D3.3 ESTABLISH Test plan

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1. Introduction

1.1 Scope

This document outlines the approach of system and acceptance testing on ESTABLISH platform and presents the methodology of running the tests.

This Test Plan details the approach of the System and the Acceptance tests. Before running the tests the following should be considered:

- The User Requirements described in the homonymous document are met and delivered;
- The suitability and usability of the system;
- The system is ready to go in production.

1.2 References

The following documents will be referred in this document:

Document	Title	Version
D2.1	State-of-the-art, detailed use case definitions and user requirements	
D2.2	Technical requirements and high level specifications	

1.3 Document overview

In this document we will present the test approach, showing the test phases involved in the system and acceptance phase of the project, the test levels that will be performed along with the associated deliverables.

Furthermore we will present a test execution strategy in terms of defect tracking workflow and defect priority classification. We will present the testing criteria showing the entry and exit criteria, test pass/fail criteria and acceptance criteria.

In the final chapter of the document we will present information on the reports that will follow system and acceptance testing.

2. Test approach

2.1 Approach overview

Before handover to Acceptance Test the development team will have performed unit testing and System testing.

For each development's iteration, system and acceptance testing must be performed:

- Regression tests (for what was developed for previous iterations)
- Non-regression test (for what was developed for the current iteration).

Each test described in "Acceptance Test Specification Document" has a dual risk evaluation ranking. Test cases can be critical (due to high frequency of the operation described and/or its impact on achieving system major objectives) or non-critical (test cases depicting low frequency operations and/or with minor impact on ESTABLISH functionality).

System testing runs before acceptance testing.

2.2 Test phases

According to the project planning, ESTABLISH will be developed in phases. Unit, System and Acceptance Testing must follow the foreseen scheduling.

The foreseen development and testing phases are going to be established in the final version of the test plan (this document).

2.3 Test levels

ESTABLISH will be subject to Unit Testing, System and Acceptance Testing.

Unit testing is the method by which individual units of source code of ESTABLISH sets of one or more application modules, usage procedures, and operating procedures are tested to determine if they are fit for use. Unit testing performs every time when a new function is set in place, allowing issues to be identified and solved in the early phase of the development cycle.

System testing is performed by the testing team before the acceptance testing. Both testing consider project plan development phases.

Both System and Acceptance Testing rely on the requirements defined in the **D2.1 State-of-the-art, detailed use case definitions and user requirements** Document.

Both System and Acceptance Testing aim to check that the created system is correct, completely stable and works as a whole, according to its requirements. System and Acceptance Testing fall within the scope of black box testing; therefore they require no knowledge of the inner design of the code or logic.

When performing System and Acceptance testing solely the test cases presented in Acceptance Test Specification Document will be used.

2.4 Test deliverables

The following deliverables will be presented in relation with ESTABLISH testing tasks:

Deliverable	Description
Test Plan (this document) – preliminary version	Presents test approach, test environments, test execution strategy, testing criteria and test reporting and test cases for System and Acceptance testing.
Test Plan (this document) – final version	Presents the updated version of the preliminary one.

3. Test environments

During the development and testing processes, the Test and Pre-Production environments will be used. Unit testing, System Testing and Acceptance testing will be performed in the Test environment by the testing team.

4. Test execution strategy

The use cases presented in “D2.1 State-of-the-art, detailed use case definitions and user requirements” and ”D2.2 Technical requirements and high level specifications” will be the primary source for the test cases that will cover all areas of in-scope functionality to be tested. All the test cases associated with ESTABLISH will be included in the “Test Plan Document”.
A test case may sub-divide into a more granular series of test conditions where appropriate. Each test condition is a binary statement that will have one possible expected outcome.
The test condition should correspond to a simple statement within which the expected outcome is obvious e.g. “upon pressing login on the home page the login window is displayed”.
The test condition describes ‘what to test’.
There may be multiple test conditions for one business rule or functional requirement, as the conditions must cover all scenarios and possible combinations.

Test Cases
The business use cases will be the primary source of the test cases. When needed, test conditions incorporate into test cases.
A test case is ‘how to test’ a group of at least one test condition.
The test case will contain steps to execute and expected result for each step.
The purpose of the test case is to enable verification of multiple test conditions.
Each test condition may cover more than one test case.
In order to perform more complex testing activities, testers could perform sequences of test cases simulating non-fragmented user behavior, simulating real-life natural usage of the system.

Test Cycles
There will be at least one cycle of all test conditions / test cases executed. As described in chapter “2.1-Approach overview”, both regression tests (for what was developed for previous iterations) and non-regressive tests (for what was developed for current iteration) will be performed for each iteration.

Regardless of the number of cycles, all test conditions/cases that fail will be retested before delivering a fix version.

4.1 Defect tracking workflow

A defect or an incident is defined as any unplanned event that has the potential to significantly affect the operation on ESTABLISH.

4.1.1 Defect reporting

During Acceptance testing all the defect and problems will be uploaded as incidents into the JIRA incident management system, under a separate project.

From JIRA, defects/issues report will be generated and managed so that all the high issues are solved as soon as possible, while the medium and low incidents will be scheduled for a resolution.

During the implementation of ESTABLISH, the teams will follow the standard operating procedure. Incidents can be logged by designated contractor staff members, or members of the SIVECO team (contractor team) using the JIRA system established specifically for this purpose.

The members of the contractor team will identify the causes of incidents, will investigate, manage and resolve them. Where possible lessons learned from the incident will apply to minimize the likelihood of the incidents occurring again.

When adding a new incident into the system or when changing the status of an incident, JIRA users of the ESTABLISH project may be able to receive an email notification from JIRA. This notification will present the actual events that happened on the respective incident.

JIRA administrator may set receiving or not an email notification whenever a ticket is updated.

Within the ESTABLISH project on JIRA an incident may be classified as new feature, bug, improvement, usability problem, technical assistance or task related incident.

Complete details of the incident including a relative priority can be added into the incident management system.

Types of incidents and resolutions that will be used in JIRA

No	Type of incident	Description of type
1	Bug	This type of incident depicts a software code problem; this is usually also named “code error”.
2	Improvement	This type of incident should be used whenever a change is necessary in an application, no matter if it is an aspect of Graphical-User-Interface or of a business or functionality component, or whether it’s a new feature or changing an existing feature.
3	Assistance	This type of incident depicts a need for technical assistance in using the applications.
4	Task	This type of incident depicts a need for a very specific technical task.

No	Type of incident	Description of type
5	New Feature	This type of incident depicts a need for a new development for the existing applications, no matter if there are small, minor changes or new modules.

Roles and responsibilities

The roles involved on a JIRA incident, and their responsibilities, are:

No	Role	Responsibility
1	Reporting user (or tester)	This person may be a member of the testing team. The reporting user is doing: ▪ The initial adding of a new incident into the system ▪ The final validation that the incident has been resolved ▪ If the validation is ok, closing of the incident (the change of status from Resolved to Closed)
2	Software developer or consultant	This person is performing the actual work to solve an incident. The software developer or consultant is doing: ▪ The work necessary to solve an incident ▪ The change of status from Open/Working to Fixed/Resolved.
3	IT/QA manager	The responsible person for this role is doing: ▪ The initial distribution of the JIRA incident to a software developer/consultant ▪ The final validation, before sending the incident back to the reporting user ▪ If the incident is solved, this person will change the status to “Resolved” and assign the incident to the reporting user ▪ If the incident is not solved, this person will change the status to “Reopened” and assign the incident back to the software developer/consultant
4	JIRA administrator	The responsible person for this role is a person from the IT department. The Project Manager is in charge of it.

Mandatory information necessary when adding an incident

When adding a new incident into the JIRA Incident Management System, the user should be as descriptive as possible about the respective issue.

The following details could be relevant, when talking about an error/usability issue:

- The operating system name and version (e.g. Windows XP SP2)
- The browser name and version (e.g. Microsoft Windows Internet Explorer v8.0)
- The resolution of the screen (e.g. 1024x768 pixels, 32-bit color depth)
- The zone of ESTABLISH where the issue has occurred (also providing the link to that particular page)
- The exact steps necessary to reproduce the problem (e.g. access “X” functionality, perform ”Y” action, view the result, click on the result etc,)
- Description of the exact problem (e.g. a pop-up will appear for a very short period of time and the user is not able to actually see the message inside it). Screenshot attachment

4.1.2 Defect solving

The following is an overview of the proposed defect tracking and resolution process: all incidents created are assigned to a member of the team. The incident will then be assigned for investigation and diagnosis.

After the correction has been applied and initial testing of the fix has taken place, the status of the incident will be changed to “Fixed”. In this instance, ”Resolved” means that the developer is satisfied with the fix that has been applied to the incident and is awaiting final approval of these changes.

When working on an issue, the types of Resolutions which will be used by the user who will resolve the incident are:

Type of resolution	Description of the resolution
Rejected	Request is refused
Fixed	A fix for this issue has been done and tested
Won’t fix	The problem described is an issue which will never be fixed
Duplicate	The problem is a duplicate of an existing issue
Incomplete	The problem is not completely described
Cannot reproduce	All attempts to reproduce this issue failed or not enough information was available to reproduce this issue. If more information appears later, then the issue should be reopened
Suspended	The issue is being suspended, until more details will be available or until a decision will be made regarding some aspects
Function as designed	Feature is working as designed, it is not a bug
Implemented	Request was implemented
Unresolved/ Reopened	Even if the software developer or IT responsible considered the incident as solved, the reporting user or an other user involved in ESTABLISH project consider that the incident is not solved and they reopen it

Type of resolution	Description of the resolution
Administration	The issue is in administration status, which means the IT management is investigating the status of this issue in order to decide the future steps which may be necessary in order to close the current issue.
Cancelled	The incident is neither solved, nor closed, but the IT management/reporting user consider that this incident is no longer up-to-date because some other changes occurred in the meantime (e.g. a change in the interface GUI) and the incident may no longer appear on the system because the feature has changed.

4.1.3 Defect closure

All resolved incidents will be subject to a final quality assurance before being closed off and the status of the incident changed to “Closed”.

According to the incident lifecycle, a JIRA item can have one of the following statuses:

- Open issue/Creation
  - The issue created by a member of the ESTABLISH team.
  - The person who created the incident is named “Reporting user” (or tester)
- In progress/Working
  - The issue has been assigned to a software developer or consultant and the activities performed are progressing
- Reopened
  - The issue considered as Fixed by a software developer or consultant, but the reporter or another person involved in ESTABLISH project checked the solution and this considered it not fixed. Consequently, the issue is reopened. If this is the case, the person that performed the check will assign the incident to the software developer/consultant who performed the correction.
- Resolved/Waiting
  - After checking it, the issue has been considered as Resolved by a contractor representative, depending on the type of issue
  - The incident is assigned to the reporting user
- Closed
  - The reporting user has checked the solution for the respective incident considered it acceptable, so that the status changes to “Closed”.

Below may be seen the JIRA workflow diagram with statuses and resolutions:

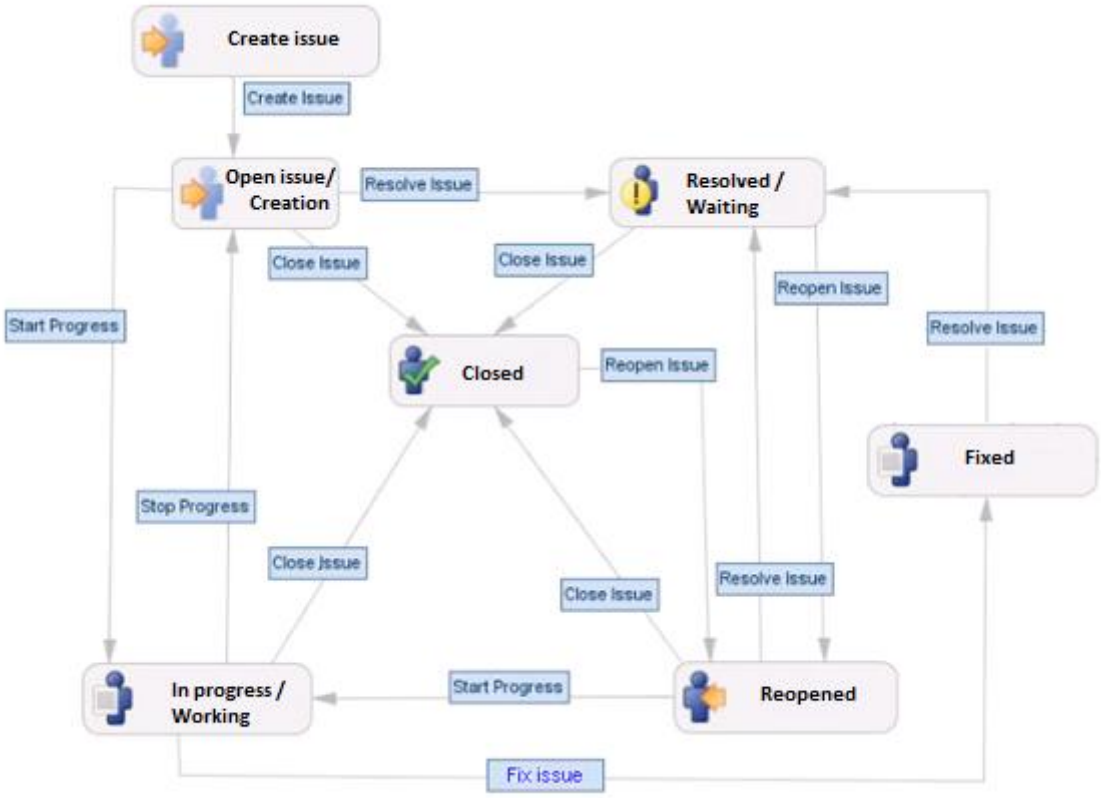

Figure 1. Statuses and resolutions on the JIRA workflow

The workload associated to a JIRA incident is considered finished only after its reporter has checked the solution, is satisfied by it and marks the issue as closed.

4.2 Defect priority classification

When reporting ESTABLISH issues, the following defect priority classification will be used:

Issue priority	Description
High	Serious systemic problems (e.g. complete or partial system unavailability, instability, or non-usability, including serious performance degradations). Loss of critical business functionalities with no reasonable workarounds. Problems with the website that limit core user functionalities; or seriously degrade user experience; or result in display of incorrect data; or negatively affect the public image of the ESTABLISH project.
Medium	Non critical systemic problems that do not cause serious loss of

Issue priority	Description
	usability. Loss of non-critical business functionalities. Loss of business functionalities but with reasonable workarounds present.
Low	Minor inconveniences with business functionalities. Trivial website issues that cause little or no inconvenience or degradation of user experience. Website issues that affect less than 1% of public users.

5. Testing criteria

5.1 Entry/Exist criteria

Before either system or acceptance execution can commence, it is a necessary condition that the entry criteria have been satisfied to ensure that testing progresses as smoothly as possible.

The Testing phase entry criteria are:

- The Test Plan (this document) accepted.
- The Acceptance Test Specification Document accepted for the ongoing testing phase.
- A stability test has been satisfactory: all major functionality for the ongoing testing phase is accessible and present and tests as well as pre-prod environments are ready and stable.
    - Test environment ready for use.
    - Pre-production environment ready for use.
    - Website data sources initialized with data and all necessary migrations performed from the development environments.
    - All technical requirements for the establishment of the environment and the website are ready.
    - Testing personnel are familiar with the system functionality.
    - Formal defect tracking mechanism/process is established.

The Testing phase exit criteria are:

- All required test cases fully executed for the appropriate test/development phase.
- Agreement on the test results by all the users involved in testing process.
- Partial acceptance of the test results from ESTABLISH team for intermediate stages of development.
- Final acceptance of the test results from ESTABLISH team.

5.2 Test pass/fail criteria

All test conditions that satisfy their expected results passed.

All Test Cases that satisfy all of their expected results passed.

Test Conditions and Cases that do not satisfy their expected results failed and have a defect of appropriate priority raised go to retesting and then a fixed version shall be released.

5.3 Test suspension criteria

A test phase may be suspended and handed back to development team if any of the following apply:

- The number of defects is such that a majority of test cases were not successfully completed.
- Major in scope functionality not delivered.

5.4 Acceptance criteria

Partial and final acceptance of ESTABLISH testing process achieved after meeting the following:

- The Test Plan (this document) is accepted.
- The Acceptance Test Specification Document is accepted for the ongoing testing phase (iteration).
- During Acceptance Testing for the ongoing testing phases (iterations) all the non-regression and regression tests developed for the ongoing iteration were performed.
- “Factory acceptance test” document created on the basis of ESTABLISH JIRA project show all “High” reported incidents as “Closed”.

6. Test reporting

Viewing the list of issues recorded in the project directly on JIRA

A summary of the status of all incidents relating to the ESTABLISH is available by selecting the “Issues” tab from the JIRA system.

A complete list of all the incidents for ESTABLISH is available by selecting the “Summary” tab on the left of the Dashboard and then the “Filters” tab.

The available filters are to view: all the incidents, resolved recently, outstanding, added recently, unscheduled, updated recently, assigned to the current user, most important, reported by the current user.

In order to view all the incidents from the project, a JIRA user will select the filter “All” and a page with the most important details of the issues will be displayed.

For each displayed incident, some important details will be shown, such as (in display order):

- Type of incident
- Number of the incident
- A description of the incident
- Assignee and reporter
- Priority

- Status
- Resolution
- Date when the incident was created
- Date when the incident was updated
- Due date.

Testing report

Based on both Acceptance Test Specification Document and ESTABLISH JIRA project, at the end of each testing phase the contractor will create a testing report - Factory Acceptance Test Document showing the following:

- Test cases status. This will show the list of test cases presented in the "Test Plan Document" along with their status. Test cases status will be presented using the following template:

Short description	Run ID	Version	Date	Tester	Not run	Passed	Failed	Observation
TC.001.BN								
Short description	RUN_1	1.0	…	…	X			…
	RUN_1	1.0	…	…		X		…

- Test executive summary. This synopsis will present the number of incidents created in JIRA for each priority level, showing how many incidents have been created, how many have been closed and how many are still in progress of solving.

Priority level	Open	In progress	Reopened	Fixed	Resolved	Closed	TOTAL
Low							
Medium							
High							
TOTAL							

7. Test scenarios and test cases

This chapter contains the test scenarios and the test cases for all the solutions that were developed in the use cases described in ESTABLISH project.

Optimized City and Mobility Planning

7.1 Test Scenarios

Test Scenario	Code TS	Test Case	Code TC	User Type
Predict the evolution of traffic loads and pollution levels	TS.WEB.01	Predict traffic loads and pollution levels for a given day in the future	TS.WEB.01-TC.01	City Authorities
Simulate certain situations of pollution	TS.WEB.02	Simulate a given protocol of pollution for a certain situation	TS.WEB.02-TC.01	City Authorities
		Simulate new protocols of pollution for a certain situation	TS.WEB.02-TC.02	City Authorities
Ask recommendations about a future situation of pollution	TS.WEB.03	Ask recommendations about situations of pollution in order to help the decision-making	TS.WEB.03-TC.01	City Authorities
Plan a multimodal route optimized in pollution	TS.MOB.01	Plan a multi-modal public transport route optimized in pollution	TS.MOB.01-TC.01	Citizens
		Plan a route by own or rented bicycle optimized in pollution	TS.MOB.01-TC.02	Citizens
		Plan a route by walk optimized in pollution	TS.MOB.01-TC.03	Citizens
Evaluate the level of pollution produced by a route by car	TS.MOB.02	Calculate the emitted pollution produced by a car for a route	TS.MOB.02-TC.01	Citizens
Provide recommendations and alerts to the citizens.	TS.MOB.03	Recommendations and alerts about levels of pollution, most-polluted areas and so on.	TS.MOB.03-TC.01	Citizens
		Recommendations and alerts about traffic, parking areas, use of public transport, and so on.	TS.MOB.03-TC.02	Citizens
Manage the user profile	TS.MOB.04	Manage user profile, user preferences, type of car to get personalized information	TS.MOB.04-TC.01	Citizens

7.2 Test Cases

TS Code	TS.WEB.01
TS Name	Predict the evolution of traffic loads and pollution levels
TC Code	TS.WEB.01-TC.01
TC Version	1.0
TC Name	**Predict traffic loads and pollution levels for a given day in the future**
Component	Web Application
Sub-Component	Analysis and processing over a Traffic Simulation Platform
Function	Predict traffic loads and pollution levels for a given day in the future
Actor	City Authorities
Special Requirements	Test case needs to have data from open data sources stored in Elastic Search and/or MongoDB
Pre-Condition	City Authority must be logged in the ESTABLISH Application.
Post-Condition	When transaction is successful, the results provided by Analysis and processing over a Traffic Simulation Platform are shown in the WebUI.
Date	
Tester	

Step	Actions and Data input	Expected Result	Obtained Result	PASSED/ FAILED
1	User selects a future date through the calendar	A future date is selected.		
2	User selects a time zone	A time-zone is selected from a drop-down list		
3	User selects a city	A city is selected correctly		
4	User clicks on the “Start prediction” button	Results for the selected day are shown: traffic intensity, pollution levels, etc.		

TS Code	TS.WEB.02
TS Name	Simulate certain situations of pollution
TC Code	TS.WEB.02-TC.01
TC Version	1.0
TC Name	**Simulate a given protocol of pollution for a certain situation**
Component	Web Application
Sub-Component	Analysis and processing over a Traffic Simulation Platform
Function	Simulate a given protocol of pollution for a certain situation
Actor	City Authorities
Special Requirements	Test case needs to have data from open data sources stored in Elastic Search and/or MongoDB and the third-party simulation tool (SUMO) enabled to be launched from

	the Web App.
Pre-Condition	City Authority must be logged in the ESTABLISH Application.
Post-Condition	When transaction is successful, the results provided by Analysis and processing over a Traffic Simulation Platform are shown in the WebUI.
Date	
Tester	

Step	Actions and Data input	Expected Result	Obtained Result	PASSED/ FAILED
1	User selects a future date through the calendar	A future date is selected.		
2	User selects a city	A city is selected correctly		
3	User selects a given protocol of pollution	A protocol of pollution is selected correctly		
4	User clicks on the “Start simulation” button	Simulation results are shown: traffic intensity, pollution levels, etc.		

TS Code	**TS.WEB.02**
TS Name	Simulate certain situations of pollution
TC Code	TS.WEB.02-TC.02
TC Version	1.0
TC Name	**Simulate new protocols of pollution for a certain situation**
Component	Web Application
Sub-Component	Analysis and processing over a Traffic Simulation Platform
Function	Simulate new protocols of pollution for a certain situation
Actor	City Authorities
Special Requirements	Test case needs to have data from open data sources stored in Elastic Search and/or MongoDB and the third-party simulation tool (SUMO) enabled to be launched from the Web App.
Pre-Condition	City Authority must be logged in the ESTABLISH Application.
Post-Condition	When transaction is successful, the results provided by Analysis and processing over a Traffic Simulation Platform are shown in the WebUI.
Date	
Tester	

Step	Actions and Data input	Expected Result	Obtained Result	PASSED/ FAILED
1	User selects a future date through the calendar	A future date is selected.		
2	User selects a city	A city is selected correctly		
3	User configures scenarios about limiting the speed in	New scenarios of pollution are configured through the Web App		

	main roads, traffic cuts, prohibition to park through the Web App.	and simulated in the Traffic Simulator Platform.		
4	User clicks on the "Start simulation" button	Simulation results are shown: traffic intensity, pollution levels, etc.		

TS Code	**TS.WEB.03**			
TS Name	Ask recommendations about a future situation of pollution			
TC Code	TS.WEB.03-TC.01			
TC Version	1.0			
TC Name	**Ask recommendations about situations of pollution in order to help the decision-making**			
Component	Web Application			
Sub-Component	Analysis and processing over a Traffic Simulation Platform			
Function	Ask recommendations about situations of pollution in order to help the decision-making			
Actor	City Authorities			
Special Requirements	Test case needs to have data from open data sources stored in Elastic Search and/or MongoDB			
Pre-Condition	City Authority must be logged in the ESTABLISH Application. TS.WEB.01-TC.01 must be run previously.			
Post-Condition	When transaction is successful, the results provided by Analysis and processing over a Traffic Simulation Platform are shown in the WebUI.			
Date				
Tester				
Step	**Actions and Data input**	**Expected Result**	**Obtained Result**	**PASSED/ FAILED**
1	User clicks on "Ask for recommendations" button	A list of recommendations are given to help the decision-making		

TS Code	**TS.MOB.01**
TS Name	Plan a multimodal route optimized in pollution
TC Code	TS.MOB.01-TC.01
TC Version	1.0
TC Name	**Plan a multi-modal public transport route optimized in pollution**
Component	Mobile Application
Sub-Component	Multi-modal route planner
Function	Plan a multi-modal public transport route optimized in pollution

Actor	Citizens
Special Requirements	Test case needs to have data from open data sources stored in Elastic Search and/or MongoDB
Pre-Condition	Citizens must be logged in the ESTABLISH Application.
Post-Condition	When transaction is successful, the results provided by the Multimodal Route Planner are shown in the Mobile App.
Date	
Tester	

Step	Actions and Data input	Expected Result	Obtained Result	PASSED/ FAILED
1	User selects origin and destination points for the route	The origin and destination point for a route are selected correctly.		
2	User selects the date for the route	A given date is selected.		
3	User selects “public transport” as a transport way	The “Public transport” way is selected as a transport way.		
4	User marks “Optimized in pollution” as a priority	The “Optimized in pollution” priority is marked.		
5	User clicks on “Calculate Route” button	Directions for the route are shown correctly in the mobile app.		

TS Code	**TS.MOB.01**
TS Name	Plan a multimodal route optimized in pollution
TC Code	TS.MOB.01-TC.02
TC Version	1.0
TC Name	**Plan a route by own or rented bicycle optimized in pollution**
Component	Mobile Application
Sub-Component	Multi-modal route planner
Function	Plan a route by own or rented bicycle optimized in pollution
Actor	Citizens
Special Requirements	Test case needs to have data from open data sources stored in Elastic Search and/or MongoDB
Pre-Condition	Citizens must be logged in the ESTABLISH Application.
Post-Condition	When transaction is successful, the results provided by the Multimodal Route Planner are shown in the Mobile App.
Date	
Tester	

Step	Actions and Data input	Expected Result	Obtained Result	PASSED/ FAILED

1	User selects origin and destination points for the route	The origin and destination point for a route are selected correctly.		
2	User selects the date for the route	A given date is selected.		
3	User selects “own or rented bicycle” as a transport way	One of the two “bicycles” way is selected as a transport way.		
4	User marks “Optimized in pollution” as a priority	The “Optimized in pollution” priority is marked.		
5	User clicks on “Calculate Route” button	Optimized directions for bicycle optimized in pollution are shown correctly in the mobile app.		

TS Code	**TS.MOB.01**
TS Name	Plan a multimodal route optimized in pollution
TC Code	TS.MOB.01-TC.03
TC Version	1.0
TC Name	**Plan a route by walk optimized in pollution**
Component	Mobile Application
Sub-Component	Multi-modal route planner
Function	Plan a route by walk optimized in pollution
Actor	Citizens
Special Requirements	Test case needs to have data from open data sources stored in Elastic Search and/or MongoDB
Pre-Condition	Citizens must be logged in the ESTABLISH Application.
Post-Condition	When transaction is successful, the results provided by the Multimodal Route Planner are shown in the Mobile App.
Date	
Tester	

Step	**Actions and Data input**	**Expected Result**	**Obtained Result**	**PASSED/ FAILED**
1	User selects origin and destination points for the route	The origin and destination point for a route are selected correctly.		
2	User selects the date for the route	A given date is selected.		
3	User selects “walking” as a transport way	The “walking” way is selected as a transport way.		
4	User marks “Optimized in pollution” as a priority	The “Optimized in pollution” priority is marked.		
5	User clicks on “Calculate Route” button	Optimized directions for walking optimized in pollution are shown		

		correctly in the mobile app.		

TS Code	TS.MOB.02
TS Name	Evaluate the level of pollution produced by a car for a route
TC Code	TS.MOB.02-TC.01
TC Version	1.0
TC Name	**Calculate the emitted pollution produced by a car for a route**
Component	Mobile Application
Sub-Component	Multi-modal route planner
Function	Calculate the emitted pollution produced by a car for a route
Actor	Citizens
Special Requirements	Test case needs to have data from open data sources stored in Elastic Search and/or MongoDB
Pre-Condition	Citizens must be logged in the ESTABLISH Application.
Post-Condition	When transaction is successful, the results provided by the Multimodal Route Planner are shown in the Mobile App.
Date	
Tester	

Step	Actions and Data input	Expected Result	Obtained Result	PASSED/ FAILED
1	User selects origin and destination points for the route	The origin and destination point for a route are selected correctly.		
2	User selects the date for the route	A given date is selected.		
3	User selects “car” as a transport way	The “car” way is selected as a transport way.		
4	User clicks on “Calculate Route” button	Directions for a route by car are shown and the emitted pollution produced by the car is notified to the user.		

TS Code	TS.MOB.03
TS Name	Provide recommendations and alerts to the citizens.
TC Code	TS.MOB.03-TC.01
TC Version	1.0
TC Name	**Recommendations and alerts about levels of pollution, most-polluted areas and so on.**
Component	Mobile Application
Sub-Component	Cloud Platform for Data Fusion and Data analysis from multiple sources

Function	Recommendations and alerts about levels of pollution, most-polluted areas and so on.
Actor	Citizens
Special Requirements	Test case needs to have data from open data sources stored in Elastic Search and/or MongoDB
Pre-Condition	Citizens must be logged in the ESTABLISH Application.
Post-Condition	When transaction is successful, the results provided by the Cloud Platform for Data Fusion and Data Analysis from multiple sources are shown in the Mobile App.
Date	
Tester	

Step	Actions and Data input	Expected Result	Obtained Result	PASSED/ FAILED
1	User clicks on the "Recommendations" button	The "Recommendations" Page is shown		
2	User selects the "Pollution" tab	Recommendations related to pollution are shown in the mobile app.		

TS Code	**TS.MOB.03**
TS Name	Provide recommendations and alerts to the citizens.
TC Code	TS.MOB.03-TC.02
TC Version	1.0
TC Name	**Recommendations and alerts about traffic, parking areas, use of public transport, and so on.**
Component	Mobile Application
Sub-Component	Cloud Platform for Data Fusion and Data analysis from multiple sources
Function	Recommendations and alerts about traffic, parking areas, use of public transport, and so on.
Actor	Citizens
Special Requirements	Test case needs to have data from open data sources stored in Elastic Search and/or MongoDB
Pre-Condition	Citizens must be logged in the ESTABLISH Application.
Post-Condition	When transaction is successful, the results provided by the Cloud Platform for Data Fusion and Data Analysis from multiple sources are shown in the Mobile App.
Date	
Tester	

Step	Actions and Data input	Expected Result	Obtained Result	PASSED/ FAILED
1	User clicks on the "Recommendations" button	The "Recommendations" Page is shown		
2	User selects the "Mobility" tab	Recommendations related to mobility are shown in the mobile		

		app.		

TS Code	TS.MOB.04
TS Name	Manage the user profile
TC Code	TS.MOB.04-TC.01
TC Version	1.0
TC Name	**Manage user profile, user preferences, type of car to get personalized information**
Component	Mobile Application
Sub-Component	Cloud Platform for Data Fusion and Data analysis from multiple sources
Function	Manage user profile, user preferences, type of car to get personalized information
Actor	Citizens
Special Requirements	Test case needs to have data from open data sources stored in Elastic Search and/or MongoDB
Pre-Condition	Citizens must be logged in the ESTABLISH Application.
Post-Condition	When transaction is successful, the results provided by the Cloud Platform for Data Fusion and Data Analysis from multiple sources are shown in the Mobile App.
Date	
Tester	

Step	Actions and Data input	Expected Result	Obtained Result	PASSED/ FAILED
1	User clicks on the “Profile” button	The “Profile” Page is shown		
2	User can edit any input field related to the user preferences, type of car, etc.	All input fields are accessible to the user		
3	User clicks on the “Save” button	The user profile is stored correctly.		

Developing smart HVAC systems that ensure a healthy indoor environment

7.3 Test Scenarios

Smart HVAC systems that ensure a healthy indoor environment

Test Scenario	Code TS	Code TC	User Type
Installation of the system as whole and all single components within the IT system of the user/customer	UC2-TS01	UC2-TS01-TC01 UC2-TS01-TC02 UC2-TS01-TC03 UC2-TS01-TC04 UC2-TS01-TC05	System installation, implementation

		UC2-TS01-TC06 UC2-TS01-TC07	
Data acquisition of more than 10 devices, processing, transmission, appearance on the server, data loses, appearance in the application, application responses to various user request/entry/operation	UC2-TS02	UC2-TS02-TC01 UC2-TS02-TC02 UC2-TS02-TC03 UC2-TS02-TC04 UC2-TS02-TC05 UC2-TS02-TC06 UC2-TS02-TC07 UC2-TS02-TC08 UC2-TS02-TC09	System performance
System runs and a stuck occurs	UC2-TS03	UC2-TS03-TC01	System reliability

Intelligent air quality management system

Test Scenario	Code TS	Test Case	Code TC	User Type
Store sensor data to the data storage	TS.DM.ADMIN.01	Store sensor data to the data storage	TS.DM.ADMIN.01-TC.01	Administrator
Create an account (sign up)	TS.DM.GUEST.01	Create an account (sign up)	TS.DM.GUEST.01-TC.01	Guest
Login as a user	TS.DM.USER.01	Login as a user	TS.DM.USER.01-TC.01	User
Search the store sensor data from the data storage	TS.DM.USER.02	Search the store sensor data from the data storage	TS.DM.USER.02-TC.01	User
Visualize sensor data in a graphical form on web browser	TS.DM.USER.03	Visualize sensor data in a graphical form on web browser	TS.DM.USER.03-TC.01	User

7.4 Test Cases

Smart HVAC systems that ensure a healthy indoor environment

TS ID	**UC2-TS01**
TS Name	Installation of the system as whole and all single components within the IT system of the user/customer
TC ID	UC2-TS01-TC01
TC Version	1.0 – initial test
TC Name	**Installation of the system**

Component	all
Sub-Component	Not applicable
Function	System installation, implementation
Actor(s)	System operator, IT administrator, user
Special Requirements	Test case needs preparation of the affected components. Specific tests could require – sensors connected, set of data characterizing a real or fictive stakeholders (name, email address, wanted profile, permissions, assigned sensors).
Pre-Condition	Actor(s) are logged (or connected by other way) in the system and has (have) valid profile. Components related to the test case are up and running.
Post-Condition	Not defined yet.
Date	
Tester	

Actions	Expected Result	Obtained Result	PASSED/ FAILED

TS ID	**UC2-TS01**
TS Name	Installation of the system as whole and all single components within the IT system of the user/customer
TC ID	UC2-TS01-TC02
TC Version	1.0 – initial test
TC Name	**Create new customer account**
Component	Application
Sub-Component	Not applicable
Function	System configuration
Actor	User/customer
Special Requirements	Test case needs preparation of the affected components. Specific tests could require – sensors connected, set of data characterizing a real or fictive stakeholders (name, email address, wanted profile, permissions, assigned sensors).
Pre-Condition	Actor(s) are logged (or connected by other way) in the system and has (have) valid profile. Components related to the test case are up and running.
Post-Condition	The test passes successfully, the system is fully stable and ready to the next test taking place.
Date	
Tester	

Actions	Expected Result	Obtained Result	PASSED/ FAILED

TS ID	UC2-TS01
TS Name	Installation of the system as whole and all single components within the IT system of the user/customer
TC ID	UC2-TS01-TC03
TC Version	1.0 – initial test
TC Name	**Customer and accounts description, sufficient volume of entry boxes**
Component	Application
Sub-Component	Not applicable
Function	Management platform
Actor	User/customer
Special Requirements	Test case needs preparation of the affected components. Specific tests could require – sensors connected, set of data characterizing a real or fictive stakeholders (name, email address, wanted profile, permissions, assigned sensors).
Pre-Condition	Actor(s) are logged (or connected by other way) in the system and has (have) valid profile. Components related to the test case are up and running.
Post-Condition	The test passes successfully, the system is fully stable and ready to the next test taking place.
Date	
Tester	

Actions	Expected Result	Obtained Result	PASSED/ FAILED

TS ID	UC2-TS01
TS Name	Installation of the system as whole and all single components within the IT system of the user/customer
TC ID	UC2-TS01-TC04
TC Version	1.0 – initial test
TC Name	**Dash board arrangement**
Component	Application
Sub-Component	Not applicable
Function	Usability
Actor	User/customer

Special Requirements	Test case needs preparation of the affected components. Specific tests could require – sensors connected, set of data characterizing a real or fictive stakeholders (name, email address, wanted profile, permissions, assigned sensors).
Pre-Condition	Actor(s) are logged (or connected by other way) in the system and has (have) valid profile. Components related to the test case are up and running.
Post-Condition	The test passes successfully, the system is fully stable and ready to the next test taking place.
Date	
Tester	

Actions	Expected Result	Obtained Result	PASSED/ FAILED

TS ID	**UC2-TS01**
TS Name	Installation of the system as whole and all single components within the IT system of the user/customer
TC ID	UC2-TS01-TC05
TC Version	1.0 – initial test
TC Name	**Menu and options orderliness**
Component	Application
Sub-Component	Not applicable
Function	Usability
Actor	User/customer
Special Requirements	Test case needs preparation of the affected components. Specific tests could require – sensors connected, set of data characterizing a real or fictive stakeholders (name, email address, wanted profile, permissions, assigned sensors).
Pre-Condition	Actor(s) are logged (or connected by other way) in the system and has (have) valid profile. Components related to the test case are up and running.
Post-Condition	The test passes successfully, the system is fully stable and ready to the next test taking place.
Date	
Tester	

Actions	Expected Result	Obtained Result	PASSED/ FAILED

TS ID	UC2-TS01
TS Name	Installation of the system as whole and all single components within the IT system of the user/customer
TC ID	UC2-TS01-TC06
TC Version	1.0 – initial test
TC Name	**Icon's support when operating**
Component	Application
Sub-Component	Not applicable
Function	Usability
Actor	User/customer
Special Requirements	Test case needs preparation of the affected components. Specific tests could require – sensors connected, set of data characterizing a real or fictive stakeholders (name, email address, wanted profile, permissions, assigned sensors).
Pre-Condition	Actor(s) are logged (or connected by other way) in the system and has (have) valid profile. Components related to the test case are up and running.
Post-Condition	The test passes successfully, the system is fully stable and ready to the next test taking place.
Date	
Tester	

Actions	Expected Result	Obtained Result	PASSED/ FAILED

TS ID	UC2-TS01
TS Name	Installation of the system as whole and all single components within the IT system of the user/customer
TC ID	UC2-TS01-TC07
TC Version	1.0 – initial test
TC Name	**Add new device, set up parameters**
Component	Application
Sub-Component	Not applicable
Function	System configuration
Actor	User/customer, sensor network manager
Special Requirements	Test case needs preparation of the affected components. Specific tests could require – sensors connected, set of data characterizing a real or fictive stakeholders (name, email address, wanted profile, permissions, assigned sensors).

Pre-Condition	Actor(s) are logged (or connected by other way) in the system and has (have) valid profile. Components related to the test case are up and running.
Post-Condition	The test passes successfully, the system is fully stable and ready to the next test taking place.
Date	
Tester	

Actions	Expected Result	Obtained Result	PASSED/ FAILED

TS ID	**UC2-TS02**
TS Name	Data acquisition of more than 10 devices, processing, transmission, appearance on the server, data loses, appearance in the application, application responses to various user request/entry/operation
TC ID	UC2-TS02-TC01
TC Version	1.0 – initial test
TC Name	**Data acquisition of more than 10 devices**
Component	all
Sub-Component	Not applicable
Function	System performance
Actor	User/customer, IT administrator
Special Requirements	Test case needs preparation of the affected components. Specific tests could require – sensors connected, set of data characterizing a real or fictive stakeholders (name, email address, wanted profile, permissions, assigned sensors).
Pre-Condition	Actor(s) are logged (or connected by other way) in the system and has (have) valid profile. Components related to the test case are up and running.
Post-Condition	The test passes successfully, the system is fully stable and ready to the next test taking place.
Date	
Tester	

Actions	Expected Result	Obtained Result	PASSED/ FAILED

TS ID	**UC2-TS02**
TS Name	Data acquisition of more than 10 devices, processing, transmission, appearance on the

	server, data loses, appearance in the application, application responses to various user request/entry/operation
TC ID	UC2-TS02-TC02
TC Version	1.0 – initial test
TC Name	**Application response to various user requests/entry/operation**
Component	Application
Sub-Component	Not applicable
Function	System performance
Actor	User/customer, IT administrator
Special Requirements	Test case needs preparation of the affected components. Specific tests could require – sensors connected, set of data characterizing a real or fictive stakeholders (name, email address, wanted profile, permissions, assigned sensors).
Pre-Condition	Actor(s) are logged (or connected by other way) in the system and has (have) valid profile. Components related to the test case are up and running.
Post-Condition	The test passes successfully, the system is fully stable and ready to the next test taking place.
Date	
Tester	

Actions	Expected Result	Obtained Result	PASSED/ FAILED

TS ID	**UC2-TS02**
TS Name	Data acquisition of more than 10 devices, processing, transmission, appearance on the server, data loses, appearance in the application, application responses to various user request/entry/operation
TC ID	UC2-TS02-TC03
TC Version	1.0 – initial test
TC Name	**Graphs drawing, zooming possibilities, comfort in terms of colors & content, appearance by different resolution (mobile, desktop)**
Component	Application
Sub-Component	Not applicable
Function	Visualization
Actor	User/customer
Special Requirements	Test case needs preparation of the affected components. Specific tests could require – sensors connected, set of data characterizing a real or fictive stakeholders (name, email address, wanted profile, permissions, assigned sensors).

Pre-Condition	Actor(s) are logged (or connected by other way) in the system and has (have) valid profile. Components related to the test case are up and running.
Post-Condition	The test passes successfully, the system is fully stable and ready to the next test taking place.
Date	
Tester	

Actions	Expected Result	Obtained Result	PASSED/ FAILED

TS ID	**UC2-TS02**
TS Name	Data acquisition of more than 10 devices, processing, transmission, appearance on the server, data loses, appearance in the application, application responses to various user request/entry/operation
TC ID	UC2-TS02-TC04
TC Version	1.0 – initial test
TC Name	**Data interpretation**
Component	Application
Sub-Component	Not applicable
Function	Visualization
Actor	User/customer
Special Requirements	Test case needs preparation of the affected components. Specific tests could require – sensors connected, set of data characterizing a real or fictive stakeholders (name, email address, wanted profile, permissions, assigned sensors).
Pre-Condition	Actor(s) are logged (or connected by other way) in the system and has (have) valid profile. Components related to the test case are up and running.
Post-Condition	The test passes successfully, the system is fully stable and ready to the next test taking place.
Date	
Tester	

Actions	Expected Result	Obtained Result	PASSED/ FAILED

TS ID	**UC2-TS02**
TS Name	Data acquisition of more than 10 devices, processing, transmission, appearance on the

	server, data loses, appearance in the application, application responses to various user request/entry/operation
TC ID	UC2-TS02-TC05
TC Version	1.0 – initial test
TC Name	**Data processing, transmission, appearance on the server, data loses, appearance in the application**
Component	all
Sub-Component	Not applicable
Function	System performance
Actor	System operator, IT administrator, user/customer
Special Requirements	Test case needs preparation of the affected components. Specific tests could require – sensors connected, set of data characterizing a real or fictive stakeholders (name, email address, wanted profile, permissions, assigned sensors).
Pre-Condition	Actor(s) are logged (or connected by other way) in the system and has (have) valid profile. Components related to the test case are up and running.
Post-Condition	The test passes successfully, the system is fully stable and ready to the next test taking place.
Date	
Tester	

Actions	Expected Result	Obtained Result	PASSED/ FAILED

TS ID	**UC2-TS02**
TS Name	Data acquisition of more than 10 devices, processing, transmission, appearance on the server, data loses, appearance in the application, application responses to various user request/entry/operation
TC ID	UC2-TS02-TC06
TC Version	1.0 – initial test
TC Name	**Devices management, description of sensors is adequate, sufficient volume of entry boxes, ikons for rapid navigation, assignments to customers**
Component	Application
Sub-Component	Not applicable
Function	Management platform
Actor	User/customer
Special Requirements	Test case needs preparation of the affected components. Specific tests could require – sensors connected, set of data characterizing a real or fictive stakeholders (name, email address, wanted profile, permissions, assigned

	sensors).
Pre-Condition	Actor(s) are logged (or connected by other way) in the system and has (have) valid profile. Components related to the test case are up and running.
Post-Condition	The test passes successfully, the system is fully stable and ready to the next test taking place.
Date	
Tester	

Actions	Expected Result	Obtained Result	PASSED/ FAILED

TS ID	**UC2-TS02**
TS Name	Data acquisition of more than 10 devices, processing, transmission, appearance on the server, data loses, appearance in the application, application responses to various user request/entry/operation
TC ID	UC2-TS02-TC07
TC Version	1.0 – initial test
TC Name	**Connectivity of devices with different communication standards**
Component	Interfaces, sensor nodes
Sub-Component	Not applicable
Function	Interoperability, integration
Actor	System operator, IT administrator, user
Special Requirements	Test case needs preparation of the affected components. Specific tests could require – sensors connected, set of data characterizing a real or fictive stakeholders (name, email address, wanted profile, permissions, assigned sensors).
Pre-Condition	Actor(s) are logged (or connected by other way) in the system and has (have) valid profile. Components related to the test case are up and running.
Post-Condition	The test passes successfully, the system is fully stable and ready to the next test taking place.
Date	
Tester	

Actions	Expected Result	Obtained Result	PASSED/ FAILED

TS ID	**UC2-TS02**

TS Name	Data acquisition of more than 10 devices, processing, transmission, appearance on the server, data loses, appearance in the application, application responses to various user request/entry/operation
TC ID	UC2-TS02-TC08
TC Version	1.0 – initial test
TC Name	**New device/sensor (existing communication standards) in the system, getting sensor to work, how fast the system accepts new device**
Component	Interfaces, sensor nodes
Sub-Component	Not applicable
Function	System performance
Actor	System operator, IT administrator, user
Special Requirements	Test case needs preparation of the affected components. Specific tests could require – sensors connected, set of data characterizing a real or fictive stakeholders (name, email address, wanted profile, permissions, assigned sensors).
Pre-Condition	Actor(s) are logged (or connected by other way) in the system and has (have) valid profile. Components related to the test case are up and running.
Post-Condition	The test passes successfully, the system is fully stable and ready to the next test taking place.
Date	
Tester	

Actions	Expected Result	Obtained Result	PASSED/ FAILED

TS ID	**UC2-TS02**
TS Name	Data acquisition of more than 10 devices, processing, transmission, appearance on the server, data loses, appearance in the application, application responses to various user request/entry/operation
TC ID	UC2-TS02-TC09
TC Version	1.0 – initial test
TC Name	**New device/sensor in the system (new communication standard)**
Component	Interfaces, sensor nodes
Sub-Component	Not applicable
Function	Implementation, interoperability
Actor	System operator, IT administrator, user
Special Requirements	Test case needs preparation of the affected components. Specific tests could require – sensors connected, set of data characterizing a real or fictive stakeholders (name, email address, wanted profile, permissions, assigned

	sensors).
Pre-Condition	Actor(s) are logged (or connected by other way) in the system and has (have) valid profile. Components related to the test case are up and running.
Post-Condition	The test passes successfully, the system is fully stable and ready to the next test taking place.
Date	
Tester	

Actions	Expected Result	Obtained Result	PASSED/ FAILED

TS ID	**UC2-TS03**
TS Name	System runs and a stuck occurs
TC ID	UC2-TS03-TC01
TC Version	1.0 – initial test
TC Name	**System runs in 24/7 regime, a component stuck, communication/network drop, auto reconnect, data loses**
Component	all
Sub-Component	Not applicable
Function	Reliability
Actor	System operator, IT administrator, user
Special Requirements	Test case needs preparation of the affected components. Specific tests could require – sensors connected, set of data characterizing a real or fictive stakeholders (name, email address, wanted profile, permissions, assigned sensors).
Pre-Condition	Actor(s) are logged (or connected by other way) in the system and has (have) valid profile. Components related to the test case are up and running.
Post-Condition	The test passes successfully, the system is fully stable and ready to the next test taking place.
Date	
Tester	

Actions	Expected Result	Obtained Result	PASSED/ FAILED

7.4.1 TS.DM.ADMIN.01: Store sensor data to the data storage

TS Code	TS.DM.ADMIN.01
TS Name	Store sensor data to the data storage
TC Code	TS.DM.ADMIN.01-TC.01
TC Version	1.0 – initial test
TC Name	**Store sensor data to the data storage**
Component	Java Application
Sub-Component	Sensor Data Management
Function	Store sensor data transferred from IAQ/OAQ devices to the data storage
Actor	IAQ/OAQ device
Special Requirements	Test case needs preparation of the relational database management system (PostgreSQL in this case) for storing sensor data.
Pre-Condition	IAQ device is connected to the server via TCP through Wi-Fi
Post-Condition	When transaction is successful, a new row of the sensor data table is created in the DBMS.
Date	
Tester	

Step	Actions and Data input	Expected Result	Obtained Result	PASSED/ FAILED
1	IAQ device sends sensor data	IAQ device sends a sensor data packet to the server every 1 minutes via TCP protocol		
2	Server receives the sensor data	Server receives the sent packet through TCP connection. Server interprets and validates the packet using CRC.		
3	Server saves the sensor data	Server generates insert SQL for saving the sensor data and executes the SQL		

7.4.2 TS.DM.GUEST.01: Create an account (Sign up)

TS Code	TS.DM.GUEST.01
TS Name	Create an account (sign up)
TC Code	TS.DM.GUEST.01-TC.01
TC Version	1.0 – initial test
TC Name	**Create an account (sign up)**
Component	Web Application
Sub-Component	Sensor Data Management
Function	Sign up
Actor	Guest (does not have an active user account)
Special Requirements	Test case needs preparation of the relational database management system for storing user profiles

Pre-Condition	User accesses the Web applications and doesn't have an active user account.
Post-Condition	When transaction is successful, an account is created for the user.
Date	
Tester	

Step	Actions and Data input	Expected Result	Obtained Result	PASSED/ FAILED
1	User clicks on "Sign up" button	When the user clicks on "Sign up" button the "Sign up form" is displayed.		
2	User enters data in all mandatory fields.	User identifier, password, confirm password, e-mail fields are filled		
3	User clicks on "Submit" button.	Entered data is saved and the new user account is created. The "Sign up" form is closing and the "Login to your account" form is opening.		

7.4.3 TS.DM.USER.01: Login as a user

TS Code	TS.DM.USER.01
TS Name	Login as a user
TC Code	TS.DM.USER.01-TC.01
TC Version	1.0 – initial test
TC Name	**Login as a user**
Component	Web Application
Sub-Component	Sensor data management
Function	Login
Actor	User
Special Requirements	Test case needs preparation of the relational database management system that stores user profiles.
Pre-Condition	User accesses the Web applications and has an active user account.
Post-Condition	When transaction is successful, the page specific for the user is displayed.
Date	
Tester	

Step	Actions and Data input	Expected Result	Obtained Result	PASSED/ FAILED
1	User enters username and password	The user has to fill the mandatory fields: Username, Password		
2	User clicks on "Login" button	If the entered data is correct, the "Login in your account" the page specific for the user is displayed Otherwise, login error page is displayed.		

7.4.4 TS.DM.USER.02: Search the store sensor data from the data storage

TS Code	TS.DM.USER.02
TS Name	Search the store sensor data from the data storage
TC Code	TS.DM.USER.02-TC.01
TC Version	1.0 – initial test
TC Name	**Search the store sensor data from the data storage**
Component	Web Application
Sub-Component	Sensor Data Management
Function	Search the store sensor data from the data storage
Actor	User
Special Requirements	Test case needs preparation of the relational database management system for storing sensor data.
Pre-Condition	User is logged in the server and has User profile.
Post-Condition	When transaction is successful, the result of sensor data is shown on web browser in the table form
Date	
Tester	

Step	Actions and Data input	Expected Result	Obtained Result	PASSED/ FAILED
1	User selects an IAQ device	The user navigates IAQ devices and selects one that the user wants to search		
3	User enters search conditions	The user fills the search condition fields: start time, end time, data size.		
4	User clicks on “Search” button.	When user clicks “Search” button, the result of sensor data is shown on web browser in a table form		

7.4.5 TS.DM.USER.03: Visualize sensor data in a graphical form on web browser

TS Code	TS.DM.USER.03
TS Name	Visualize sensor data in a graphical form on web browser
TC Code	TS.DM.USER.03-TC.01
TC Version	1.0 – initial test
TC Name	**Visualize sensor data in a graphical form on web browser**
Component	Web Application
Sub-Component	Sensor Data Management
Function	Visualize sensor data in a graphical form on web browser
Actor	User
Special Requirements	Test case needs preparation of the relational database management system for storing sensor data.

Pre-Condition	User is logged in the server and has User profile.
Post-Condition	When transaction is successful, the result of sensor data is shown on web browser in the graphical form
Date	
Tester	

Step	Actions and Data input	Expected Result	Obtained Result	PASSED/ FAILED
1	User selects an IAQ device	After login, the user navigates IAQ devices and selects one that the user wants to search		
2	User enters visualization conditions	After selecting a IAQ device, the user enters time constraints, the number of data and chart type to be displayed		
3	User clicks on "Visualize" button.	When user clicks "Visualize" button, the result of sensor data is shown on web browser in a graphical form such as line chart, spline chart, bar chart, and area chart		

Promoting independence of specific vulnerable groups

7.5 Test Scenarios

Rehabilitation decision support

Test Scenario	Code TS	Test Case	Code TC	User Type
Enter as a Guest	TS.GUEST.01	Enter as a Guest	TS.GUEST.01-TC.01	Guest
View "Dashboard" information	TS.GUEST.02	View "Current Data" tab information	TS.GUEST.02-TC.01	Guest
		View "Environmental Data" tab information	TS.GUEST.02-TC.02	Guest
Create an account (sign up)	TS.GUEST.03	Sign up as a Patient	TS.GUEST.03-TC.01	Guest
		Sign up as a Kineto	TS.GUEST.03-TC.02	Guest
Login as an active user	TS.USER.01	Login as a Patient	TS.USER.01-TC.01	Patient
		Login as a Kineto	TS.USER.01-TC.02	Kineto
"Dashboard" information management	TS.USER.02	View "Current Data" tab information as a patient	TS.USER.02-TC.01	Patient
		View "Current Data" tab information as a kineto	TS.USER.02-TC.02	Kineto

		"Environmental Data" tab information management	TS.USER.02-TC.03	Patient/ Kineto
		"Physiological Data" tab information management	TS.USER.02-TC.04	Patient/ Kineto
		Dashboard alerts management for patient	TS.USER.02-TC.05	Patient
		Dashboard alerts management for kineto	TS.USER.02-TC.06	Kineto
"Alerts" management	TS.USER.03	"Alerts" management for patient	TS.USER.03-TC.01	Patient
		"Alerts" management for kineto	TS.USER.03-TC.02	Kineto
"Activities" management	TS.USER.04	View assigned activities	TS.USER.04-TC.01	Patient
		View assigned activities	TS.USER.04-TC.02	Kineto
		Managing activities assigned to a specific patient	TS.USER.04-TC.03	Kineto
		Create new activity	TS.USER.04-TC.04	Kineto
"Patient" management	TS.USER.05	View patient list	TS.USER.05-TC.01	Kineto
		Edit patient's information	TS.USER.05-TC.02	Kineto
		Add new patient	TS.USER.05-TC.03	Kineto
"Settings" management	TS.USER.06	View current account settings	TS.USER.06-TC.01	Patient/ Kineto
		Change account settings	TS.USER.06-TC.02	Patient/ Kineto

Indoor air quality improvement at school

Test Scenario	Code TS	Test Case	Code TC	User Type
Installation Management	TS.INS.01	Application installation	TS.INS.01-TC.01	End User
Registration Management	TS.REG.01	User Registration	TS.REG.01-TC.01	System Admin
User Management	TS.USER.01	User Login	TS.USER.01-TC.01	End User
		User Account Editing	TS.USER.01-TC.02	System Admin, End User
		Deleting a User Account	TS.USER.01-TC.03	System Admin, End User
User Data Recording	TS.DATA.01	Scheduled Reports	TS.DATA.01-TC.01	End User
		Symptoms Reporting	TS.DATA.01-TC.02	End User
		User Feedback	TS.DATA.01-TC.03	End User

Tracking of athletes with wearable sensors

Test Scenario	Code TS	Test Case	Code TC	User Type
Gateway Register	TS-REG-01	Gateway Register	TS-REG-01-TC01	Device
Device Register	TS-REG-02	Device Register	TS-REG-02-TC01	Device
Sensor Read	TS-RD-01	Sensor Read	TS-RD-01-TC01	Device
Subscription	TS-SB-01	Subscription	TS-SB-01-TC01	End User
Data Gathering	TS-DG-01	Data Gathering	TS-DG-01-TC01	End User

7.6 Test Cases

For each Test Scenario defined in the previous chapter (7.5 Test scenarios), a set of Test Cases will be identified and described in the second table below.

Rehabilitation decision support

7.6.1 TS.GUEST.01: Enter as a Guest

TS Code	**TS.GUEST.01**
TS Name	Enter as Guest
TC Code	TS.GUEST.01-TC.01
TC Version	1.0 – initial test
TC Name	**Enter as a Guest**
Component	Web Application
Sub-Component	Login
Function	Login
Actor	User having Guest profile (without an active user account)
Special Requirements	Test case needs preparation of a test data set including several real or fictive persons with: first name, last name, valid email address (business address inside the organization), wanted profile, permissions.
Pre-Condition	User accesses the Web applications and doesn't have an active user account. The starting page is displayed with the 'Enter as guest', 'Enter as a patient' and 'Enter as a kineto' buttons displayed and enabled on the right side of the start page.
Post-Condition	When transaction is successful, the Dashboard page is displayed.
Date	
Tester	

Step	Actions and Data input	Expected Result	Obtained Result	PASSED/ FAILED
1	User clicks on button "**Enter**	The "**Dashboard**" page is		

	as guest”.	displayed. At the left of the top page is displayed a standard text (“Welcome to ESTABLISH!”) and the user type (Guest).		

7.6.2 TS.GUEST.02: View “Dashboard” information

TS Code	**TS.GUEST.02**
TS Name	View “Dashboard” information
TC Code	TS.GUEST.02-TC.01
TC Version	1.0 – initial test
TC Name	**View “Current Data” tab information**
Component	Web Application
Sub-Component	Dashboard
Function	Current Data
Actor	User having Guest profile (without an active user account)
Special Requirements	Test case needs preparation of a test data set including several real or fictive persons with: first name, last name, valid email address (business address inside the organization), wanted profile, permissions.
Pre-Condition	User (Guest) successfully accessed the Web applications and the Dashboard page is displayed.
Post-Condition	When transaction is successful, the user views the information displayed in “Current Data” tab for a specific location.
Date	
Tester	

Step	**Actions and Data input**	**Expected Result**	**Obtained Result**	**PASSED/ FAILED**
1	User clicks on “**Select location**” field on “**Dashboard**” page.	At the top of the “**Dashboard**” page, under the “**Sign up**” banner is situated “**Select location**” field. Field “**Select location**” is a dropdown box filled with city names. The user will select a specific location from the list. Under the “**Current Data**” tab are displayed real-time measurements from up to 8 environmental sensors and weather data, for the selected		

		location.		
2	User clicks on “**View more**” link	The user can display multiple rows of information by clicking “**View more**” link. The graphical components that represent averages of measurements of some sensors will be displayed in the expanded view. The link “**View less**” becomes available.		

TS Code	**TS.GUEST.02**			
TS Name	View “Dashboard” information			
TC Code	TS.GUEST.02-TC.02			
TC Version	1.0 – initial test			
TC Name	**View “Environmental Data” tab information**			
Component	Web Application			
Sub-Component	Dashboard			
Function	Environmental Data			
Actor	User having Guest profile (without an active user account)			
Special Requirements	Test case needs preparation of a test data set including several real or fictive persons with: first name, last name, valid email address (business address inside the organization), wanted profile, permissions.			
Pre-Condition	User (Guest) successfully accessed the Web applications and the Dashboard page is displayed.			
Post-Condition	When transaction is successful, the user views the information displayed in “Environmental Data” tab; the information is displayed in accordance with the filtering criteria entered by the user.			
Date				
Tester				
Step	**Actions and Data input**	**Expected Result**	**Obtained Result**	**PASSED/ FAILED**
1	User clicks on “**Select location**” field on “**Dashboard**” page.	At the top of the “**Dashboard**” page, under the “**Sign up**” banner is situated “**Select location**” field. Field “**Select location**” is a dropdown box filled with city names. The user will select a		

		specific location from the list.		
2	User clicks on “**Environmental data**” tab	A list of all measurements recorded for the current day (since 00:00 hour to now) is displayed. The displayed columns are: • Measurement Item • ID Sensor/Location • Date/Time • Value • Unit of measurement The number of displayed records and a navigator control set is displayed at the bottom part of the screen.		
3	User clicks on the navigator control set	In order to view more information (rows) the user has to click on the navigator control set who is displayed at the right bottom part of the screen (on “>” button). When the user clicks on “>” a new set of rows are displayed and the page number is increased. If the user wants to see the last page, will click on “>>” button.		
4	User enters values in the filtering form	Above the rows displayed on “**Environmental data**” tab is found a filtering form. In order to filter the data, the user has to fill in the following fields: • START date and time – mandatory, the user will select • END date and time • Select a Parameter		
5	User clicks on “Filter” button	Is displayed the list of all measurements recorded for the chosen time interval (since start date/ time to end date/ time) and for the selected parameter (if chosen).		

7.6.3 TS.GUEST.03: Create an account (Sign up)

TS Code	TS.GUEST.03
TS Name	Create an account (sign up)
TC Code	TS.GUEST.03-TC.01
TC Version	1.0 – initial test
TC Name	**Sign up as a Patient**
Component	Web Application
Sub-Component	Dashboard
Function	Sign up
Actor	User having Guest profile (without an active user account)
Special Requirements	Test case needs preparation of a test data set including several real or fictive persons with: first name, last name, valid email address (business address inside the organization), wanted profile, permissions.
Pre-Condition	User accesses the Web applications and doesn't have an active user account. The user chose "Enter as guest" button displayed on the starting page and then clicks on the "Sign up" button on the Dashboard page. The "Sign up" form is displayed.
Post-Condition	When transaction is successful, an account with "Patient" profile is created for user.
Date	
Tester	

Step	Actions and Data input	Expected Result	Obtained Result	PASSED/ FAILED
1	User clicks on "**Enter as a guest**" button on the starting page.	The Dashboard page is displayed. At the top of the "**Dashboard**" page, under the page title is situated the "**Want to become a member?"** banner, with the "Sign up" button on the right side.		
2	User clicks on "**Sign up**" button	When the user clicks on "**Sign up**" button the "**Sign up form**" is displayed. All fields are empty and mandatory. Button "**Sign up**" is displayed and active.		
3	User enters data in all mandatory fields.	Field "**Profile type**" is a dropdown box filled with two values: Patient and Kinetotherapist. The user has to choose one value from the		

		list; in this case the value to choose is "**Patient**". Fields "**Username**", "**Password**" and "**Confirm Password**" are free text fields. For Username the user will fill the e-mail address. For the Password the user will fill a password. On the "**Confirm Password**" field the user will fill the same password filled on "Password" field. If the text filled on "Confirm Password" field is not the same as the one filled on "Password" field, an error message will be displayed. In case of an error, the confirmation password must be entered again. User has to check the "**I'm not a robot**" check box (captcha code, mandatory). After each input, cursor is navigating to next field. At the end, the cursor will be placed on button "Sign up".		
4	User clicks on "**Sign up**" button.	Entered data is saved and the new user account is created*. The "Sign up" form is closing and the "Login to your account" form is opening. *If entered data is not correct (wrong e-mail address or non-compliant password) an error message is displayed and the user has to fill again the		

		correct data (step 3).		

TS Code	TS.GUEST.03
TS Name	Create an account (sign up)
TC Code	TS.GUEST.03-TC.02
TC Version	1.0 – initial test
TC Name	**Sign up as a Kineto**
Component	Web Application
Sub-Component	Dashboard
Function	Sign up
Actor	User having Guest profile (without an active user account)
Special Requirements	Test case needs preparation of a test data set including several real or fictive persons with: first name, last name, valid email address (business address inside the organization), wanted profile, permissions.
Pre-Condition	User accesses the Web applications and doesn't have an active user account. The user chose "Enter as guest" button displayed on the starting page and then clicks on the "Sign up" button on the Dashboard page. The "Sign up" form is displayed.
Post-Condition	When transaction is successful, an account with "Kinetotherapist" profile is created for user.
Date	
Tester	

Step	Actions and Data input	Expected Result	Obtained Result	PASSED/ FAILED
1	User clicks on "Enter as a guest" button on the starting page.	The Dashboard page is displayed. The Dashboard page is displayed. At the top of the "**Dashboard**" page, under the page title is situated the "**Want to become a member?"** banner, with the "Sign up" button on the right side.		
2	User clicks on "Sign up" button	When the user clicks on "**Sign up**" button the "**Sign up form**" is displayed. All fields are empty and mandatory. Button "**Sign up**" is displayed and active.		

3	User enters data in all mandatory fields.	Field "**Profile type**" is a dropdown box filled with two values: Patient and Kinetotherapist. The user has to choose one value from the list; in this case the value to choose is "**Kinetotherapist**". Fields "**Username**", "**Password**" and "**Confirm Password**" are free text fields. For Username the user will fill the e-mail address. For the Password the user will fill a password. On the "**Confirm Password**" field the user will fill the same password filled on "Password" field. If the text filled on "Confirm Password" field is not the same as the one filled on "Password" field, an error message will be displayed. In case of an error, the confirmation password must be entered again. User has to check the "**I'm not a robot**" check box (captcha code, mandatory). After each input, cursor is navigating to next field. At the end, the cursor will be placed on button "Sign up".		
4	User clicks on "Sign up" button.	Entered data is saved and the new user account is created*. The "Sign up" form is closing and the "Login to your account" form is opening.		

		*If entered data is not correct (wrong e-mail address or non-compliant password) an error message is displayed and the user has to fill again the correct data (step 3).		

7.6.4 TS.USER.01: Login as an active user

TS Code	TS.USER.01
TS Name	Login as an active user
TC Code	TS.USER.01-TC.01
TC Version	1.0 – initial test
TC Name	**Login as a Patient**
Component	Web Application
Sub-Component	Login
Function	Login
Actor	User having Patient profile (with an active user account)
Special Requirements	Test case needs preparation of a test data set including several real or fictive persons with: first name, last name, valid email address (business address inside the organization), wanted profile, permissions.
Pre-Condition	User accesses the Web applications having an active user account. The user chose "Enter as a Patient" button displayed on the starting page. The "Login to your account" form is displayed.
Post-Condition	When transaction is successful, the Dashboard page specific for "Patient" is displayed.
Date	
Tester	

Step	Actions and Data input	Expected Result	Obtained Result	PASSED/ FAILED
1	User clicks on button "**Enter as a Patient**".	An input data form, named "**Login in your account"** is displayed. All fields appearing in this form are empty and mandatory. Fields Username, Password are free text fields. Button "**Login**" is displayed and active. At the "**Login to your account**"		

		form's bottom is displayed "**Forgot your password**" link.		
2	User enters username and password	The user has to fill the mandatory fields: • **Username** • **Password** After each input, cursor is navigating to next field. At the end, the cursor will be placed on button "**Login**".		
3	User clicks on "**Login**" button	If the entered username and password are correct a new "**Login in your account**" form is displayed*. "**Please enter your PIN number**" field is mandatory. "**Remember me**" check box is displayed. Button "**Submit**" is displayed and active. * If entered data is not correct (wrong username or password), when user clicks on "Login" button an error message is displayed and the user has to fill again the correct data (step 2).		
4	User enters PIN number	User enters the PIN number in the "**Please enter your PIN number**" field . The user has the option to save the entered PIN number for the next login in the web application by checking the "**Remember me**" check box.		
5	User clicks on "**Submit**" button	If the entered PIN number is correct, the "**Login in your account**" form is closed and the "**Dashboard**" page is displayed*.		

		At the left top of the page is displayed the name and user type (Patient). * If entered data is not correct (wrong PIN number), when user clicks on “Submit” button an error message is displayed and the user has to fill again the correct data (step 4).		

TS Code	**TS.USER.01**
TS Name	Login as active user
TC Code	TS.USER.01-TC.02
TC Version	1.0 – initial test
TC Name	**Login as a Kineto**
Component	Web Application
Sub-Component	Login
Function	Login
Actor	User having Kineto profile (with an active user account)
Special Requirements	Test case needs preparation of a test data set including several real or fictive persons with: first name, last name, valid email address (business address inside the organization), wanted profile, permissions.
Pre-Condition	User accesses the Web applications having an active user account. The user chose “Enter as a Kineto” button displayed on the starting page. The “Login to your account” form is displayed.
Post-Condition	When transaction is successful, the Dashboard page specific for “Kinetotherapist” is displayed.
Date	
Tester	

Step	**Actions and Data input**	**Expected Result**	**Obtained Result**	**PASSED/ FAILED**
1	User clicks on button “**Enter as a Kineto**”.	An input data form, named “**Login in your account”** is displayed. All fields appearing in this form are empty and mandatory. Fields Username, Password are free text fields.		

		Button “**Login**” is displayed and active. At the “**Login to your account**” form’s bottom is displayed “**Forgot your password**” link.		
2	User enters username and password	The user has to fill the mandatory fields: • **Username** • **Password** After each input, cursor is navigating to next field. At the end, the cursor will be placed on button “**Login**”.		
3	User clicks on “**Login**” button	If the entered username and password are correct a new “**Login in your account**” form is displayed*. “**Please enter your PIN number**” field is mandatory. “**Remember me**” check box is displayed. Button “**Submit**” is displayed and active. * If entered data is not correct (wrong username or password), when user clicks on “Login” button an error message is displayed and the user has to fill again the correct data (step 2).		
4	User enters PIN number	User enters the PIN number. The user has the option to save the entered PIN number for the next login in the web application by checking the “**Remember me**” check box.		
5	User clicks on “**Submit**” button	If the entered PIN number is correct, the “**Login in your account**” form is closed and the “**Dashboard**” page is		

		displayed*. At the top left of the page is displayed the name and user type (Kinetotherapist). * If entered data is not correct (wrong PIN number), when user clicks on "Submit" button an error message is displayed and the user has to fill again the correct data (step 4).		

7.6.5 TS.USER.02: "Dashboard" information management

TS Code	TS.USER.02
TS Name	"Dashboard" information management
TC Code	TS.USER.02-TC.01
TC Version	1.0 – initial test
TC Name	**View "Current Data" tab information as a patient**
Component	Web Application
Sub-Component	Dashboard
Function	Current Data
Actor	User having Patient profile (with an active user account)
Special Requirements	Test case needs preparation of a test data set including several real or fictive persons with: first name, last name, valid email address (business address inside the organization), wanted profile, permissions.
Pre-Condition	User accesses the Web applications having an active user account (as a patient). The user successfully logged in the application. The "Dashboard" page is displayed.
Post-Condition	When transaction is successful, the user is able to view current data information for himself and for his location.
Date	
Tester	

Step	Actions and Data input	Expected Result	Obtained Result	PASSED/ FAILED
1	User is on the "**Dashboard**" page.	On the "**Dashboard**" page, under the "**Current Data**" tab are displayed real-time measurements from up to 8 environmental sensors and weather data, for the current user (patient) and his current		

		location.		
2	User clicks on “**View more**” link	The user can display multiple rows of information by clicking “**View more**” link. The graphical components that represent averages of measurements of some sensors will be displayed in the expanded view. The link “**View less**” becomes available.		

TS Code	**TS.USER.02**			
TS Name	“Dashboard” information management			
TC Code	TS.USER.02-TC.02			
TC Version	1.0 – initial test			
TC Name	**View “Current Data” tab information as a kineto**			
Component	Web Application			
Sub-Component	Dashboard			
Function	Current Data			
Actor	User having Kineto profile (with an active user account)			
Special Requirements	Test case needs preparation of a test data set including several real or fictive persons with: first name, last name, valid email address (business address inside the organization), wanted profile, permissions.			
Pre-Condition	User accesses the Web applications having an active user account (as a kinetotherapist). The user successfully logged in the application. The “Dashboard” page is displayed.			
Post-Condition	When transaction is successful, the user is able to view current data information for the selected patient and location.			
Date				
Tester				
Step	**Actions and Data input**	**Expected Result**	**Obtained Result**	**PASSED/ FAILED**
1	User clicks on “**Select a patient**” field on “**Dashboard**” page.	At the top of the “**Dashboard**” page is situated “**Select a patient**” field. Field “**Select a patient**” is a dropdown box filled with patient names. The user		

		(kinetotherapist) will select a specific patient from his patients list. The selected patient name will be displayed in the "Current patient" banner, below the selection field. Under the "**Current Data**" tab will be displayed real-time measurements from up to 8 environmental sensors and weather data, for the selected patient.		
2	User clicks on "**View more**" link	The user can display multiple rows of information by clicking "**View more**" link. The graphical components that represent averages of measurements of some sensors will be displayed in the expanded view. The link "**View less**" becomes available.		

TS Code	**TS.USER.02**
TS Name	"Dashboard" information management
TC Code	TS.USER.02-TC.03
TC Version	1.0 – initial test
TC Name	**"Environmental Data" tab information management**
Component	Web Application
Sub-Component	Dashboard
Function	Environmental Data
Actor	User having Patient or Kineto profile (with an active user account)
Special Requirements	Test case needs preparation of a test data set including several real or fictive persons with: first name, last name, valid email address (business address inside the organization), wanted profile, permissions.
Pre-Condition	User accesses the Web applications and has an active user account (as a patient or a kinetotherapist). The user successfully logged in the application. The "Dashboard" page is displayed.
Post-Condition	When transaction is successful, the user is able to view and filter Environmental data

	information.			
Date				
Tester				
Step	**Actions and Data input**	**Expected Result**	**Obtained Result**	**PASSED/ FAILED**
1	The user with "kineto" profile clicks on "**Select patient**" field on "**Dashboard**" page.	At the top of the "**Dashboard**" page, under the page's title is situated "**Select patient**" field. Field "**Select patient**" is a dropdown box filled with patient names. The user with "kineto" profile will select a specific patient from the list, for which information will be displayed.		
2	User (both "patient" and "kineto" user types) clicks on "**Environmental data**" tab	A list of all measurements recorded for the current day (since 00:00 hour to now) is displayed. The displayed columns are: • Measurement Item • ID Sensor/Location • Date/Time • Value • Unit of measurement If the user is a patient, the displayed values are measured by sensors associated to his current location (measured by GPS tracker of the smartphone). If the user is a kinetotherapist, the displayed values are measured by sensors associated to the current location of the patient selected at step 1 (measured by GPS tracker of the smartphone, if available). The number of displayed records and a navigator control set is displayed at the bottom part of the screen.		
3	User (both "patient" and "kineto" user types) clicks	In order to view more information (rows) the user has		

	on the navigator control set	to click on the navigator control set who is displayed at the right bottom part of the screen (on ">" button). When the user clicks on ">" a new set of rows are displayed and the page number is increased. If the user wants to see the last page, will click on ">>" button.		
4	User (both "patient" and "kineto" user types) enters values in the filtering form	Above the rows displayed on "**Environmental data**" tab is found a filtering form. In order to filter the data, the user has to fill in the following fields: • START date and time • END date and time • Select a Parameter: the list displays the parameters that are enabled from the "Settings" menu's function (for further details see TS.USER.06)		
5	User (both "patient" and "kineto" user types) clicks on "**Filter**" button	Is displayed the list of all measurements recorded for the chosen time interval (since start date/ time to end date/ time) and for the selected parameter (if chosen). On the bottom of the page a chart of the selected measured condition variation in time, is displayed.		

TS Code	**TS.USER.02**
TS Name	Manage "Dashboard" information
TC Code	TS.USER.02-TC.04
TC Version	1.0 – initial test
TC Name	**"Physiological Data" tab information management**
Component	Web Application
Sub-Component	Dashboard

Function	Physiological Data
Actor	User having Patient or Kineto profile (with an active user account)
Special Requirements	Test case needs preparation of a test data set including several real or fictive persons with: first name, last name, valid email address (business address inside the organization), wanted profile, permissions.
Pre-Condition	User accesses the Web applications and has an active user account (as a patient or a kinetotherapist). The user successfully logged in the application. The "Dashboard" page is displayed.
Post-Condition	When transaction is successful, the user is able to view and filter Physiological data information.
Date	
Tester	

Step	Actions and Data input	Expected Result	Obtained Result	PASSED/ FAILED
1	The user with "kineto" profile clicks on "**Select patient**" field on "**Dashboard**" page.	At the top of the "**Dashboard**" page, under the page's title is situated "**Select patient**" field. Field "**Select patient**" is a dropdown box filled with patient names. The user with "kineto" profile will select a specific patient from the list, for which information will be displayed.		
2	User (both "patient" and "kineto" user types) clicks on "**Physiological data**" tab	A list of all measurements recorded for the current day (since 00:00 hour to now) is displayed. The displayed columns are: • Measurement Item • ID Sensor/Location • Date/Time • Value • Unit of measurement The displayed values are measured by wearable devices. If the user is a patient, the information displayed concerns him. If the user is a kinetotherapist, the information displayed concerns the patient selected at step 1. The number of displayed records and a navigator control		

		set is displayed at the bottom part of the screen.		
3	User (both “patient” and “kineto” user types) clicks on the navigator control set	In order to view more information (rows) the user has to click on the navigator control set who is displayed at the right bottom part of the screen (on “>” button). When the user clicks on “>” a new set of rows are displayed and the page number is increased. If the user wants to see the last page, will click on “>>” button.		
4	User (both “patient” and “kineto” user types) enters values in the filtering form	Above the rows displayed on “**Physiological data**” tab is found a filtering form. In order to filter the data, the user has to fill in the following fields: • START date and time • END date and time • Select a Parameter: the list displays the parameters that are enabled from the “Settings” menu’s function (for further details see TS.USER.06)		
5	User (both “patient” and “kineto” user types) clicks on “**Filter**” button	The list of records is filtered for a measured condition and a date interval (selected at step 4). On the bottom of the page a chart of the selected measured condition variation in time, is displayed.		

TS Code	**TS.USER.02**
TS Name	“Dashboard” information management
TC Code	TS.USER.02-TC.05
TC Version	1.0 – initial test
TC Name	**Dashboard alerts management for patient**
Component	Web Application

Sub-Component	Dashboard
Function	Alerts
Actor	User having a Patient profile (with an active user account)
Special Requirements	Test case needs preparation of a test data set including several real or fictive persons with: first name, last name, valid email address (business address inside the organization), wanted profile, permissions.
Pre-Condition	User accesses the Web applications and has an active user account (as a patient). The user successfully logged in the application. The "Dashboard" page is displayed.
Post-Condition	When transaction is successful, the user is able to view, mark as read and delete alerts.
Date	
Tester	

Step	Actions and Data input	Expected Result	Obtained Result	PASSED/ FAILED
1	User (Patient) view alerts short list	On the right side of the "**Dashboard**" page, near the data tabs region, there is a region where the last five unread alerts are displayed, ordered by date and time (the icon next to an unread row is read).		
2	User (Patient) clicks on an alert name	The alert is a "redirect to activity" link field. When the user clicks on the alert's name, the activity to which the alert is linked is displayed. On the left side of the page are displayed the activity details (which are not editable): • Activity name • Description • Scheduled date • Performed date • Length • Location A "Messages" area is displayed on the right side of the page. To return to the alerts list on the "Dashboard" page, the user has to click on		

		"Dashboard" function from menu.		
3	User (Patient) enters a comment	On the notified activity page is editable only the "Message" area. In this area are displayed the messages sent by the patient and his kinetotherapist, related to that activity (and the date and time of the message). The user enters a text on the "Enter your message" field, on the bottom of the "Messages" area.		
4	User (Patient) clicks on "**Add Comment**" button	To send the entered message the user clicks on "Add Comment" button.		
5	User (Patient) clicks on "**Dashboard**" function from main menu	User is redirected to the "Dashboard" main page, where the alert that was read is no longer highlighted in red (as unread).		
6	User (Patient) clicks on "**x**" icon	When user is on "Dashboard" page, for the alerts short list an "**x**" icon is displayed at the end of the row to delete an alert from the notification short list.		
7	User (Patient) clicks on "**View more**" link	When user is on "Dashboard" page, for the displayed alerts, clicking on "**View more**" link below the alerts section redirects the user to the page "Alerts", where all the alerts received by the user can be viewed (for further details see TS.USER.03-TC.01).		
8	User (Patient) clicks on "**Mark all as read**" link	When user is on "Dashboard" page, for the displayed alerts, clicking on "**Mark all as read"** link closes the last 5 alerts section and rearranges the		

		other sections.		

TS Code	TS.USER.02
TS Name	"Dashboard" information management
TC Code	TS.USER.02-TC.06
TC Version	1.0 – initial test
TC Name	**Dashboard alerts management for kineto**
Component	Web Application
Sub-Component	Dashboard
Function	Alerts
Actor	User having a Kineto profile (with an active user account)
Special Requirements	Test case needs preparation of a test data set including several real or fictive persons with: first name, last name, valid email address (business address inside the organization), wanted profile, permissions.
Pre-Condition	User accesses the Web applications and has an active user account (as a kineto). The user successfully logged in the application. The "Dashboard" page is displayed.
Post-Condition	When transaction is successful, the user is able to view, edit, mark as read and delete alerts.
Date	
Tester	

Step	Actions and Data input	Expected Result	Obtained Result	PASSED/ FAILED
1	User (Kineto) view alerts short list	On the right side of the "**Dashboard**" page, near the data tabs region, there is a region where the last five unread alerts are displayed, ordered by date and time (the icon next to an unread row is read).		
2	User (Kineto) clicks on an alert name	The alert is a "redirect to activity" link field. When the user clicks on the alert's name, the activity to which the alert is linked is displayed. On the left side of the page are displayed the activity details: -Activity name -Description -Scheduled date		

		-Performed date -Length -Location Below the activity's details are "Edit" and "Cancel activity" buttons. A "Messages" area is displayed on the right side of the page. To return to the alerts list on the "Dashboard" page, the user has to click on "Dashboard" function from menu.		
3	User (Kineto) enters a comment	On the notified activity page in the "Message" area are displayed the messages sent by the patient and his kinetotherapist, related to that activity (and the date and time of the message). The user enters a text on the "Enter your message" field, on the bottom of the "Messages" area.		
4	User (Kineto) clicks on "**Add Comment**" button	To send the entered message the user clicks on "Add Comment" button.		
5	User (Kineto) clicks on "**Edit**" button	On the notified activity page, below the activity's details is "**Edit**" button. When the user clicks on the "Edit" button, the following fields are displayed in a new page and are editable: -Scheduled date (Date and time) -Comments The user can change the scheduled date and time. To save the change the user clicks on "Save" button.		

6	User (Kineto) clicks on "**Cancel Activity**" button	On the notified activity page, below the activity's details is "**Cancel Activity**" button. To cancel a notified activity, the user has to click on this button. A confirmation message is displayed. After confirmation, the activity is canceled and its status is changed in "canceled".		
7	User (Kineto) clicks on "**x**" icon	When user is on "Dashboard" page, for the displayed alerts a "**delete**" icon is displayed at the end of the row to delete the alert from the notification short list.		
8	User (Kineto) clicks on "**View more**" link	When user is on "Dashboard" page, for the displayed alerts, clicking on "**View more**" link below the alerts section redirects the user to the page "Alerts", where all the alerts received by the user can be viewed (for further details see TS.USER.03-TC.01).		
9	User (Kineto) clicks on "**Mark all as read**" link	When user is on "Dashboard" page, for the displayed alerts, clicking on "**Mark all as read"** link closes the last 5 alerts section and rearranges the other sections.		

7.6.6 TS.USER.03: "Alerts" management

TS Code	TS.USER.03
TS Name	"Alerts" management
TC Code	TS.USER.03-TC.01
TC Version	1.0 – initial test
TC Name	**"Alerts" management for patient**
Component	Web Application

Sub-Component	Menu
Function	Alerts
Actor	User having Patient profile (with an active user account)
Special Requirements	Test case needs preparation of a test data set including several real or fictive persons with: first name, last name, valid email address (business address inside the organization), wanted profile, permissions.
Pre-Condition	User accesses the Web applications and has an active user account (as a patient). The user successfully logged in the application. The "Dashboard" page is displayed and the main menu of the application is displayed on the left side of the page. "Alerts" menu's function is displayed.
Post-Condition	When transaction is successful, the Alerts page is displayed and the user (patient) is able to view and filter his alerts.
Date	
Tester	

Step	Actions and Data input	Expected Result	Obtained Result	PASSED/ FAILED
1	User (Patient) clicks on "**Alerts**" function from the menu	On the left side of the main page ("Dashboard") is displayed the main menu, that differs depending on the type of user logged in to the application (for the users with "kineto" profile, in the menu appears additionally the function "Patient"). The user clicks on "**Alerts**" function from the menu. A list of alerts is displayed (in reverse chronological order). The displayed columns are: • Alert (name) • Date and time		
2	User (Patient) clicks on the navigator control set	In order to view more alerts (rows) the user has to click on the navigator control set who is displayed at the right bottom part of the screen (on ">" button). When the user clicks on ">" a new set of rows are displayed and the page number is increased. If the user wants to see the last		

		page, will click on “>>” button.		
3	User (Patient) clicks on an alert name	The alert is a “redirect to activity” link field. When the user clicks on the alert’s name, the activity to which the alert is linked is displayed. On the left side of the page are displayed the activity details (which are not editable): • Activity name • Description • Scheduled date • Performed date • Length • Location A “Messages” area is displayed on the right side of the page. To return to “Alerts” page, the user has to click on “Back to alerts list” button.		
4	User (Patient) enters a comment	On the notified activity page is editable only the “Message” area. In this area are displayed the messages sent by the patient and his kinetotherapist, related to that activity (and the date and time of the message). The user enters a text on the “Enter your message” field, on the bottom of the “Messages” area.		
5	User (Patient) clicks on “**Add Comment**” button	To send the entered message the user clicks on “Add Comment” button.		
6	User (Patient) clicks on “**Alerts**” function from main menu	User is redirected to the “Alerts” main page, where the alert that was read is no longer highlighted in red (as unread).		
7	User (Patient) enters values in the filtering form	Above the rows displayed on “**Alerts**” page is found a filtering form.		

		In order to filter the alerts, the user has to fill in the following fields: • START date and time – mandatory • END date and time • Select Status – the user will select the status for the alerts that he wants to see (read or unread)		
8	User (Patient) clicks on "**Filter**" button	Is displayed the list of all the alerts recorded for the chosen time interval (since start date/ time to end date/ time) and for the selected status (if chosen).		

TS Code	**TS.USER.03**
TS Name	"Alerts" management
TC Code	TS.USER.03-TC.01
TC Version	1.0 – initial test
TC Name	**"Alerts" management for kineto**
Component	Web Application
Sub-Component	Menu
Function	Alerts
Actor	User having Kineto profile (with an active user account)
Special Requirements	Test case needs preparation of a test data set including several real or fictive persons with: first name, last name, valid email address (business address inside the organization), wanted profile, permissions.
Pre-Condition	User accesses the Web applications and has an active user account (as a kinetotherapist). The user successfully logged in the application. The "Dashboard" page is displayed and the main menu of the application is displayed on the left side of the page. "Alerts" menu's function is displayed.
Post-Condition	When transaction is successful, the Alerts page is displayed.
Date	
Tester	

Step	**Actions and Data input**	**Expected Result**	**Obtained Result**	**PASSED/ FAILED**
1	User (Kineto) clicks on "**Alerts**" function from the menu	On the left side of the main page ("Dashboard") is displayed the menu, that differs depending on the type of user logged in to the application (for the users with		

		"kineto" profile, in the menu appears additionally the function "Patient"). The user clicks on "**Alerts**" function from the menu. A list of alerts is displayed. The displayed columns are: • Alert (name) • Recipient (patient name) • Date and time		
2	User (Kineto) clicks on the navigator control set	In order to view more alerts (rows) the user has to click on the navigator control set who is displayed at the right bottom part of the screen (on ">" button). When the user clicks on ">" a new set of rows are displayed and the page number is increased. If the user wants to see the last page, will click on ">>" button.		
3	User (Kineto) clicks on an alert name	The alert is a "redirect to activity" link field. When the user clicks on the alert's name, the activity to which the alert is linked is displayed. On the left side of the page are displayed the activity details: • Activity name • Description • Scheduled date • Performed date • Length • Location Below the activity's details are "Edit" and "Cancel activity" buttons. A "Messages" area is displayed on the right side of the page.To return to "Alerts" page, the user has to click on "Back to alerts list" button.		

4	User (Kineto) enters a comment	On the notified activity page in the “Message” area are displayed the messages sent by the patient and his kinetotherapist, related to that activity (and the date and time of the message). The user enters a text on the “Enter your message” field, on the bottom of the “Messages” area.		
5	User (Kineto) clicks on “**Add Comment**” button	To send the entered message the user clicks on “Add Comment” button.		
6	User (Kineto) clicks on “**Edit**” button	On the notified activity page, below the activity’s details is “**Edit**” button. When the user clicks on the “Edit” button, the following fields are displayed in a new page and are editable: -Scheduled date (Date and time) -Comments The user can change the scheduled date and time. To save the change the user clicks on “Save” button.		
7	User (Kineto) clicks on “**Cancel Activity**” button	On the notified activity page, below the activity’s details is “**Cancel Activity**” button. To cancel a notified activity, the user has to click on this button. A confirmation message is displayed. After confirmation, the activity is canceled and its status is changed in “canceled”.		
8	User (Kineto) enters values in the filtering form	Above the rows displayed on “**Alerts**” page is found a filtering form.		

		In order to filter the alerts, the user has to fill in the following fields: • Search your patient • START date and time – mandatory • END date and time		
9	User (Kineto) clicks on "**Filter**" button	Is displayed the list of all the alerts recorded for the selected patient and for the chosen time interval (since start date/ time to end date/ time).		

7.6.7 TS.USER.04: "Activities" management

TS Code	**TS.USER.04**
TS Name	"Activities" management
TC Code	TS.USER.04-TC.01
TC Version	1.0 – initial test
TC Name	**View assigned activities**
Component	Web Application
Sub-Component	Menu
Function	Activities
Actor	User having Patient profile (with an active user account)
Special Requirements	Test case needs preparation of a test data set including several real or fictive persons with: first name, last name, valid email address (business address inside the organization), wanted profile, permissions.
Pre-Condition	User accesses the Web applications and has an active user account (as a patient). The user successfully logged in the application. The "Dashboard" page is displayed and the main menu of the application is displayed on the left side of the page. "Activities" menu's function is displayed.
Post-Condition	When transaction is successful, the user is able to view his assigned activities.
Date	
Tester	

Step	**Actions and Data input**	**Expected Result**	**Obtained Result**	**PASSED/ FAILED**
1	User (Patient) clicks on "**Activities**" function from the menu	On the left side of the main page ("Dashboard") is displayed the main menu, that differs depending on the type of user logged in to the		

		application (for the users with “kineto” profile, in the menu appears additionally the function “Patient”). The user clicks on “**Activities**” function from the menu. The list of his assigned activities is displayed (in reverse chronological order). The displayed columns are: • Status icon, that is the details button for each activity in the list (the icon color varies depending on the activity status) • Activity name (with the type of status highlight below the name) • Date and time		
2	User (Patient) clicks on “**Activity details**” button (icon)	When the user clicks on the activity’s details icon is displayed a new page, that has two regions: -activity’s details region (on the left side of the page) -Messages region (on the right side of the page) On the left side of the page are displayed the activity details (which are not editable): • Activity name (with the type of status highlight below the name) • Description • Contraindication • Scheduled date • Performed date • Length • Location If the type of activity (status) is “Notified”, on the activity details region will be displayed		

		also the notification (alert) text, date and time. A “Messages” area is displayed on the right side of the page. On the top of the Activity’s details region is displayed and enabled “Back to activity list” button.		
3	User (Patient) enters a comment	On the notified activity page is editable only the “Message” area. In this area are displayed the messages sent by the patient and his kinetotherapist, related to that activity (and the date and time of the message). The user enters a text on the “Enter your message” field, on the bottom of the “Messages” area.		
4	User (Patient) clicks on “**Add Comment**” button	To send the entered message the user clicks on “Add Comment” button.		
5	User (Patient) clicks on “**Back to activity list**” button	The “Activities” main page is displayed.		
6	User (Patient) enters values in the filtering form	Above the rows displayed on “Activities” page is found a filtering form. In order to filter the assigned activities, the user has to fill in the following fields: • START date and time • END date and time • Select status: that is a dropdown box filled with the following values: Notified activity, New activity, In progress activity, Performed activity, Finalised activity, Rescheduled activity,		

		Canceled activity. The user will select a specific status from the list.		
7	User (Patient) clicks on "**Filter**" button	Is displayed the list of all the activities assigned for the selected status and for the chosen time interval (since start date/ time to end date/ time).		

TS Code	**TS.USER.04**
TS Name	"Activities" management
TC Code	TS.USER.04-TC.02
TC Version	1.0 – initial test
TC Name	**View assigned activities**
Component	Web Application
Sub-Component	Menu
Function	Activities
Actor	User having Kineto profile (with an active user account)
Special Requirements	Test case needs preparation of a test data set including several real or fictive persons with: first name, last name, valid email address (business address inside the organization), wanted profile, permissions.
Pre-Condition	User accesses the Web applications and has an active user account (as a kinetotherapist). The user successfully logged in the application. The "Dashboard" page is displayed and the main menu of the application is displayed on the left side of the page. "Activities" menu's function is displayed.
Post-Condition	When transaction is successful, the user is able to view the list of assigned activities.
Date	
Tester	

Step	**Actions and Data input**	**Expected Result**	**Obtained Result**	**PASSED/ FAILED**
1	User (Kineto) clicks on "**Activities**" function from the menu	On the left side of the main page ("Dashboard") is displayed the main menu, that differs depending on the type of user logged in to the application (for the users with "kineto" profile, in the menu appears additionally the function "Patient"). The user clicks on "**Activities**" function from the menu.		

		The list of assigned activities is displayed (in reverse chronological order). The displayed columns are: • Status icon, that is the details button for each activity in the list (the icon color varies depending on the activity status) • Activity name (with the the name of the patient to whom the activity is assigned and the type of status highlighted below the activity's name) • Date and time Are displayed in the list all the activities assigned to all the patients on the kineto's patient list.		
2	User (Kineto) clicks on "**Activity details**" button (icon)	When the user clicks on the activity's details icon is displayed a new page, that has two regions: -activity's details region (on the left side of the page) -Messages region (on the right side of the page) On the left side of the page are displayed the activity details : • Activity name (with the type of status highlight below the name) • Description • Contraindication • Scheduled date • Performed date • Length • Location If the type of activity (status) is "Notified", on the activity details region will be displayed		

		also the notification (alert) text, date and time. Below the activity's details are "**Edit**" and "**Cancel activity**" buttons. A "**Messages**" area is displayed on the right side of the page. On the top of the Activity's details region is displayed and enabled "**Back to activity list**" button.		
3	User (Kineto) clicks on "**Back to activity list**" button	The "Activities" main page is displayed.		

TS Code	**TS.USER.04**
TS Name	"Activities" management
TC Code	TS.USER.04-TC.03
TC Version	1.0 – initial test
TC Name	**Managing activities assigned to a patient**
Component	Web Application
Sub-Component	Menu
Function	Activities
Actor	User having Kineto profile (with an active user account)
Special Requirements	Test case needs preparation of a test data set including several real or fictive persons with: first name, last name, valid email address (business address inside the organization), wanted profile, permissions.
Pre-Condition	User accesses the Web applications and has an active user account (as a kinetotherapist). The user successfully logged in the application. The "Dashboard" page is displayed and the main menu of the application is displayed on the left side of the page. "Activities" menu's function is displayed.
Post-Condition	When transaction is successful, the user is able to view the assigned activities to a specific patient.
Date	
Tester	

Step	**Actions and Data input**	**Expected Result**	**Obtained Result**	**PASSED/ FAILED**
1	User (Kineto) clicks on "**Activities**" function from the menu	The "Activities" main page is displayed. The list of assigned activities is		

		displayed (in reverse chronological order). The displayed columns are: • Status icon, that is the details button for each activity in the list (the icon color varies depending on the activity status) • Activity name (with the the name of the patient to whom the activity is assigned and the type of status highlighted below the activity's name) • Date and time Are displayed in the list all the activities assigned to all the patients on the kineto's patient list.		
2	User (Kineto) enters values in the filtering form	Above the rows displayed on "Activities" page is found a filtering form. In order to filter the assigned activities to a specific patient from the list, the kinetotherapist has to fill in the following fields: • Search your patient: that is a dropdown box filled with the patient's names (from the kineto's patient list) • START date and time • END date and time • Select status: that is a dropdown box filled with the following values: Notified activity, New activity, In progress activity, Performed activity, Finalised activity, Rescheduled activity,		

		Canceled activity. The user will select a specific status from the list.		
3	User (Kineto) clicks on "**Filter**" button	Is displayed the list of all the activities assigned to the selected patient, for the selected status and for the chosen time interval (since start date/ time to end date/ time).		
4	User (Kineto) clicks on "**Activity details**" button (icon)	The user (kineto) chose an activity from the filtered list displayed on the "Activities" page, by clicking on the activity's details icon.. Is displayed a new page, that has two regions: -activity's details region (on the left side of the page) -Messages region (on the right side of the page) On the left side of the page are displayed the activity details : • Activity name (with the type of status highlight below the name) • Description • Contraindication • Scheduled date • Performed date • Length • Location If the type of activity (status) is "Notified", on the activity details region will be displayed also the notification (alert) text, date and time. Below the activity's details are "**Edit**" and "**Cancel activity**" buttons. A "**Messages**" area is displayed on the right side of the page. On the top of the Activity's		

		details region is displayed and enabled “**Back to activity list**” button.		
5	User (Kineto) clicks on “**Edit**” button	When the user clicks on the “Edit” button, the following fields are displayed in a new page and are editable: -Scheduled date (Date and time) -Comments The user can change the scheduled date and time for activity. To save the change the user clicks on “Save” button.		
6	User (Kineto) clicks on “**Cancel Activity**” button	To cancel an activity, the user has to click on “Cancel Activity” button. A confirmation message is displayed. After confirmation, the activity is canceled and its status is changed in “canceled”.		
7	User (Kineto) enters a comment	On the “Message” area are displayed the messages sent by the kinetotherapist and his patient, related to the assigned activity (and the date and time of the message). The user enters a text on the “Enter your message” field, on the bottom of the “Messages” area.		
8	User (Kineto) clicks on “**Add Comment**” button	To send the entered message the user clicks on “Add Comment” button.		
9	User (Kineto) clicks on “**Back to activity list**” button	The “Activities” main page is displayed.		

TS Code	TS.USER.04
TS Name	"Activities" management
TC Code	TS.USER.04-TC.04
TC Version	1.0 – initial test
TC Name	**Create new activity**
Component	Web Application
Sub-Component	Menu
Function	Activities
Actor	User having Kineto profile (with an active user account)
Special Requirements	Test case needs preparation of a test data set including several real or fictive persons with: first name, last name, valid email address (business address inside the organization), wanted profile, permissions.
Pre-Condition	User accesses the Web applications and has an active user account (as a kinetotherapist). The user successfully logged in the application. The "Dashboard" page is displayed and the main menu of the application is displayed on the left side of the page."Activities" menu's function is displayed.
Post-Condition	When transaction is successful, a new activity is created for the selected patient.
Date	
Tester	

Step	Actions and Data input	Expected Result	Obtained Result	PASSED/ FAILED
1	User (Kineto) clicks on "**Activities**" function from the menu	The "**Activities**" main page is displayed. The list of assigned activities is displayed. Under the filter area is displayed and enabled the "**Add new activity**" button.		
2	User (Kineto) clicks on '**Search your patient**" field	In order to create a new activity, the user (kineto) has to chose first a patient. The new created activity will be assigned to the selected patient. The user clicks on "Search your patient" field and chose a patient from the list.		
3	User (Kineto) clicks on '**Search**" button	Is displayed the list of all the activities assigned to the selected patient.		
2	User (Kineto) clicks on "**Add**	The "**Add new activity**" page is		

	new activity" button	displayed. All fields are empty and mandatory. "**Save**" and "**Cancel**" buttons are displayed and active in the bottom of the page.		
3	User (Kineto) enters data in all mandatory fields	In order to create a new activity, the user has to fill in the following fields: • Activity name: free text, mandatory • Description: free text • Contraindication: free text • Scheduled date • Performed date • Length • Location		
4	User (Kineto) clicks on "**Save**" button	In order to save the entered data, the user clicks on "Save" button. "Activities" page is displayed, with the new created activity displayed on the list. The new created activity has the patient name and activity status ("New activity") highlighted beneath the activity's name.		

7.6.8 TS.USER.05: "Patient" management

TS Code	**TS.USER.05**
TS Name	"Patient" management
TC Code	TS.USER.05-TC.01
TC Version	1.0 – initial test
TC Name	**View patient list**
Component	Web Application
Sub-Component	Menu
Function	Patient
Actor	User having Kinetotherapist profile (with an active user account)

Special Requirements	Test case needs preparation of a test data set including several real or fictive persons with: first name, last name, valid email address (business address inside the organization), wanted profile, permissions.
Pre-Condition	User accesses the Web applications and has an active user account (as a kineto). The user successfully logged in the application. The “Dashboard” page is displayed and the main menu of the application is displayed on the left side of the page, specific for the “Kinetotherapist” type of user. ”Patient” menu’s function is displayed and enabled.
Post-Condition	When transaction is successful, the user (kinetotherapist) is able to view the list of his patients.
Date	
Tester	

Step	Actions and Data input	Expected Result	Obtained Result	PASSED/ FAILED
1	User (Kineto) clicks on “**Patient**” function from the menu	On the left side of the main page (“Dashboard”) is displayed the main menu, that differs depending on the type of user logged in to the application. For the users with “kineto” profile, in the menu appears additionally the function “Patient”. The user clicks on “**Patient**” function from the menu. “Patient” main page is displayed. On the top of the “Patient” page a filtering section is displayed, with the fields: Search your patient (defaulted with All), Select status and a “Filter” button. Beneath that selection aria is displayed and enebled the “Add new patient” button. The list of patients assigned to the current user (kineto) is displayed. In the “Patient” main page, the displayed details for each patient are:		

		• Patient photo • Patient name • Status (active, inactive) • Phone ID • Fitbit ID • “Patient details” icon		
2	User (kineto) clicks on “**Patient details**” icon	In order to see the information for a patient from the displayed list, the user press the “Patient details” icon situated on the end of the patient row. Is displayed the “Details” page for the selected patient. This details page contain: -a patient detail region (with an “Edit” button) -in the bottom of the page, the list of assigned activities to the selected patient -in the right side of the page, patient’s alerts list This information are editable (for further details see TS.USER.05-TC.02).		
3	User (kineto) clicks on “**Back to patients list**” button	The User clicks on “**Back to patients list**” button, in order to return to the “Patient” main page. “Patient” page is displayed.		
4	User (Kineto) enters values in the filtering form	On the top of the “**Patient**” page is found a filtering form. In order to filter the patients list, the user has to fill in the following fields: • Search your patient – the user will select the patient name from a list • Select status – the user will select from a list the status for the selected patient (active or inactive)		

5	User (Kineto) clicks on "**Filter**" button	"Patient details" page for the selected patient is displayed.		

TS Code	TS.USER.05
TS Name	"Patient" management
TC Code	TS.USER.05-TC.02
TC Version	1.0 – initial test
TC Name	**Edit patient's data**
Component	Web Application
Sub-Component	Menu
Function	Patient
Actor	User having Kinetotherapist profile (with an active user account)
Special Requirements	Test case needs preparation of a test data set including several real or fictive persons with: first name, last name, valid email address (business address inside the organization), wanted profile, permissions.
Pre-Condition	User accesses the Web applications and has an active user account (as a kineto). The user successfully logged in the application. The "Dashboard" page is displayed and the main menu of the application is displayed on the left side of the page, specific for the "Kinetotherapist" type of user. "Patient" menu's function is displayed and enabled.
Post-Condition	When transaction is successful, the user (kinetotherapist) is able to edit the information for a specific patient from his patient list.
Date	
Tester	

Step	Actions and Data input	Expected Result	Obtained Result	PASSED/ FAILED
1	User (Kineto) clicks on "**Patient**" function from the menu	The user clicks on "**Patient**" function from the menu. "Patient" main page is displayed.		
2	User (Kineto) select a patient	The user choose the desired patient from the displayed list (see TS.USER.05-TC.01, step 2) or using the filter aria (see TS.USER.05-TC.01, step 4). "Patient details" page is displayed.		

3	The user (Kineto) views the details recorded for the selected patient	On the “Patient details” page are recorded for the patient: -Name -Status (active/ inactive) -Phone -Email address -Age -Height -Weight -Sex -Diagnostic -Diagnostic details		
4	User (Kineto) clicks on “**Edit**” button	In order to change the patient details, the user clicks on “Edit” button. A new form is displayed, were the fields enumerated at step 3 are displayed and editable. In the bottom of the form are displayed and enabled “Save” and “Cancel” buttons. The user operates the desired changes and then press the “**Save**” button. If the user wants to quit the changes press the “**Cancel**” button.		
5	User (Kineto) clicks on “**Save**” button	The changes are saved and the “Patient details” page is displayed. The changes are visible in the “Patient details” region.		
6	User (Kineto) clicks on “**Cancel**” button	The user quit the changes, which are not saved. The “Patient details” page is displayed, unchanged.		

7	User clicks on an activity	If the kinetotherapist wants to modify an activity assigned to the selected patient, it will click on an activity name selected from the displayed list. Then the user follows the steps as in TS.USER.04-TC.03 (Managing activities assigned to a specific patient).		
8	User clicks on an alert	If the kinetotherapist wants to modify an alert assigned to the selected patient, it will click on an alert name selected from the displayed list. Then the user follows the steps as in TS.USER.03-TC.01 ("Alerts" management for kineto).		

TS Code	**TS.USER.05**
TS Name	"Patient" management
TC Code	TS.USER.05-TC.03
TC Version	1.0 – initial test
TC Name	**Add new patient**
Component	Web Application
Sub-Component	Menu
Function	Patient
Actor	User having Kinetotherapist profile (with an active user account)
Special Requirements	Test case needs preparation of a test data set including several real or fictive persons with: first name, last name, valid email address (business address inside the organization), wanted profile, permissions.
Pre-Condition	User accesses the Web applications and has an active user account (as a kineto). The user successfully logged in the application. The "Dashboard" page is displayed and the main menu of the application is displayed on the left side of the page, specific for the "Kinetotherapist" type of user. "Patient" menu's function is displayed and enabled.
Post-Condition	When transaction is successful, the user (kinetotherapist) is able to edit the information for a specific patient from his patient list.
Date	
Tester	

Step	**Actions and Data input**	**Expected Result**	**Obtained Result**	**PASSED/ FAILED**

1	User (Kineto) clicks on "**Patient**" function from the menu	The user clicks on "**Patient**" function from the menu. "Patient" main page is displayed.		
2	User (Kineto) clicks on "**Add new patient**" button	A new "**Add patient**" form is displayed. All fields are empty and mandatory. "**Save**" and "**Cancel**" buttons are displayed and active.		
3	User (Kineto) enters data in all mandatory fields	User fill in the mandatory fields: -First name: free text -Last Name: free text -Phone -Email address -Age -Height -Weight -Sex: user select a value from the list -Diagnostic: free text -Diagnostic details: free text -Phone ID -Fitbit ID -Status: defaulted "Active" (values: Active, Inactive)		
4	User (Kineto) clicks on "**Save**" button	The new patient details are saved. A PIN code is automatically generated by the system. A message is sent to the patient's email, informing him that it was created in the system. The "Patient" main page is displayed and the new created patient is displayed on the patients list.		

5	User (Kineto) clicks on "**Cancel**" button.	The user quit the changes, which are not saved. The "Patient" main page is displayed, unchanged.		

7.6.9 TS.USER.06: "Settings" management

TS Code	**TS.USER.06**
TS Name	"Settings" management
TC Code	TS.USER.06-TC.01
TC Version	1.0 – initial test
TC Name	**View current account settings**
Component	Web Application
Sub-Component	Menu
Function	Settings
Actor	User having Patient or Kinetotherapist profile (with an active user account)
Special Requirements	Test case needs preparation of a test data set including several real or fictive persons with: first name, last name, valid email address (business address inside the organization), wanted profile, permissions.
Pre-Condition	User accesses the Web applications having an active user account (as a patient). The user successfully logged in the application. The "Dashboard" page is displayed and the main menu of the application is displayed on the left side of the page. "Settings" menu's function is displayed and enabled.
Post-Condition	When transaction is successful, the "Settings" page is displayed.
Date	
Tester	

Step	**Actions and Data input**	**Expected Result**	**Obtained Result**	**PASSED/ FAILED**
1	User clicks on "**Settings**" function from the menu	On the left side of the main page ("Dashboard") is displayed the menu. The user clicks on "**Settings**" function from the menu. A list of parameters is displayed. The enabled parameters have the icon on the end of the row turn-on. Data is displayed on the main page depending on the enabled parameters.		

2	User clicks on “**Dashboard**” function from the menu	To leave the “Settings” page, the user chooses another menu function (“Dashboard” for example).		

7.6.10 TS.INS.01: Installation Management

TS Code	TS.INS.01
TS Name	Installation Management
TC Code	TS.INS.01-TC.01
TC Version	1.0 – initial test
TC Name	**Application Installation**
Component	Android Self-Report Application
Sub-Component	-
Function	Application Installation
Actor	End User with or without an active registration
Special Requirements	
Pre-Condition	The user has been sent a link to the application.
Post-Condition	When transaction is successful, the self-reporting application is installed on the End User's phone.
Date	
Tester	

Step	Actions and Data input	Expected Result	Obtained Result	PASSED/ FAILED
1	User follows the installation link sent to him.	Google Play opens on the user's phone, showing the Self Report application and an Install button		
2	User clicks the install button	The application is installed on the user's phone		

7.6.11 TS.REG.01: Registration Management

TS Code	TS.REG.01
TS Name	Registration Management
TC Code	TS.REG.01-TC.01
TC Version	1.0 – initial test
TC Name	**User Registration**
Component	Android Self-Report Application
Sub-Component	-
Function	User Registration
Actor	System Administrator
Special Requirements	
Pre-Condition	The System Administrator has access to the Google sheet that defines resources for users, reporting schedules, questionnaires, and UI strings
Post-Condition	When transaction is successful, an end user with the specified PIN code can login.
Date	
Tester	

Step	Actions and Data input	Expected Result	Obtained Result	PASSED/ FAILED
1	System Administrator creates a new user entry in the resource sheet with default schedule, questionnaire content, and UI strings.	Sheet is modified accordingly.		
2	System Administrator selects the “ESTABLISH | Push to Server" menu item.	Modified resources are pushed to questionnaire server.		
3	User logs in.	User sees default resources (schedule, questionnaire, UI strings)		

7.6.12 TS.USER.01: User Management

TS Code	TS.USER.01
TS Name	User Management
TC Code	TS.USER.01-TC.01
TC Version	1.0 – initial test
TC Name	**User Login**
Component	Android Self-Report Application
Sub-Component	-

Function	User Account
Actor	End User
Special Requirements	
Pre-Condition	A user account with default parameters exists. User has received the necessary user login code, e.g., via email.
Post-Condition	When transaction is successful, the user is logged in the application.
Date	
Tester	

Step	Actions and Data input	Expected Result	Obtained Result	PASSED/ FAILED
1	User enters the login code in the login screen and presses “login”	User is sees the application main page.		
2	User selects the help icon on the main screen and checks the Research ID.	User can verify that the Research ID in the help screen matches the one given to him in the email.		

TS Code	**TS.USER.01**
TS Name	User Management
TC Code	TS.USER.01-TC.02
TC Version	1.0 – initial test
TC Name	**User Account Editing**
Component	Android Self-Report Application
Sub-Component	-
Function	User Account
Actor	System Administrator, End User
Special Requirements	
Pre-Condition	A user account with default parameters exists.
Post-Condition	When transaction is successful, the user account’s questionnaire and UI parameters have changed.
Date	
Tester	

Step	Actions and Data input	Expected Result	Obtained Result	PASSED/ FAILED
1	System Administrator changes the UI string for application title to “test	Resource is modified on the sheet.		

	title" in the resource sheet.			
2	System Administrator selects the "ESTABLISH | Push to Server" menu item in the sheet	Modified resource gets pushed to questionnaire server.		
3	User logs in.	User sees "test title" as the modified title.		

TS Code	**TS.USER.01**			
TS Name	User Management			
TC Code	TS.USER.01-TC.03			
TC Version	1.0 – initial test			
TC Name	**Deleting a User Account**			
Component	Android Self-Report Application			
Sub-Component	-			
Function	User Account			
Actor	System Administrator, End User			
Special Requirements				
Pre-Condition	A user account exists.			
Post-Condition	When transaction is successful, the user is no longer able to login. Shared resources assigned to the user (schedule, questionnaires, UI strings) are not deleted.			
Date				
Tester				
Step	**Actions and Data input**	**Expected Result**	**Obtained Result**	**PASSED/ FAILED**
1	System Administrator removes the entry for the user on the resource sheet.	Resource is removed from the sheet.		
2	System Administrator selects the "ESTABLISH | Push to Server" menu item in the sheet	User account resources are removed from the questionnaire server.		
3	User tries to log in.	User gets an error message "Error: code not in use" in the login screen.		

7.6.13 TS.DATA.01: User Data Recording

TS Code	TS.DATA.01
TS Name	User Data Recording
TC Code	TS.DATA.01-TC.01
TC Version	1.0 – initial test
TC Name	**Scheduled Reports**
Component	Android Self-Report Application
Sub-Component	-
Function	User data recording
Actor	End User
Special Requirements	
Pre-Condition	User is logged in the application. The application is running in the background.
Post-Condition	The user has sent a scheduled report.
Date	
Tester	

Step	Actions and Data input	Expected Result	Obtained Result	PASSED/ FAILED
1	Reporting schedule timer elapses.	The user gets a notification to fill in a report.		
2	User taps the notification icon	The application opens, with the appropriate report open.		
3	User proceeds in filling in the report	The report structure follows the specification for the current schedule		
4	User selects the send button	Report data is sent to the server.		

TS Code	TS.DATA.01
TS Name	User Data Recording
TC Code	TS.DATA.01-TC.02
TC Version	1.0 – initial test
TC Name	**Symptoms Reporting**
Component	Android Self-Report Application
Sub-Component	-
Function	User data recording
Actor	End User
Special Requirements	
Pre-Condition	User is logged in the application. The application is running in the foreground.

Post-Condition	The user has sent an impromptu symptoms report.
Date	
Tester	

Step	Actions and Data input	Expected Result	Obtained Result	PASSED/ FAILED
1	User taps the “Record here” button on the main screen	User enters symptoms reporting		
2	User follows through the reporting	User is guided through the symptoms questionnaire according to the structure defined in the resource sheet		
3	User proceeds forward in the last step	User gets a thank you greeting as defined in the resource sheet. Symptoms data is sent to the questionnaire server.		
4	User presses the “Close” button	Thank you greeting screen is closed. Main screen is shown.		

TS Code	**TS.DATA.01**
TS Name	User Data Recording
TC Code	TS.DATA.01-TC.03
TC Version	1.0 – initial test
TC Name	**User Feedback**
Component	Android Self-Report Application
Sub-Component	-
Function	User data recording
Actor	End User
Special Requirements	
Pre-Condition	User is logged in the application. The application is running in the foreground.
Post-Condition	User feedback is received by application developers.
Date	
Tester	

Step	Actions and Data input	Expected Result	Obtained Result	PASSED/ FAILED
1	User taps the text “Give feedback” at the bottom of the screen	User is shown the feedback form. Form content matches that defined in the resource sheet.		
2	User selects feedback type	Feedback type is highlighted.		
3	User writes a description	Description is shown in		

		feedback form		
4	User presses the “Send” button	User is shown a “Feedback sent” toast and the application returns to main screen.		

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TS Code	**TS.USER.06**
TS Name	“Settings” management
TC Code	TS.USER.06-TC.02
TC Version	1.0 – initial test
TC Name	**Change account settings**
Component	Web Application
Sub-Component	Settings
Function	Settings
Actor	User having Patient or Kinetotherapist profile (with an active user account)
Special Requirements	Test case needs preparation of a test data set including several real or fictive persons with: first name, last name, valid email address (business address inside the organization), wanted profile, permissions.
Pre-Condition	User accesses the Web applications having an active user account (as a patient). The user successfully logged in the application. The “Dashboard” page is displayed and the main menu of the application is displayed on the left side of the page. ”Settings” menu’s function is displayed and enabled.
Post-Condition	When transaction is successful, data on the Dashboard page is displayed according the new settings.
Date	
Tester	

Step	**Actions and Data input**	**Expected Result**	**Obtained Result**	**PASSED/ FAILED**
1	User clicks on “**Settings**” function from the menu	On the left side of the main page (“Dashboard”) is displayed the menu. The user clicks on “**Settings**” function from the menu. A list of parameters is displayed. The enabled parameters have the button on the end of the row turned-on. Data is displayed on the main page depending on the enabled parameters.		

2	User clicks on “turn-on” button	In order to display a parameter on the “Dashboard”, the user has to click on the “Turn-on” button from the end of the row for the desired parameter. A maximum of 8 parameters are allowed to be displayed.		
3	User clicks on “turn-of” button	In order to hide a parameter that is currently displayed on “Dashboard” page, the user has to disable the parameter (has to click on the “Turn-of” button from the end of the row for the desired parameter).		
4	User clicks on “**Dashboard**” function from the menu	To leave the “Settings” page, the user chooses another menu function, “Dashboard” on this case. On the “Dashboard” page the data will be displayed according the new settings (parameters).		

TS Code	**TS.REG.01**
TS Name	Gateway Register
TC Code	TS-REG-01-TC01
TC Version	1.0 – initial test
TC Name	Gateway Register
Component	Device Management
Function	Register the gateway device to the Establish portal
Actor	Register device
Special Requirements	Gateway device is an optional for the project. Gateway device has acted as a local data center that store user, sensor and the related data. If you use gateway device, your device must be register to platform.
Pre-Condition	Gateway device should be connected to the server via TCP.
Post-Condition	When transaction is successful, cloud server can get the sensors’ data over the gateway device.
Date	
Tester	

Step	Actions and Data input	Expected Result	Obtained Result	PASSED/ FAILED
1	Gateway device collects sensor data	Gateway device collects the sensor data. Gateway device sends the packet to the cloud server periodically via TCP protocol		
2	Cloud Server receive and validates the packet	Server receives the sent packet through TCP connection Server interprets the packet Server validates the packet using CRC		
3	Cloud Server saves sensor data	Server generates insert code for saving the sensor data Server executes the insert code.		

TS Code	TS.REG.02
TS Name	Device Register
TC Code	TS-REG-02-TC01
TC Version	1.0 – initial test
TC Name	Device Register
Component	Device Management
Function	Register the sensor device to the gateway or Establish portal
Actor	Register device
Special Requirements	Sensor must be activated the first time the device is operated. If the gateway option has been used, sensor device will register to gateway device. Sensor device will register to the portal if there is no gateway device.
Pre-Condition	Sensor device should be connected to the portal that is published from cloud server. Or the device should be connected the gateway device.
Post-Condition	When transaction is successful, cloud server can get the sensors' data over the gateway device or sensor device.
Date	
Tester	

Step	Actions and Data input	Expected Result	Obtained Result	PASSED/ FAILED
1	Sensor device should be activated	Sensor must be activated the first time the device is operated.		
2	Sensor specs send to the gateway or server.	If the gateway is used, sensor device's specs and data are stored on gateway. If not the data and specs are sent to the cloud server.		

TS Code	TS-RD-01
TS Name	Sensor Read
TC Code	TS-RD-01-TC01
TC Version	1.0 – initial test
TC Name	**Sensor Read**
Component	Sensor Management
Sub-Component	Sensor Data Management
Function	Collect a sensor data
Actor	Sensor device
Special Requirements	
Pre-Condition	Sensor device should be register to the gateway or portal.
Post-Condition	When transaction is successful, a new row of the sensor table is created for the new sensor data in the cloud data storage machanism.
Date	
Tester	

Step	Actions and Data input	Expected Result	Obtained Result	PASSED/ FAILED
1	Sensor device reads the data.	Sensor device determines sensor data, the sensor take the value of related measurements.		
2	Send operation is trigerred after sensor read.	The sensor sends the values to the gateway or portal server.		

TS Code	TS-SB-01
TS Name	Subscription
TC Code	TS-SB-01-TC01
TC Version	1.0 – initial test
TC Name	**Subscription**
Component	Web Application
Sub-Component	Login
Function	Login
Actor	User having Guest profile (without an active user account)
Special Requirements	Test case needs preparation of a test data set including several real or fictive sensor data
Pre-Condition	Related sensor should be activated and user accesses the Web applications and doesn't have an active user account.
Post-Condition	When transaction is successful, the Dashboard page is displayed.
Date	
Tester	

Step	Actions and Data input	Expected Result	Obtained Result	PASSED/ FAILED
1	User clicks on button “**Subscription**”.	The “**Dashboard**” page is displayed. At the left of the top page is displayed a standard text (“Welcome to ESTABLISH!”) and the user type (Guest).		

TS Code	TS-DG-01
TS Name	Data Gathering
TC Code	TS-DG-01-TC01
TC Version	1.0 – initial test
TC Name	**Data Gathering**
Component	Data store
Sub-Component	Sensor Data Management
Function	Store a sensor data to the data storage
Actor	Sensor device
Special Requirements	Sensor should measure a value.
Pre-Condition	Sensor or gateway should be trigerred for sending data to the platform that is published by cloud server.
Post-Condition	When transaction is successful, a new row of the sensor table is created for the new sensor data in the data storage.
Date	
Tester	

Step	Actions and Data input	Expected Result	Obtained Result	PASSED/ FAILED
1	Sensor device send sensor data	Sensor device packs sensor data. Sensor device sends the packet to the server periodically		
2	Server receive and validates the packet	Server receives the sent packet through TCP connection Server interprets the packet Server validates the packet using CRC		
3	Server saves sensor data	Server generates insert SQL for saving the sensor data Server executes the SQL.		