



AAL Call 2020



Deliverable D4.1 Technical Test Plan

Work Package 4

Smart Intervention for Senior Isolation: SI4SI Project

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The SI4SI consortium consists of the following Partners.

No	Name	Short name	Country
1	DS Tech Srl	DST	ITA
2	GIOMI CARE Srl	GIOMI	ITA
3	Canary Technology Innovations	CTI	RO
4	University of Medicine and Pharmacy "Carol Davila" Bucharest	UMFCD	RO
5	Caretronic	ERT	SI

Table 1 - Consortium Partners List

Document Information

Project short name and Project reference	SI4SI (aal-2020-7-108-CP)
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Table 2 – Document information

¹ **R:** Document, report; **DEM:** Demonstrator, pilot, prototype; **DEC:** Websites, patent fillings, videos, etc.; **OTHER;** **ETHICS:** Ethics requirement; **ORDP:** Open Research Data Pilot.

² **PU:** Public; **CO:** Confidential, only for members of the consortium.

Document History

Version	Date	Status	Authors, Reviewers	Description
v 0.1	30.10.2021	Draft	Iulian Anghelache (CTI)	Initial version
v 0.2	31.01.2022	Draft	Andrea Chentrens (DST)	Complete draft
V 1.0	31.01.2022	Final	Iulian Anghelanche	Final check/integrations

Table 3 – Document History

Acronyms and Abbreviations

Acronym/Abbreviation	Description
AAL	Active Assisted living
ADL	Activity of daily living
IADL	Instrumental activity of daily living
RTD	Research technology development
REST	REST - REpresentational State Transfer architecture
MQTT	MQ Telemetry Transport
TLS	Transport Layer Security
HTTPS	Hypertext Transfer Protocol Secure

Table 4 – Acronyms and Abbreviations

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Executive Summary

This document will be used as a guideline for the development of the SI4SI technical solution. The working teams, composed by developers from DST, CTI and CRT, will use this document to agree on the development methodology, development stages, responsibilities and shared tools to be used.

The development methodology will include all the procedures to ensure that the solution is built correctly and that, therefore, the necessary checks are carried out, in compliance with the functional and non-functional requirements established during the preliminary tasks T2.1 and T2.3.

The document will also serve to clearly outline who will develop the various system components (included in D2.2).

A Test Plan document completes the Technical Test Plan, including all the development steps, sprint after sprint.

1 INTRODUCTION

This document will outline the plan envisaged for testing the technical solution implemented during the preliminary phase of SI4SI project, a phase necessary to develop all technical components that will be tested and validated during the pilots that will be carried out in the second project phase in Italy and in Romania.

1.1 Purpose and scope

The purpose of this document aims to establish the roadmap, methodology and tools that the technical team will use to implement the solution of the SI4SI project.

1.2 Contribution to other deliverables

This deliverable mainly contributes to:

- D3.2 Smart Living Environment Configuration
- D3.3 Smart Home TAB
- D3.4 Social Platform
- D3.5 Caregiver App
- D4.2 Technical Test Report

1.3 Structure of the document

The document will include:

- the scope of the testing;
- what is not covered by the testing phase;
- the assumptions;
- the schedules and the methodology that will be followed
- the deliverables and outputs of the activity
- the environment to be developed
- the management tools to be used
- the defect management
- the risk management
- the exit criteria

2 Scope

The purpose of the development of the SI4Si technical solution is to create a Software-Hardware ecosystem that meets the highest quality standards to intercept, as far as possible, any bugs and correct them before the solution is released.

This is for the purpose of providing the end-users with a solution that works as expected.

The final product of the test that will be developed during WP4 is twofold:

- A pilot-ready system;
- A set of stable test procedures that can be reused for Functional and pilot test execution.

3 Out of scope

We will use devices that have already been tested and validated, so we expect them to work correctly and allow us to collect the data we need for the Pilots. Thus, we will not test the Hardware components, we will just integrate them into the system.

Furthermore, the UX and UI was validated in an earlier phase of the project, so we won't face this aspect during testing.

4 Assumptions

Below, a list of assumptions and conditions that must be met in order to proceed with testing.

- We need to have a stable software version;
- If the test involves sensors or, in general, hardware, we must have a correctly set environment;
- We must have a separate stage environment from the production one on which to conduct the tests;
- We must have credentials created ad hoc to be able to run the tests.

5 Schedules

An **Agile (Scrum) methodology** will be used which involves sprints lasting 2/3/4 weeks. At the end of each sprint the tests on the software produced will be performed. If any bugs are found, it will be inserted in the backlog in order to correct them during the following sprint.

Platform (web-app, mobile app)	Issue description	Steps to reproduce the issue	Screenshot	Credentials used	OK/KO	Note

Table 5 - Test Plan Template

D4.1 Technical Test Plan

As indicated in the table above, a **test plan** will be drawn up which will include timely tests on each software feature and which will ensure that each section of the software is correctly usable and that the latest security standards (pass, request, etc.) are respected.

The document will be compiled at the beginning of the test and increased accordingly at the following link: [Link to the Test Plan](#).

5.1 Test Cycles

At the end of the sprint, tests will be carried out on the software produced. Sprints will last 2/3/4 weeks with respect to development cycles.

6 Roles and responsibilities

Partner	Person	Role	Contacts
DS Tech	Alessio Ciuffetti	Technical leader	a.ciuffetti@dstech.it
	Stefania Porcedda	UI/UX Designer	s.porcedda@dstech.it
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	Adrian Dumitru	Development Lead	adrian.dumitru@canarytech.ro

Table 6 - Technical team

7 Deliverables

The first document useful for the tests will be the **Test Plan** (indicated above), in which the tests carried out and the obtained results will be indicated.

The final output of the activity will be **SI4SI software**, free of bugs.

All the tests carried out, the results of the testing phase, as well as the cycles carried out, will be reported in the **Test Plan**.

8 Environment

SI4SI Smart Environment we intend to develop will include:

- Software;
- backend component;
- front-end component;
- machine learning algorithm;
- hardware component (sensors).

The following are the specific competences for each system components:

SI4SI System Component	Lead Partner
Backend	Caretronic
Front-end (Dashboard and Tablet application)	Ds Tech
Front-end (Social Platform)	Canary Tech
Machine learning algorithm	DS Tech
Hardware component	Caretronic

Table 7 - System components and related lead partner

8.1 Interconnection of the development phases of the system components

After identifying the functional and non-functional requirements of the system (T2.1), it is necessary to develop **mockups** of the tablet application for users, of the web dashboard dedicated to doctors and caregivers and of the social platform.

Once the UX / UI design is defined, we can start developing the **front end** and the **back end**.

The development of the back-end services must take place at the same time, or at an earlier stage, with the front-end.

For each developed **functionality**, a trial version is released, in order to verify its functioning and proceed, if necessary, to the bug fixing.

To configure the **smart living environment**, it will be necessary to develop the CRT wearable application in order to collect data from the sensors and the sleep tracker.

Once the first data has been collected, it will be possible to test the **machine learning module** developed by DST with the support of the Engineering Department of Sapienza University. The module needs input data in order to function.

There will be two Beck-ends, one developed by CRT and one by DST.

Once the **APIs** related to the 2 back-ends have been developed, the front-end will make a request to the APIs to allow data visualisation on one hand and data analysis and processing on the other.

8.2 How and who will handle issues with the environment

Any issues will be managed by the competent partner who is in charge of the system component that produced the issue.

9 Tools

Partners agree to use [Trello](#) as a common testing and bug fixing tool. Other tools will be used by each partners' team internally, as, for example, [Jira](#).

9.1 Specifications on how to use the tool

To use this management tool, a workspace is created within which three boards will be structured:

- one for "To-do",
- one for "Ongoing" and
- one for "Done"

In this way it will be possible, respectively, to track the tasks that are to be done, those that are in working progress and those that have been completed / solved.

The tasks on Trello are assigned to the partner / person in charge of the component that requires intervention / verification.

10 Defect management

We will report the defect management on Trello by creating a special card that includes:

- the title,
- the description of the issue,
- the steps necessary to reproduce the issue,
- any test credentials used on which the problem was found.
- If there is any error output at the front end, a screenshot will be taken.

These indications will also be reported in the Test Plan.

11 Risk and Risk Management

The following table reports the risks related to the implementation of the activities foreseen in this document:

Risk	WP	Possibility (P) Severity (S) [1-5]	Mitigation strategy	Intervention success feasibility (F) [1-5]
Significant dependency on other technologies.	3	P: 3 S: 3	Further investment for in house technology development if needed. If dependency works fine then a continuation of the dependencies	3

D4.1 Technical Test Plan

Constant technology evolution	3	P: 3 S: 3	Always be updated on technological developments and carry out the necessary assessments to verify the usability of new solutions in the project.	4
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Table 8 - Identified risks

11.1 Technical Risks

Below are listed some possible risks that the technical team may face:

- The integrated solution is not ready to be tested according with the test plan
 - *Mitigation:* The technical team will divide the solution testing into smaller components that can be tested individually
 - *Probability:* Medium
- The testing procedure is not clear
 - *Mitigation:* The technical team will provide more details on each particular module/solution so that the responsible testing partner can proceed with testing
 - *Probability:* Low
- The solution present some blocking software issues that prevents further testing
 - *Mitigation:* The technical team will provide immediate support and try to provide a fix as soon as possible so that testing can continue
 - *Probability:* Medium
- The solution presents some blocking hardware issues that prevents further testing
 - *Mitigation:* The technical team and responsible partner will proceed to help fix the hardware issue remotely and if a fix is not possible, a new hardware device will be sent for testing. This
 - *Probability:* Low
- The setup or testing of the solution is blocked due to covid cases for either the technical team or test partners
 - *Mitigation:* Testing will be delayed until there is availability within the teams to take over the tasks from persons affected by covid.
 - *Probability:* Medium

12 Exit criteria

It is planned to release the definitive software version, without bugs, integrated with the Smart Living Environment hardwares by the end of April 2022.

If delays and problems arise during development, we will evaluate the possibility of extending the release of the final version or releasing a beta / partial version of the software.