ways that future events might unfold (Carroll 1995). Specifically, the SOCIABLE scenarios characterize real activities associated with the provision of care services with the SOCIABLE ICT platform. The scenarios involve elderly users and/or health professionals, describe their actions/activities in the scope of cognitive training and/or social activation programmes and characterize their interactions. The more details are given the higher is the likelihood for a precise determination of the course of action and adequate reactions in the scope of the pilot operations of the SOCIABLE system.

A SOCIABLE scenario description consists of the following elements:

- **Identifier:** A unique identifier for the scenario at hand.
- **Title:** A characteristic and descriptive title for the scenario.
- **Actors:** Users or stakeholders involved in the specific scenario. Typically, actors can be elderly (healthy seniors or demented patients), health professionals, carers, medical experts involved in a care services provision scenarios/activity based on the SOCIABLE ICT platform.
- **Description:** This is a general description of the scenario. It can be thought as an example of SOCIABLE operation/use in the context of the specific scenario.
- **Trigger:** The cause or rationale behind the occurrence of the specific scenario.
- **Precondition:** A set of conditions or actions that are assumed to have taken place before the occurrence of the scenario. These conditions may concern the status or activities of the scenario actors.
- **Normal Flow:** The usual flow of events in the scope of the specific scenario. These events should focus on what normally happened during the course of the scenario.
- **Alternative Flow:** This element provides any alternative (yet significant) flow of events pertaining to the same scenario.
- **Exception:** Exceptions refer to deviations of the above-mentioned flows of the scenarios, which will be accompanied by a justification about why and when they could occur.
- **Frequency of use:** A frequency of occurrence for recurring scenarios. It aims to identify how frequently specific scenarios will occur in the scope of the SOCIABLE pilot operations.
- **Notes and Issues:** This element of the scenarios description provides notes and issues that might be associated with the scenario. Note could provide clarifications on the scenario aspects, which are listed in the rest elements described above.

The scenario template is provided in tabular format in the scope of Table 2.

Identifier:	
Title:	
Actors:	
Description:	
Trigger:	
Preconditions:	
Normal Flow:	
Alternative Flows:	
Exceptions	
Frequency of Use:	
Notes and Issues:	

Table 2: Template for the description of SOCIABLE Scenarios

4.1.2 SOCIABLE Scenarios Background

SOCIABLE scenarios concern the provision of care services in the areas of cognitive training/rehabilitation and social activation. The care services involve the use of the SOCIABLE ICT platform according to the SOCIABLE concept described earlier in this deliverable. Care services are provided to senior citizens belonging to one of the following three groups:

- Group A: normal elderly people aged 65+ (patients' caregivers and/or people attending Municipal Recreation Centers).
- Group B: elderly people aged 65+ with Mild Cognitive Impairment (e.g., according to the Petersen, 2001 criteria - MMSE score 25-30).
- Group C: elderly people aged 65+ with mild Alzheimer's disease (according to the DSM-IV criteria (according to the NINCDS-ADRDA criteria) - MMSE score 20-25).

The provision of care services involves one or more health professionals, who are in charge of the provision and/or supervision of the offered care services. Health professionals can be either medical experts (in the areas of cognitive training and social activation) or carers that may or may not possess scientific background. This depends also on the type of the care service provider e.g., hospitals are likely to involve medical experts in their programmes, whereas carers are more commonly employed by municipalities. In the scope of SOCIABLE pilots operations, health professionals will use the SOCIABLE applications in order to monitor the patients' health records, as well as cognitive status.

Care services are offered by care services providers (e.g., municipalities, private hospitals, public hospitals, non-profit centres for demented patients), for which the provision of social support services is part of their culture and core activities. In terms of their existing activities, care service providers can be classified into two main categories:

- Care service providers that already offer cognitive training and/or social activation programmes (e.g., HYGEIA and FSL hospitals in the SOCIABLE

consortium). In order to participate in the SOCIABLE pilot operations, these care service providers will transform their current programmes through including the SOCIABLE ICT platform in their current processes.

- Care service providers that do not offer cognitive training and/or social activation programmes (e.g., SPC and COFO municipalities in the SOCIABLE consortium). In the scope of the SOCIABLE pilot operations, these organizations will have to introduce cognitive training and/or social activation programmes in their offerings.

In addition to health professionals and elderly users, the operation of the platform involves a number of IT experts (e.g., game developers, game deployers, integrators of the SOCIABLE platform), who provide technical/technological support associated with the SOCIABLE platform and related ICT (i.e. surface computing) services.

The above description of actors, organizations and services sets the setting for SOCIABLE scenarios and use cases.

4.2 Overview of SOCIABLE Scenarios

The following table provides an overview of the SOCIABLE Scenarios, listing also the actors which they involve.

No.	Title	Actors
1	Cognitive, Affective and Functional Assessment	1. Elderly User (GroupA or GroupB or GroupC) 2. Medical Expert or other Health Professional (e.g., carer)
2	SOCIABLE Programme Design-Configuration	1. Medical Expert (specialist in cognitive training and/or social activation)
3	SOCIABLE Session Design	1. Medical Expert (specialist in cognitive training/rehabilitation and/or in social activation of the elderly)
4	Cognitive Game Configuration	1. Medical Expert (specialist in cognitive training/rehabilitation) 2. IT Expert (developer and/or specialist in ICT support of the SOCIABLE platform)
5	SOCIABLE Session at Care Centre	1. Elderly a. Healthy seniors OR b. Elderly with MCI OR c. Mild AD AND 2. Medical expert
6	Group SOCIABLE Session at Care	1. A group of people (Healthy

	Centre	seniors OR Elderly with MCI OR mild AD) AND 2. Medical expert
7	SOCIABLE Session at Home	1. Elderly a. Healthy seniors OR b. Elderly with MCI OR c. Mild AD AND 2. Medical expert
8	SSAS at Care Centre	1. Elderly d. Healthy seniors OR e. Elderly with MCI OR f. Mild AD AND 2. Psychologist expert
9	SSAS at Home	1. Healthy senior AND 2. Psychologist expert
10	SOCIABLE Health Record Management	Health Professional

Table 3: Overview of main SOCIABLE Scenarios

These scenarios are in detailed described in the following paragraph.

4.3 Description of Baseline SOCIABLE Scenarios

4.3.1 Elderly User’s Cognitive, Affective and Functional Assessment

The scenario concerns the mandatory cognitive screening processes, which is a key prerequisite for enlisting an elderly user in any SOCIABLE programme. The scenario is described in the table below:

Identifier:	SOCIABLE-SCENARIO- Cognitive, Affective and Functional Assessment -1.0
Title:	Cognitive, Affective and Functional Assessment
Actors:	Elderly User Medical Expert or other Health Professional (e.g., carer)
Description:	This scenario is to describe the in-depth assessment procedure that precedes every elderly user’s participation in any cognitive training programmes.
Trigger:	The user comes to the care center for a scheduled cognitive screening/assessment session
Preconditions:	1. The medical expert has prepared a set of c a set of tests to evaluate the cognitive functions, affective status and

	<p>functional abilities of the elderly. Carers are also trained in conducting the tests¹.</p> <p>2. The tests will be available in the traditional paper-and-pencil form.</p>
Normal Flow ² :	<p>1. The elderly user has a short introductory conversation with the health professional (duration 5 minutes).</p> <p>2. The health professional and the elderly user go through the tests (duration 30-40 minutes). Demographic information has already been recorded during the history-taking phase (see SOCIABLE Deliverable D2.1 – section on Overview of user assessment and selection).</p> <p>3. The tests are administered in the conventional paper-and-pencil form.</p> <p>4. The user has a short closing conversation with the expert (duration 5 minutes).</p> <p>5. The health professional reviews the test results.</p> <p>6. In case there is no entry for the elderly in the SOCIABLE system, the health professional registers the elderly in the SOCIABLE platform and opens his/her SOCIABLE medical record. This includes entering the demographic information, as well as the results of the test and the elderly classification in one of the SOCIABLE target groups.</p> <p>7. Any personal information about the user (e.g., demographics, the paper test, the results of the test(s) etc.) are stored (digitally and/or physically) in accordance with the SOCIABLE privacy preserving protocol.</p>
Alternative Flows:	<p>3. 1. The registration of the elderly in SOCIABLE can be done at a later stage.</p> <p>4.</p>
Exceptions:	<p>1. The process may be terminated in case the elderly user is not cooperative.</p>
Frequency of Use:	<p>1. At least once before enlisting an elderly user in a SOCIABLE programme.</p> <p>2. The process might be repeated at any time, when a health professional decides to (re)assess the cognitive status of the elderly user. This is also the case at the end of each SOCIABLE programme.</p>
Notes and Issues:	

Table 4: Description of the Cognitive Screening Scenario

¹ The specific tests to be used in SOCIABLE are described in Deliverable D2.1 of the project

² The elderly user should also fill in and sign the informed consent form

4.3.2 Design/Configuration of a SOCIABLE Programme

The scenario concerns the design of a cognitive training programme using the SOCIABLE platform. The details are provided in the table below:

Identifier:	SOCIABLE-SCENARIO- Programme Design-Configuration-1.0
Title:	Programme Design-Configuration
Actors:	Medical Expert (specialist in cognitive training and/or social activation)
Description:	This scenario describes the process of designing a SOCIABLE based cognitive training programme for one or more elderly. The design takes into account the functionalities and utilities of the SOCIABLE ICT platform.
Trigger:	The Medical Expert uses the SOCIABLE platform (notably in a care centre) in order to design SOCIABLE programmes for one or more of its patients.
Preconditions:	<ol style="list-style-type: none"> 1. The medical expert has opted to design a programme for one of more of the elderly citizens/patients, which have enlisted in the SOCIABLE pilot programmes. 2. The medical expert can retrieve/access through the SOCIABLE platform the medical record(s) of the patient(s). 3. The programme to be designed is applicable to one or more elderly belonging to the same SOCIABLE target group.
Normal Flow:	<ol style="list-style-type: none"> 1. The medical expert reviews the characteristics of the elderly. 2. The medical expert uses the SOCIABLE platform in order to specify the programme in terms of the number of sessions/visits involved, their duration³, the nature of the sessions (i.e. in-home, in the care centre, hybrid), specific milestones (e.g., cognitive tests) during the treatment as well as the games/activities to be provided through the platform. 3. The medical expert associates one or more elderly with the specific programme. This involves also scheduling the execution of the programme based on specific appointments/sessions in the care centre and/or in the elderly home.
Alternative Flows:	<ol style="list-style-type: none"> 5. 1. Instead of designing a programme from scratch the medical expert may clone (and possibly customize) an existing cognitive training programme (i.e. “create-like” functionality).

³ The overall duration of a SOCIABLE programme, the duration of the sessions, as well as the number of sessions per week for the SOCIABLE pilot are defined in Deliverable D1.3

Exceptions:	1. The medical experts may be able to select from a list of predefined cognitive training programmes (based on related templates).
Frequency of Use:	1. Every time an expert believes that a new programme needs to be defined/developed or an existing programme needs to become customized to specific elderly/patients. 2. Every elderly must become assigned to a cognitive training programme
Notes and Issues:	The design of a programme may include/encompass the design of a training session, which is discussed in a later scenario

Table 5: Description of the Cognitive Programme Design/Configuration Scenario

4.3.3 Design/Configuration of a SOCIABLE Session

The scenario concerns the design of a cognitive training session using the SOCIABLE platform. The details are provided in the table below:

Identifier:	SOCIABLE-SCENARIO-Session Design-v1.0
Title:	Session Design
Actors:	Medical Expert (specialist in cognitive training/rehabilitation and/or in social activation of the elderly)
Description:	This scenario describes the process of designing a SOCIABLE session, which falls in the scope of one or more SOCIABLE programmes.
Trigger:	The Medical Expert uses the SOCIABLE platform (notably in a care centre) in order to design a specific session for one or more of its patients.
Preconditions:	1. The medical expert designs a session for one of more of the elderly citizens/patients, which have been enlisted in a SOCIABLE pilot programme for cognitive training and/or social activation. 2. The medical expert can retrieve/access through the SOCIABLE platform the medical record(s) of the patient(s). 3. The session to be designed is applicable to one or more elderly belonging to the same SOCIABLE target group. 4. The medical expert has been trained in the use of the SOCIABLE surface computing environment, with particular emphasis on SOCIABLE functionalities such as view cognitive skills classification and associated games.
Normal Flow:	1. The medical expert reviews the characteristics of the target elderly, as well as of the cognitive training programmes. 2. The medical expert uses the SOCIABLE platform in order

	<p>to specify the cognitive session attributes (e.g., games to be included in the session, their sequence, their duration etc.) according to the target cognitive skills of the elderly and/or its cognitive and social status.</p> <p>3. The medical expert associates the session with one or more SOCIABLE programmes for cognitive training and/or social activation.</p>
Alternative Flows:	<p>6. 1. Instead of designing a session from scratch the medical expert may clone (and possibly customize) an existing cognitive training session (i.e. “create-like” functionality).</p>
Exceptions:	<p>1. The medical experts may be able to select from a list of predefined SOCIABLE sessions (based on related templates).</p>
Frequency of Use:	<p>1. Every time an expert sets up a cognitive training programme and needs to specific certain training sessions.</p> <p>2. Each cognitive training programme comprises several cognitive training sessions.</p>
Notes and Issues:	<p>The design of a SOCIABLE session, can be thought as part (i.e. sub-scenario) of the SOCIABLE programme design scenario.</p>

Table 6: Description of the Cognitive Session Design Scenario

4.3.4 Configuration of a Cognitive Training Game

The scenario concerns the configuration of a cognitive training game using the SOCIABLE platform. The details are provided in the table below:

Identifier:	SOCIABLE-SCENARIO- Cognitive Game Configuration-v1.0
Title:	Cognitive Game Configuration
Actors:	<p>1. Medical Expert (specialist in cognitive training/rehabilitation)</p> <p>2. IT Expert (developer and/or specialist in ICT support of the SOCIABLE platform)</p>
Description:	This scenario describes the process of configuring a cognitive training game for use within the SOCIABLE platform.
Trigger:	The medical expert has prescribed a certain cognitive training game, which has been accordingly developed for use within the SOCIABLE platform.
Preconditions:	<p>1. The IT developer/expert has developed a cognitive training game over the SOCIABLE platform, based on specifications provided by medical experts.</p> <p>2. The IT expert has deep knowledge and expertise associated with all technical/technological aspects of the SOCIABLE ICT platform.</p> <p>3. The game is configurable in terms of complexity (e.g.,</p>

	dimension, size, time limits etc.). 4. The game and its parameters have been appropriately documented in both paper and electronic format.
Normal Flow:	1. The IT expert deploys the game over the SOCIABLE platform. 2. The IT expert consults the medical experts in order to tune/configure several deployment parameters of the game, including meta-data about the targeted cognitive skills and the respective percentages. 3. The IT expert demonstrates the levels of difficulty of the game. 4. Following the deployment of the game, the medical expert can accordingly use the SOCIABLE platform to tune the difficulty of the game in the scope of a given session.
Alternative Flows:	7. 1. The IT expert deploys the game in the platform without consulting the medical expert. In this case metadata will be configured based on the specifications of the cognitive game.
Exceptions:	1. Some games may not provide options for configuring their level of difficulty.
Frequency of Use:	1. The process of configuring the deployment parameters will take place every time a new game is deployed in the platform. 2. The medical expert will be able to configure a game during the design of a session, but also during the course of a play activity involving one or more elderly.
Notes and Issues:	For some games there may be options for configuring their output as well

Table 7: Description of the Cognitive Training Game Configuration Scenario

4.3.5 Individual SOCIABLE Session at the Care Centre

The following table illustrates the scenario where an elderly visits a care centre for a scheduled cognitive training session.

Identifier:	SOCIABLE-SCENARIO- SOCIABLE Session at Care Centre-v1.0
Title:	SOCIABLE Session at Care Centre
Actors:	Healthy seniors OR Elderly with MCI or mild AD AND Medical experts
Description:	This scenario is meant to give an example of the use of the SOCIABLE services in the Care Center
Trigger:	The user comes to the Care Center for his scheduled SOCIABLE session

Preconditions:	<ol style="list-style-type: none"> 1. The medical expert responsible for the session has already reviewed the user's file and prepared the session (i.e. has chosen the appropriate exercises according to the user's cognitive impairments etc). 2. The user has successfully completed training on the use of surface computers and is familiar with the whole process.
Normal Flow:	<ol style="list-style-type: none"> 1. The user has a short introductory conversation with the expert on everyday topics (weather, family issues etc): 5 minutes. 2. The user is introduced to a conversational reality orientation exercise (e.g., questions on day, date, year, time, top news etc): 5 minutes 3. The user together with the expert go through the assigned homework exercises: 5 minutes. 4. The user is reminded of the basics on the use of the surface computer: 5 minutes 5. The user is then successively introduced to each of the PC-based mental games selected by the medical expert: 20 minutes 6. The user has a short closing conversation with the expert on his experience of today's session (likes and dislikes, difficulties experienced etc) and is given homework (paper-and-pencil cognitive training exercises): 5 minutes 7. The medical expert monitors the user's performance and statistics.
Alternative Flows:	<ol style="list-style-type: none"> 1. If the user finds it difficult to complete a PC-based exercise and shows signs of discomfort, the expert may switch to a different activity (conversational, PC-based or paper-and-pencil). 2. The homework may be assigned electronically, so that the user can complete it in the scope of a later individual SOCIABLE session at his/her home.
Exceptions:	<ol style="list-style-type: none"> 1. The session may last less than 45 minutes in case of pronounced user's discomfort (e.g. due to body pain, bad mood). 2. The duration of the session may be also longer than 45' in some programmes
Frequency of Use:	2 times per week (typical)
Notes and Issues:	

Table 8: Scenario of Individual Cognitive Training Session at Care Centre Pilot

4.3.6 Group SOCIABLE Session at the Care Centre

The following table illustrates the scenarios where a group of elderly people participate in a scheduled cognitive training session within a care centre.

Identifier:	SOCIABLE-SCENARIO- Group SOCIABLE Session at Care Centre-v1.0
Title:	Group SOCIABLE Session at Care Centre
Actors:	A group of people (Healthy seniors OR Elderly with MCI OR mild AD) AND Medical experts
Description:	This scenario is meant to give an example of the use of the SOCIABLE services in the Care Center by groups of elderly
Trigger:	An elderly group comes to the Care Center for scheduled SOCIABLE session
Preconditions:	<ol style="list-style-type: none"> 1. The medical experts responsible for the session have already reviewed the users' medical records and prepared the session (i.e. has chosen the appropriate exercises according to the users' cognitive impairments, the skills that have to be trained etc). 2. All the users have successfully completed training on the use of surface computers and are familiar with the whole process.
Normal Flow:	<ol style="list-style-type: none"> 3. The users engage in short introductory conversations with the expert on everyday topics (weather, family issues etc): 5 minutes 4. The user is introduced to a conversational reality orientation exercise (e.g. questions on day, date, year, time, top news etc): 5 minutes 5. The users together with the expert go through the assigned homework exercises: 5 minutes. 6. The users are reminded of the basics on the use of the surface computer: 5 minutes 7. The users are then successively introduced to group PC-based mental games selected by the medical expert: 20 minutes (as part of the designed session for the group). 8. The users have a short closing conversation with the expert on their experience of the group session (likes and dislikes, difficulties experienced etc) and are given homework (paper-and-pencil cognitive training exercises): 5 minutes 9. The medical expert monitors the users' performance and statistics.
Alternative Flows:	<ol style="list-style-type: none"> 1. If the user finds it difficult to complete a PC-based exercise and shows signs of discomfort, the expert may

	switch to a different activity (conversational, PC-based or paper-and-pencil) 2. The homework may be assigned electronically, as part of the user's in-home SOCIABLE session.
Exceptions:	1. The session may last less than 45 minutes in case of pronounced users' discomfort (e.g. due to body pain, bad mood). 2. The duration of the session may be also longer than 45' in some programmes
Frequency of Use:	2 times per week (typical)
Notes and Issues:	

Table 9: Group Cognitive Training Session at Care Centre Pilot Scenario

4.3.7 Individual SOCIABLE Session at Home

The following table illustrates the scenario where an elderly user executes a session using a touch-computer (e.g., TabletPC) from his/her home.

Identifier:	SOCIABLE-SCENARIO- SOCIABLE Session at Home-v1.0
Title:	SOCIABLE Session at Home
Actors:	Healthy seniors OR Elderly with MCI or mild AD AND Medical experts
Description:	This scenario is meant to give an example of the use of the SOCIABLE services at the senior citizen home
Trigger:	A medical expert has prescribed (to the elderly) an in-home SOCIABLE session
Preconditions:	1. The medical expert responsible for the session has already reviewed the user's file and prepared the session (i.e. has chosen the appropriate exercises according to the user's cognitive impairments etc). 2. The user has successfully completed training on the use of the SOCIABLE system on TabletPC and is familiar with the whole process.
Normal Flow:	1. The user undertakes to play one or more selected exercises (play activities), which have been configured by its supervising medical expert. These exercises have been assigned in each training session. 2. The performance and statistics of the user (scores) are stored in his/her medical record.
Alternative Flows:	1. Some MCI and mild AD might not be able to conduct the exercise on their own. In such cases the in-home session may be assisted/supervised by the primary family caregiver.
Exceptions:	1. In several cases the session may be based on non-ICT games (e.g., the use of traditional paper & pencil games).

Frequency of Use:	Several times per week as defined in the cognitive training programme where the patient participates. Typically two (2) sessions per week.
Notes and Issues:	

Table 10: Scenario of Individual Cognitive Training Session at Home

4.3.8 Social Activation at the Care Centre

The following table illustrates the scenario where an elderly user engages in social activation activities using the SOCIABLE surface computing platform (i.e. the Microsoft Surface) at a care centre.

Identifier:	SOCIABLE-SCENARIO- SSAS at Care Centre -v1.0
Title:	SSAS at Care Centre
Actors:	Healthy seniors OR Elderly with MCI AND Psychologist expert
Description:	Typical scenario of SSAS use at the care centre
Trigger:	The user comes to the care centre for his scheduled SASS session
Preconditions:	The user has successfully completed training on the use of surface computers
Normal Flow:	<ol style="list-style-type: none"> 1. The user with the expert complete the VAS pre-session questionnaire: 5-10 minutes 2. The user with the expert chooses the service to use: 60 minutes. The user can choose several services at the same session. 3. The user with the expert complete the VAS post-session questionnaire: 5-10 minutes
Alternative Flows:	
Exceptions:	The second step can last less than 60 minutes in case the user is tired or wants to leave it
Frequency of Use:	2 time per week (typical duration)
Notes and Issues:	The use of SSAS can be also considered as part of the SOCIABLE session scenario (outlined above, see SOCIABLE-SCENARIO- SOCIABLE Session at Care Centre -v1.0)

Table 11: Scenario of using SSAS at the Care Centre

4.3.9 Social Activation at the Elderly Home

The following table illustrates the scenario where an elderly user engages in social activation activities using a TabletPC at the elderly home.

Identifier:	SOCIABLE-SCENARIO- SSAS at Home -v1.0
Title:	SSAS at Home

Actors:	Healthy senior AND Psychologist expert
Description:	Typical scenario of SSAS use at home
Trigger:	The psychologist expert has recommended an in-home social activation session
Preconditions:	The user has successfully completed training on the use of surface computers
Normal Flow:	4. The user with the expert complete the VAS pre-session questionnaire: 5-10 minutes 5. The user with the expert chooses the service to use: 60 minutes. The user can choose several services at the same session. 6. The user with the expert complete the VAS post-session questionnaire: 5-10 minutes
Alternative Flows:	
Exceptions:	The second step can last less than 60 minutes in case the user is tired or wants to leave it
Frequency of Use:	Two times per week (typical frequency)
Notes and Issues:	1. At the first 2 sessions the user will be help by an expert 2. The use of SSAS can be also considered as part of the SOCIABLE session scenario (outlined above, see SOCIABLE-SCENARIO- SOCIABLE Session at Home-v1.0)

Table 12: Scenario of using SSAS at Home

4.3.10 Managing Elderly/Patient Health Record, Cognitive, affective and functional Assessment and Performance in SOCIABLE games

The following table illustrates the scenario where a health professional accesses, reviews and assesses the health record of a specific elderly user that participates in a SOCIABLE programme. The scenario gives emphasis on the assessment of the elderly performance in the scope of play activities (such as cognitive training games).

Identifier:	SOCIABLE-SCENARIO- SOCIABLE Health Record Management -v1.0
Title:	SOCIABLE Health Record Management
Actors:	Health Professional
Description:	Description of the process of accessing and managing a SOCIABLE elderly user/patient health record
Trigger:	The health professional (e.g., medical expert) wants to review the status of one or more of his/her patients, who participate in SOCIABLE.
Preconditions:	The user/patient participates in a SOCIABLE programme. Hence the elderly belongs to one of the SOCIABLE target groups and meets the criteria set for inclusion in SOCIABLE. As a result, a record for this user exists in the SOCIABLE

	database. Moreover, the elderly user has given consent to the health professional for this process.
Normal Flow:	<ol style="list-style-type: none"> 1. The health professional retrieves the user/patient record from the database. 2. Along with demographic information, the health professional has full access to the scores of the elderly in the various games, as well as in the neuropsychological tests. 3. The health professional has the opportunity to statistically analyze the above information in order to extract comparative evolutionary data (e.g., scores/tests) through the participation of the user in the SOCIABLE programme.
Alternative Flows:	
Exceptions:	The health professional may be also assisted by personal notes kept for the patient (outside of the SOCIABLE system).
Frequency of Use:	<p>The process of accessing and reviewing an elderly health record may be repeated at several points during the course of a SOCIABLE programme for example:</p> <ul style="list-style-type: none"> ○ When the elderly enters the programme. ○ On a weekly/monthly basis to review the progress of the patient. ○ When the elderly finishes and exits the programme. ○ On demand, as soon as the elderly user requests information from his/her doctor or carer.
Notes and Issues:	

Table 13: SOCIABLE Health Record Management Scenario

5. SOCIABLE System Use Cases

5.1 Use Cases Definition and Template

Use cases describe SOCIABLE requirements at a finer level of granularity. Use cases correspond to things that the SOCIABLE system must do/support. In terms of the SOCIABLE platform functionality, SOCIABLE scenarios can be seen as collection of use cases. Furthermore, a use case can support one or more SOCIABLE scenarios. The main elements of a use case description are the following:

- **Identifier / Code:** A unique identifier of the use case, which will facilitate its tracing and management throughout the project lifecycle.
- **Name:** A descriptive name for the use case.
- **Related Scenario(s):** One or more scenarios supported by the specific use case.
- **Goal:** The goal of the use case i.e. what is expected to be achieved and how will the participating/involved user(s) will be satisfied.
- **Actor(s):** The actors (e.g., medical experts, health professionals, healthy seniors, demented patients) involved in the use case.
- **Preconditions:** One or more assumptions underlining the use case.
- **Basic Course of Action:** The flow of the use case described as a series of steps.
- **Post Conditions:** The situation after the execution of the use case.
- **Target Platform:** The target platform(s) (Microsoft Surface / TabletPC) where this use case will be implemented.
- **Notes:** Any additional notes (e.g., clarifications) surrounding the particular use case.

The use cases template is provided in tabular format in the scope of Table 14.

Identifier / Code	Unique Identifier of the Use Case
Name	Name of the Use Case
Related Scenario(s)	Scenarios supported by this use case
Goal	What is expected to be achieved? When and how will the user(s) be satisfied?
Actor(s)	Who is involved in the use case
Preconditions	Assumptions underlining the use case
Basic Course of Action	Flow of the use case as a series of steps
Post Conditions	Situation after the execution of the use case
Target Platforms	The target platform(s) (Microsoft Surface / TabletPC) where this use case will be implemented
Notes	Any additional notes (e.g., clarifications) surrounding the particular use case

Table 14: Basic Use Case Description Template

5.2 Overview of SOCIABLE Use Cases

The following table provides an overview of the SOCIABLE Use Cases, listing also the actors which they involve.

No.	Use Case Title	Actors
1	User Registration to the SOCIABLE Platform	1. Health Professional 2. Elderly User 3. IT Administrator/Expert (one of the above)
2	SOCIABLE Platform Login	1. Health Professional 2. Elderly User a. Healthy seniors OR b. Elderly with MCI OR c. Mild AD 3. IT Administrator/Expert (one of the above)
3	SOCIABLE Platform Logout	1. Health Professional 2. Elderly User a. Healthy seniors OR b. Elderly with MCI OR c. Mild AD 3. IT Administrator/Expert (one of the above)
4	Manage Medical Records	Health Professional
5	Cognitive Game Configuration	IT Expert
6	Social Activation Services Deployment/Configuration	IT Expert
7	Medical Records Reports	Health Professional
8	Medical Record History	Health Professional
9	Session Configuration	Health Professional
10	Cognitive Games Search	Health Professional
11	User Search	Health Professional
12	Using/Playing Cognitive Games	1. Elderly a. Healthy seniors OR b. Elderly with MCI OR c. Mild AD
13	Social Activation Service	2. Elderly a. Healthy seniors OR b. Elderly with MCI

Table 15: Main SOCIABLE Use Cases

The following sub-section describes these use cases in more detail.

5.3 SOCIABLE Use Cases

5.3.1 User Registration to the SOCIABLE Platform

Identifier / Code	SOCIABLE-UC-User Registration-v1.0
Name	User Registration to the SOCIABLE Platform
Related Scenario(s)	SOCIABLE-SCENARIO- Cognitive, Affective and Functional Assessment -1.0
Goal	Register Users to the SOCIABLE platform
Actor(s)	Health Professional Elderly User IT Administrator/Expert
Preconditions	Users have been adequately trained in the use of the surface computing system.
Basic Course of Action	<ul style="list-style-type: none"> ○ The User (elderly, health professional, IT administrator) is presented with a registration form. ○ The User (elderly, health professional, IT administrator) completes and submits the registration form. ○ The User is registered in the SOCIABLE database.
Post Conditions	Registered users can login and use the system.
Target Platform(s)	Microsoft Surface, TabletPC
Notes	

Table 16: Registration to the SOCIABLE platform Use Case

5.3.2 Login to SOCIABLE Platform

Identifier / Code	SOCIABLE-UC-Login-v1.0
Name	SOCIABLE Platform Login
Related Scenario(s)	All SOCIABLE Scenarios
Goal	Authenticate users and authorize them to use the SOCIABLE platform
Actor(s)	Health Professional Elderly User IT Administrator/Expert
Preconditions	Users (both elderly and professionals) have been adequately trained in the use of the system.
Basic Course of Action	<ul style="list-style-type: none"> ○ The User (elderly or health professional) is presented with login

	<p>screen.</p> <ul style="list-style-type: none"> ○ The User (elderly or health professional) provides its username and password. Alternatively, it can provide object based identification (e.g., using a tag or his/her photo). ○ The SOCIABLE platform authenticates users and authorizes them to use the SOCIABLE platform.
Post Conditions	User is presented with the appropriate (home) screen according to its role (user or professional) and privileges in the system
Target Platform(s)	Microsoft Surface, TabletPC
Notes	

Table 17: Login to SOCIABLE platform Use Case

5.3.3 Logout from SOCIABLE Platform

Identifier / Code	SOCIABLE-UC-Logout-v1.0
Name	SOCIABLE Platform Logout
Related Scenario(s)	All SOCIABLE Scenarios
Goal	Save and close the user’s session
Actor(s)	Health Professional Elderly User IT Administrator/Expert
Preconditions	Users (both elderly and professionals) have been adequately trained in the use of the system.
Basic Course of Action	<ul style="list-style-type: none"> ○ The User (elderly or health professional) is presented with a log-out / sign-out command.
Post Conditions	<ul style="list-style-type: none"> ○ The platform is available for use by other users (through the login procedure / use case) ○ The user’s session (e.g., preferences, layout, game progress/scores) have been saved and will be available in his/her next login.
Target Platform(s)	Microsoft Surface, TabletPC
Notes	

Table 18: Logout from SOCIABLE platform Use Case

5.3.4 Manage Medical Record (Add/Update)

Identifier / Code	SOCIABLE-UC- Manage Medical Records - v1.0
Name	Manage Medical Records
Related Scenario(s)	SOCIABLE-SCENARIO- SOCIABLE Health Record Management -v1.0, SOCIABLE-SCENARIO- Cognitive, Affective and Functional Assessment -1.0
Goal	Allow the health professional (notably the medical expert) to manage the elderly medical health record through the SOCIABLE platform
Actor(s)	Health Professional
Preconditions	Health professionals have been adequately trained in the use of the system.
Basic Course of Action	<ul style="list-style-type: none"> ○ The Health professional fetches the electronic health record of a specific elderly/patient in the SOCIABLE platform. This is based on a unique identifier of the elderly (such as social security number or tax record number). ○ The Health professional view and updates the medical record as required by the needs of the scenario that comprises this use case. Update may involve recording of the sessions, updates in the scores of exercises etc.
Post Conditions	<ul style="list-style-type: none"> ○ The health professional can view the electronic record of the patient in order to plan and/or execute the cognitive training intervention. ○ The electronic health record of the patients is updated as needed.
Target Platform(s)	Microsoft Surface, TabletPC
Notes	The SOCIABLE Ethical Management Guidelines for handling the medical records will be fully respected.

Table 19: Medical Record Management Use Case

5.3.5 Cognitive Game Deployment/Configuration

Identifier / Code	SOCIABLE-UC- Cognitive Game
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	Configuration-v1.0
Name	Cognitive Game Configuration
Related Scenario(s)	
Goal	Enable the deployment of (additional) games on the SOCIABLE platform
Actor(s)	IT Expert
Preconditions	A game has been developed according to specification provided by medical experts
Basic Course of Action	<ul style="list-style-type: none"> ○ The IT expert installs / deploys the game over the SOCIABLE ICT platform. ○ The game is configured on the basis of metadata associated with the cognitive skills it targets (e.g., attention, perception, memory, executive functions, space-Time Orientation, Imagination/Creativity, Mathematical Calculations, Language). ○ The game is also classified on the basis of its type (e.g., Word Games, Typing Games, Math Games, Logic Games, Search Games, Memory Games, Focus Games, Card Games, Mouse Games, Multi-Tasking Games, Spatial Games, Eye-Hand Coordination, Visual-Spatial, Problem Solving, Processing Numbers, Puzzles/Brainteasers).
Post Conditions	<ul style="list-style-type: none"> ○ The cognitive training game is available for use within SOCIABLE cognitive training programmes.
Target Platform(s)	Microsoft Surface, TabletPC
Notes	

Table 20: Cognitive Training Game Deployment/Configuration Use Case

5.3.6 Social Activation Services Deployment/Configuration

Identifier / Code	SOCIABLE-UC- SSAS Configuration-v1.0
Name	Social Activation Services Deployment/Configuration
Related Scenario(s)	
Goal	Enable the deployment of social activation services on the SOCIABLE

	platform
Actor(s)	IT Expert
Preconditions	<ul style="list-style-type: none"> ○ A social activation service has been developed according to specification provided by psychologist experts
Basic Course of Action	<ul style="list-style-type: none"> ○ The IT expert installs and configures the social activation service over the SOCIABLE platform
Post Conditions	<ul style="list-style-type: none"> ○ The social activation service is available for use within SOCIABLE SOCIABLE programmes
Target Platform(s)	Microsoft Surface, TabletPC
Notes	

Table 21: Playing a Cognitive Training Game Use Case

5.3.7 Medical Records Reports

Identifier / Code	SOCIABLE-UC- Medical Records Reports - v1.0
Name	Medical Records Reports
Related Scenario(s)	SOCIABLE-SCENARIO- SOCIABLE Health Record Management -v1.0, SOCIABLE-SCENARIO- Cognitive, Affective and Functional Assessment -1.0
Goal	Produce reports on one or more patients health records
Actor(s)	Health Professional
Preconditions	<ul style="list-style-type: none"> ○ The SOCIABLE platform comprises a medical records database, which has been populated in the scope of the cognitive training sessions. ○ The medical records database is maintained/hosted by a certain services provider and may aggregate information for all the sites that are served/supported by the specific service provider.
Basic Course of Action	<ul style="list-style-type: none"> ○ The health professional produces, views and prints various parametric reports for a specific patient ○ The health professional prints also group/aggregate statistical reports.
Post Conditions	<ul style="list-style-type: none"> ○ The reports are extracted from the system to allow better and more informed decisions about the

	evolution of a patient's cognitive decline, the design of cognitive training programmes and sessions, as well as the evaluation of the SOCIABLE approach.
Target Platform(s)	TabletPC
Notes	This functionality could be made available on the Microsoft Surface as well. It is assumed that the health professional could assess the relevant SOCIABLE database via both devices/platforms.

Table 22: Medical Records Reports Use Case

5.3.8 Medical Record History

Identifier / Code	SOCIABLE-UC- Medical Record History - v1.0
Name	Medical Record History
Related Scenario(s)	SOCIABLE-SCENARIO- SOCIABLE Health Record Management -v1.0, SOCIABLE-SCENARIO- Cognitive, Affective and Functional Assessment -1.0
Goal	Maintain and present a full history of the medical records that are hosted on the system.
Actor(s)	Health Professional
Preconditions	<ul style="list-style-type: none"> ○ The SOCIABLE platform comprises a medical records database, which has been populated in the scope of the cognitive training sessions.
Basic Course of Action	<ul style="list-style-type: none"> ○ The health professional views a full history of a given patient's record. ○ The record can be filtered and printed.
Post Conditions	<ul style="list-style-type: none"> ○ The medical history of a given elderly individual can be used for customizing treatments/session/programmes to his/her needs.
Target Platform(s)	TabletPC
Notes	This functionality could be made available on the Microsoft Surface as well. It is assumed that the health

	professional could assess the relevant SOCIABLE database via both devices/platforms.
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Table 23: Medical Records History Use Case

5.3.9 SOCIABLE Session Configuration

Identifier / Code	SOCIABLE-UC- Session Configuration - v1.0
Name	Session Configuration
Related Scenario(s)	SOCIABLE-SCENARIO- Programme Design-Configuration-1.0, SOCIABLE-SCENARIO-Session Design-v1.0
Goal	Define and/or customize a SOCIABLE session and assign it to a patient
Actor(s)	Health Professional
Preconditions	<ul style="list-style-type: none"> ○ There is a need for designing/configuring a new SOCIABLE session for a patient or group of patients
Basic Course of Action	<ul style="list-style-type: none"> ○ The health professional specifies a session's characteristics including duration, number of exercises involved, complexity of the exercises, target cognitive skills, target elderly group, social interaction activities used and in what capacity etc.
Post Conditions	<ul style="list-style-type: none"> ○ The session is created and can be assigned to specific programmes
Target Platform(s)	Microsoft Surface, TabletPC
Notes	

Table 24: Cognitive Training Session Configuration Use Case

5.3.10 Games Search

Identifier / Code	SOCIABLE-UC- Games Search -v1.0
Name	Cognitive Games Search
Related Scenario(s)	SOCIABLE-SCENARIO- Programme Design-Configuration-1.0, SOCIABLE-SCENARIO-Session Design-v1.0, SOCIABLE-SCENARIO- Cognitive Game Configuration-v1.0
Goal	Search available cognitive games based on a variety of criteria
Actor(s)	Health Professional

Preconditions	<ul style="list-style-type: none"> ○ A number of games have been deployed on the SOCIABLE platform. ○ Upon their deployment, games have been accompanied by metadata (e.g., game type, cognitive skills trained) enabling search and retrieval of games.
Basic Course of Action	<ul style="list-style-type: none"> ○ The health professional uses a search form to specify criteria for searching the available games. Criteria are mainly based on the metadata supplied in the scope of the game’s deployment. ○ The search is performed and results are presented to the user.
Post Conditions	<ul style="list-style-type: none"> ○ Upon using the search functionality, the health professional can easily find appropriate games for inclusion within cognitive sessions and/or cognitive training programmes
Target Platform(s)	TabletPC
Notes	This functionality could be made available on the Microsoft Surface as well. It is assumed that the health professional could assess the relevant SOCIABLE database via both devices/platforms.

Table 25: Cognitive Training Games Search Use Case

5.3.11 Search Users and their Health Records

Identifier / Code	SOCIABLE-UC- UserSearch -v1.0
Name	User Search
Related Scenario(s)	SOCIABLE-SCENARIO- SOCIABLE Health Record Management -v1.0, SOCIABLE-SCENARIO- Cognitive, Affective and Functional Assessment -1.0
Goal	Search the electronic health records database based on a variety of criteria
Actor(s)	Health Professional
Preconditions	<ul style="list-style-type: none"> ○ A number of elderly users/patients have been registered on the SOCIABLE platform. ○ For each user the platform includes information about his/her profile,

	including demographic information, his/her social history, as well as his/her performance in play activities and neuropsychological tests.
Basic Course of Action	<ul style="list-style-type: none"> ○ The health professional uses a search form to specify criteria for searching the users' database. Criteria are mainly based on the user data kept in the system, such as type of user (i.e. based on the user group A/B/C), demographic data, values in specific tests etc. ○ The search is performed and results are presented to the user.
Post Conditions	<ul style="list-style-type: none"> ○ Upon using the search functionality, the health professional can easily recall information about the user/patient, as for example required in order to assign the patient to a specific session or programme.
Target Platform(s)	TabletPC
Notes	This functionality could be made available on the Microsoft Surface as well. It is assumed that the health professional could assess the relevant SOCIABLE database via both devices/platforms.

Table 26: Search users and their Health records use case

5.4 SOCIABLE Play Activities as Use Cases

5.4.1 The SOCIABLE Play Activities (Cognitive Training Games and Social Interaction Activities) as SOCIABLE Use Cases

Play activities such as cognitive training games and social interaction activities can be seen as individual self-sustained use cases, which can be used to support several of the scenarios outlined above. The following tables describe a cognitive game and a sociable activation services as a special type of SOCIABLE use cases.

Identifier / Code	SOCIABLE-UC- CognitiveGame-v1.0
Name	Using/Playing Cognitive Games
Related Scenario(s)	SOCIABLE-SCENARIO- Group SOCIABLE Session at Care Centre-v1.0, SOCIABLE-SCENARIO- SOCIABLE Session at Care Centre-v1.0, SOCIABLE-SCENARIO- SOCIABLE Session at Home-v1.0
Goal	Play a cognitive training game in the scope of a session
Actor(s)	Elderly Users (Healthy seniors OR Elderly with MCI OR mild AD)
Preconditions	<ul style="list-style-type: none"> ○ User is about to play a cognitive game in the scope of a cognitive training session (either in a care centre or at his/her home). ○ A health professional has instructed the older adult on the use of the cognitive game.
Basic Course of Action	<ul style="list-style-type: none"> ○ The user plays the game over the SOCIABLE surface computing platform (care centre scenario). The play activity may be carried out individually or within a group. ○ The completion of the game leads to a tangible/quantitative result (e.g., score, elapsed time), which are accordingly used by the supervising health professional.
Post Conditions	<ul style="list-style-type: none"> ○ The older adult has completed a cognitive exercise in the scope of its session and can advance to the next step foreseen by the design of the particular session.
Target Platform(s)	Microsoft Surface, TabletPC
Notes	It is assumed that this cognitive game is available both in the care/leisure centre and through the home.

Table 27: A Cognitive Training Game as a SOCIABLE Use Case

Identifier / Code	SOCIABLE-UC- SocialActivationService-v1.0
Name	Social Activation Service
Related Scenario(s)	SOCIABLE-SCENARIO- Group SOCIABLE Session at Care Centre-v1.0, SOCIABLE-SCENARIO- SOCIABLE Session at Care Centre-v1.0, SOCIABLE-SCENARIO- SOCIABLE Session at Home-v1.0, SSAS at Care Centre, SSAS at Home
Goal	Use a social activation service within a SOCIABLE session
Actor(s)	Healthy Elderly or Elderly with MCI
Preconditions	<ul style="list-style-type: none"> ○ A user has chosen a social activation service to use it in a session. ○ A psychologist expert has instructed the user on the use of the social service.
Basic Course of Action	<ul style="list-style-type: none"> ○ The user uses the social activation service over the surface computing platform (at the care centre) or through a TabletPC (at home). ○ Data generated during the use of the social activation service (with who talks, mood, etc) is stored in the SOCIABLE platform.
Post Conditions	<ul style="list-style-type: none"> ○ The elderly user has used a social activation service in a SOCIABLE session, according to the specification of a session in which he/she participates.
Target Platform(s)	Microsoft Surface, TabletPC
Notes	

Table 28: A SOCIABLE Activation Service as a SOCIABLE Use Case

Note that Table 27 describes a general cognitive training game as a SOCIABLE Use case. Numerous cognitive training games will be designed and deployed over the SOCIABLE platform, with the view to supporting the pilots. In general, the games to be deployed will:

- Cover the needs of all the SOCIABLE elderly users, including users from all target groups.
- Take into account the existing practices and activities of existing play activities, in order to ensure a smooth migration to the SOCIABLE surface computing approach.
- Exploit the benefits of surface computing in general and the SOCIABLE platform in particular.

- Manifest the added value of the surface computing environment, in terms of ergonomics, flexibility and ease of use.
- Have a medical and scientific justification.
- Attempt as much as possible to be connected to the elderly end users real life.

In order to achieve the above SOCIABLE has established a formal process for the specification, design and deployment of cognitive training games, which involves medical experts, game experts and technology providers within the consortium. An exhaustive description of this process, as well as of the cognitive games to be deployed over the SOCIABLE platform is beyond this deliverable. However, following paragraphs provide an example description of cognitive training games based on a formal description template, which is also described in the sequel.

Likewise, this deliverable does not provide an exhaustive presentation/specification of the social activation services. Nevertheless, a brief presentation of the main social activation services to be used in the SOCIABLE is provided.

5.4.2 Cognitive Training Games Examples

5.4.2.1 Play Activities Description

The main elements of a game description are:

- **Identifier:** Unique Identifier of the Game (in the form of SOCIABLE-GAME-[Name]-[Version]).
- **Name:** A descriptive name of the Game.
- **Short Description:** A Short (summary) Description of the Game.
- **Analytical Description:** A detailed description of the Game.
- **Target Groups:** One or more of the SOCIABLE target groups (A and/or B and/or C), which are addressed by the game.
- **Number of Participants:** In the case of group play, this indicates how many elderly could participate.
- **Target Platform:** The platform(s) where this game will be operational (Microsoft Surface, Tablet PC, both, other).
- **Cognitive) Skills Addressed:** The skills addressed by the particular game (according to the final SOCIABLE cognitive skills classification) – In the case where more than one skills are targeted, the relevant percentages should be indicated as well.
- **Game Origin:** An indication of the origin of the game (e.g., if it is based on an existing activity, if it is derived from a third-party vendor or project, or if it is inspired entirely in the scope of SOCIABLE).
- **Notes:** Free notes for additional documentation of the game.

The following table provides the game description template (Table 29).

Game Metadata	Description/Explanation
Identifier	Unique Identifier of the Game (possible in the form of SOCIABLE-GAME-[Name]-[Version])
Name	Name of the Game
Short Description	Short (summary) Description of the Game

Analytical Description	Detailed Description of the Game
Target Groups	One or more of the SOCIABLE target groups (A and/or B and/or C) to which this game is addressed
Number of Participants	In the case of group play please indicate how many could participate
Target Platform	The platform(s) where this game will be operational (Microsoft Surface, Tablet PC, both, other)
(Cognitive) Skills Addressed	The skills addressed by the particular game (according to the final SOCIABLE cognitive skills classification) – In the case where more than one skills are targeted, the relevant percentages should be indicated as well
Game Origin	Is the game an existing activity? or Derived from a third-party vendor or project? or Inspired entirely in the scope of SOCIABLE
Notes	Free notes for additional documentation of the game

Table 29: Template for the description of SOCIABLE Play Activities

5.4.2.2 Sample Cognitive Games Description

Based on the above template, the following tables provide characteristic examples of cognitive games that will be deployed over the SOCIABLE platform.

Game Metadata	Description/Explanation
Identifier	SOCIABLE-GAME-TIME Identification-V1.0
Name	Time Identification
Short Description	Game boosting elderly orientation based
Analytical Description	<ol style="list-style-type: none"> 1. A card depicts time written in numbers 2. Accordingly the system presents different figures representing time clocks 3. The patient must correctly choose the clock corresponding to the time written in numbers.
Target Groups	Group C
Number of Participants	1
Target Platform	Microsoft Surface, TabletPC
(Cognitive) Skills Addressed	Memory, Attention, Orientation
Game Origin	Part of FSL Gaming Activities
Notes	Some of the above attributes (e.g., the “Cognitive Skills”) may need revision

Table 30: Description of the Time Game

Game Metadata	Description/Explanation
Identifier	SOCIABLE-GAME-SCRAMBLED STORY-V1.0
Name	Scrambled Story
Short Description	The elderly creates a story from scrambled phrases or pictures

Analytical Description	The patient has to put in order either sentences or pictures in order to create a meaningful story.
Target Groups	GroupA, Group B and Group C
Number of Participants	1-4
Target Platform	Microsoft Surface, TabletPC
(Cognitive) Skills Addressed	Memory, Attention, Executive functions and Attention
Game Origin	Part of HYGEIA Gaming Activities
Notes	Some of the above attributes (e.g., the “Cognitive Skills” and “Target Groups”) may need revision

Table 31: Description of the Scrambled Story Game

Game Metadata	Description/Explanation
Identifier	SOCIABLE-GAME-SHOPPING CART-V1.0
Name	Real Life Shopping Cart
Short Description	Given an amount of Euro the elderly must successfully create a (fictitious) shopping cart
Analytical Description	<ul style="list-style-type: none"> ○ The system presents the elderly with an amount of Euro (e.g., 100€) and a rich set of items found in supermarkets. ○ Each item has a price associated with it, which corresponds to a realistic market price. ○ The elderly must fill-in a shopping cart with the appropriate items so as to reach a specific goal (e.g. prepare a birthday party for his/her grandson or buy the things he/she will need during summer vacations) without exceeding the given amount of money.
Target Groups	GroupA, Group B and Group C
Number of Participants	1-2
Target Platform	Microsoft Surface, TabletPC
(Cognitive) Skills Addressed	Executive Functions and Memory
Game Origin	New Concept bound to the elderly daily living
Notes	

Table 32: Description of the Real Life Shopping Cart Game

5.4.3 Social Activation Services

As illustrated in Table 28 the use of a social activation service by an elderly user can be considered as a generalized use case for the SOCIABLE platform. In the sequel we briefly outline the social activation services that are under implementation in the scope of the SOCIABLE platform. These services can be seen as more specific use cases, resulting from the specialization of the “Basic Course of Action” outlined in Table 28. Note however that the following descriptions intend to be very brief, since

the SAAS system and applications will be described in the scope of WP2 (from a functional perspective) and WP3 (from a technical/technological perspective).

5.4.3.1 Book of Life

The Book-of-Life will be a personal diary, which will be created by the elderly user through the SOCIABLE ICT platforms. In creating his/her “Book-of-Life” the elderly will make use of his/her life experiences, emotions and thoughts. The book will serve as both a collective memory and an individual memory, which will help the elderly to improve its communication capabilities and/or increase the number of his/her social contacts. The aim will be to enhance self-concept and self-esteem, improve mood states, and prevent social isolation. Through the book of life, elderly users will be able to share information about their life (e.g., photos, videos) with other users.

The application will enable customization of the content of the different chapters. Each chapter will practically correspond to different aspects or events of the user’s life. Hence, each chapter will focus in promoting specific psychological strengths achievement, gratitude, giving to others, beauty and more. Working on these strengths means taking care of the user’s psychological health. Making our minds stronger makes it easier to confront and overcome daily challenges and difficulties.

While it will be possible to write in the Book of Life as in a traditional diary, elderly users will be able (possibly with the support of a psychological expert) to introduce different objects: images, pictures, sounds, texts, etc. in the book. Users will be also directed to fill-in their book-of-life using questions such as: (a) Which is the nicest situation that you remember in your childhood?, (b) Did you remember a fun situation experienced with your father and mother when you were a child/adolescent?, (c) Do you remember anything that you did for somebody that made you feel deep satisfaction? (d) Describe something that constituted a benefit for other people and made you feel proud (What happened? What did you do? Who did you do it for? What did you feel when you did it? What did you think? What words came to your mind? What were the benefits for other people?).

From a technical viewpoint the Book-of-Life will be an internet-based tool with a 3-D representation of a book divided in chapters and pages that correspond to different stages or events in the life of the elderly person. Note that in-line with the SOCIABLE pilots concept and organization it will be possible to use the tool both in individualized mode (individual Book of life) and in a group mode (Group Book of Life), in order to support both individual and group sessions. The following table (Table 33) illustrates the Book of Life as a SOCIABLE Use Case.

Identifier / Code	SOCIABLE-UC- BookOfLife-v1.0
Name	Book of Life
Related Scenario(s)	Social Activation at Care Centre, Social

	Activation at Home
Goal	Use the book of life as a social activation service within a SOCIABLE session
Actor(s)	Group A or B with or without the help of a Psychologist expert
Preconditions	A user has started a Sociable session and he/she has chosen the book of life as social service to use it in the session A psychologist expert has instructed the user on the use of the book of life
Basic Course of Action	The user starts the book of life service over the surface computing (at care centre) or a pc (at home). All the books of life in which the user has participated are shown The user can choose to edit one of these existing books of life or create a new one. Once the book of life is edited or created its pages are shown. At each page the user can insert or modify images from his/her gallery, video, text and sound. The user can choose the visibility of the page (who can see this page: friends, relatives, nobody, etc) When the user can save the changes done at the book of life and finish the session
Post Conditions	The user has use the book of life service in a SOCIABLE session
Target Platform(s)	Microsoft Surface, TabletPC
Notes	

Table 33: The Book-of-Life as a SOCIABLE Use Case

5.4.3.2 Communication Application/Service

The communication applications will enable the elderly to communicate with other SOCIABLE elderly/users (deploying the SSAS) including family, friends and caregivers. The aim of this application is to promote social activation, helping to maintain the already existing relationships, and also to start new relationships with other SSAS users (i.e. from other centers). The application will include several tools supporting:

1. Sending and receiving messages (e.g., e-mail).
2. Video-conferencing.
3. Chatting.
4. Access to other centers.
5. Internet Navigation.

The tool will act as a collaborative environment using the Internet as a communication link between user-therapist and user-user, in geriatric centers and/or in the users’ homes. Hence, the application will allow the communication between users located in different sites (communication between elderly people, between elderly people and their family, between elderly people and health professionals, etc.) in order to promote social activation. Depending on their cognitive status the users may be assisted by a psychologist expert. The following table (Table 34) illustrates the Communication Service as a SOCIABLE Use Case.

Identifier / Code	SOCIABLE-UC- CommunicationService-v1.0
Name	Communication Service
Related Scenario(s)	Social Activation at Care Centre, Social Activation at Home
Goal	Use a communication as a social activation service within a SOCIABLE session
Actor(s)	Group A or B with or without the help of a Psychologist expert
Preconditions	A user has started a SOCIABLE session and he/she has chosen communication as social service to use it in the session A psychologist expert has instructed the user on the use of the communication service
Basic Course of Action	The user starts the communication service over the surface computing (at care centre) or a pc (at home). The user can choose among different communication tools: send and receive messages (mail), video-conference or chat Once the user has chosen the tool he wants to use, all his/her friends are shown. The user can only communicate with friends The user chooses a friend to communicate with and the communication is established The user closes the communication service.
Post Conditions	The user has used the communication service in a SOCIABLE session.
Target Platform(s)	Microsoft Surface, TabletPC
Notes	The tool “send and receive messages (email)” also allows to communicate with people that are not friends if they have a mail account.

Table 34: The Communication Service as a SOCIABLE Use Case

5.4.3.3 Social Matching Service

The matching application will allow the expert to understand users’ preferences and to organize some activities in the centers with the aim of increase social interactions

among the users. The application will maintain a list where the user will include preferred activities and hobbies. Each use will make his/her list at the beginning of the social activation program. This information will be stored in the system. The experts could have access to valuable information like the most preferred activities among the users. With this information the experts will be able to program activities that will be meaningful for the users. For example, if most users chose attending a concert as a preferred activity, the staff could program this activity in the near future. The following table (Table 35) illustrates the Social Matching Services as a SOCIABLE Use Case.

Identifier / Code	SOCIABLE-UC- SocialMatchingService-v1.0
Name	SocialMatchingService - Search Users with shared features
Related Scenario(s)	Social Activation at Care Centre, Social Activation at Home
Goal	Find a group of users with a shared feature (hobby, city of birth, city of residence, age)
Actor(s)	Group A or B with or without the help of a Psychologist expert
Preconditions	A number of users have been registered in the Sociable platform. For each registered his/her profile has been stored. The profile contains information about age, hobbies, city, etc. A user has started a SOCIABLE session and he/she has chosen social matching as social service to use it in the session.
Basic Course of Action	The user starts the social matching service over the surface computing (at care centre) or a pc (at home). The user introduces criteria to find a group of users with a shared feature. Features can be hobbies, age, city of birth or city of residence The search is performed and the results are presented to the user.
Post Conditions	Using the search functionality a user can find other users with common features to start a friendship, and psychologist and caregivers can group users to carry out social activation activities with them.
Target Platform(s)	Microsoft Surface, TabletPC
Notes	

Table 35: The Social Matching Service as a SOCIABLE Use Case

6. Conclusions

The present deliverable has introduced the SOCIABLE pilot concept, as well as terminology associated with the SOCIABLE platform and services. Accordingly it has presented the main processes associated with the SOCIABLE pilots, along with the specific functionalities that will be supported by the SOCIABLE ICT platform. To this end, the deliverable has adopted a scenario and use cases centered approach.

A set of SOCIABLE scenarios have been described in order to characterize real activities associated with the provision of care services in the scope of the SOCIABLE pilots. These scenarios will be used in the scope of the SOCIABLE pilots. Hence, they cover all the activities entailed in the SOCIABLE pilots, such as:

- The design of SOCIABLE programmes, sessions and games by medical experts and health professionals.
- Processing of the elderly electronic medical record, including processing of information about the cognitive assessment processes of the elderly.
- Individual and groups sessions using the SOCIABLE surface computing platform in the care/leisure centers, which involve a wide range of cognitive training games and social interaction activities.
- In-home sessions using the SOCIABLE tabletPC platform, also involving cognitive games and activities boosting the elderly social activation.

The value of these scenarios is twofold: on the one hand they provide a guide for conducting the actual pilots (i.e. they serve as pilot scenarios) and on the other they serve as a basis for engineering the final technical specification and integration of the SOCIABLE platform.

Following the specification of pilot scenarios, the deliverable has also emphasized on breaking down the scenarios to more fine-grained use cases. Use cases document capabilities and functionalities of the SOCIABLE system at a finer degree of granularity. Use case can serve as a basis for the integration, testing and deployment of the system. In principle a use case represents a unit of self-sustained SOCIABLE functionality, which supports one or more pilot scenarios.

Cognitive training games have a special place in the scope of the SOCIABLE platform, given that the later will support a wide range of game activities. Cognitive training games can be seen as special use cases, given that they represent fine-grained functionalities of the SOCIABLE platform. Note however that the SOCIABLE platform will not support a specific set of cognitive training games. Rather it will be extensible allowing its constant enhancement with additional games, as soon as the later comply with the SOCIABLE platform specifications. In the scope of the deliverable, few games have been described in order to present the concept of a cognitive training game as a SOCIABLE use case.

In addition to cognitive games, the SOCIABLE platform will support a number of social activation activities, as part of the SSAS (SOCIABLE Social Activation System). Similar to cognitive games, the activities supported by SSAS can be seen as special use cases associated with the SOCIABLE platform. While the detailed specification of SSAS is out of the scope of this deliverable, a brief description of the SSAS functionalities has been also been provided in order to provide a complete picture of the functionalities of the SOCIABLE platform and services.

Overall, the scenarios and use cases presented in this deliverable will serve as a basis for other project output and deliverables, relating to the SOCIABLE services specification and implementation, as well as the prompt planning of the pilots.

7. References

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