NET4mPLASTIC PROJECT

WP5 – Act. 5.1 Implementation of the platform (HW, SW) with field and laboratory data

D 5.1.5

Test Procedure and Reporting

December, 2021 - Version 1.0

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Acronyms / Abbreviations

ACRONYM	DEFINITION
EWS	Early Warning System
MP	Microplastic
OBU	On board Unit
PP	Project Plan
PT	Project team
TC	Technical task coordinator
TGS-ML	Technical Subgroup on Marine litter, European Union expert group On marine litter
TM	Task Manager
UML	Unified Modelling Language
WP	Workpackage

1 Introduction

1.1 Background of the project

The main goal of the NET4mPLASTIC project is to achieve an efficient monitoring system for plastic and MP distribution along the Croatian and Italian coastal and marine areas in order to improve the environmental coastal and marine sea quality conditions.

According to doc R1, the WP5 deals with the design implementation of the EWS - Early Warning System including:

- a control centre, based on system hardware and network (Prosoft), and a EWS application (Hydra Solutions) integrated with the transport model and external systems (such as the oceanographic model - (Marche Region);
- Integrated Marine Drone, for collection of MP - microplastic, and geolocalized water indicators on the route (Hydra Solutions);
- Integrated Marine OBU, a unit to be installed on board of ships for improved MP collection with geolocalized water indicators on the route (Hydra Solutions).

The design shall be carried out with the modern system engineering approach based on UML - Unified Modelling Language (Hydra Solutions). UNITS and RERA SD will provide data for the first set up of the platform related to MP. Based on this WP, the transport model will be developed in WP4. The development of the EWS platform integrated with the transport model will be done in WP5.

The activities planned for WP5 are the following:

- development of the EWS - Early Warning System data center platform and integration with the transport model (WP4)
- development of the UAV/marine drone for real-time data acquisition
- testing and calibration
- business simulation for testing the solution with real users –
- final assessment of the solution, including a CBA–cost benefit analysis and the preparation of the business plan.

The main expected output will be:

- EWS integrated platform, implemented and tested

- Training for the required personnel and users - Assessment of the platform.

The required main software modules of the EWS platform will be:

- MP Transport model, providing data with distribution and concentration,
- MP WebGIS platform, for: a) Display MP data (historical, actual forecast, 24-72h forecast) b) Early warning provision, based on the transport model c) Data entry, recording & replay
- MP DB, the DB for collecting data
- A mobile APP, for starting/closing the field activities and for data reporting
- Firmware for marine remote units - Integration with external system, for meteo/other data

The coordinator will be Hydra Solutions. The EWS SW platform will be developed by Hydra Solutions, with the support of Marche Region for the transport model, and Prosoft for localization, the ICT

implementation, the integrated testing, training and support for maintenance activities. UNITS will coordinate the assessment of the platform. The other partners involved will give contribution for data entry, as target user, and for preparation of the required documentation. The user target group will be based on the main project partners, institution, regions and councils. They will be involved in the design stage for collecting the main needs, for testing and user training of the solution. The target group will be required to use the system during the business simulation, and provide feedback.

The expected reports within WP5 are the following:

- D 5.1.4 –Hardware and Network Integration Report (Report): this deliverable will provide a report with details on integration of the network and other hardware required for the system;
- D 5.1.5 –Test procedures and reporting (Report): this deliverable will provide the procedures for testing the data centre and the integrated solution in the test bed environment, and the reporting of the tests done to assure the quality of the solution provided;
- D 5.1.6 –Hardware & Network Maintenance Manual (Document); this deliverable will provide the manual for the maintenance of the hardware and the network of the system;
- D 5.1.7 –Software User and Maintenance Manual (Document); this deliverable will provide the manual for the maintenance of the software and the User manual for the operators
- D 5.2.4 – Marine OBU / Drone Test Procedure and Report (Document): this deliverable will provide the procedures for testing the drones and the OBU, and the reporting of the tests done to assure the quality of the solution provided;
- D 5.2.5 –Marine OBU / Drone Maintenance Manual (Document): this deliverable will provide the manual for the maintenance of the Drone and OBU;
- D 5.2.6 – Marine OBU / Drone User Manual (Document): this deliverable will provide the User manual for the operators;
- D 5.3.1 – Data Centre Hardware and Network Facility implemented (Hardware, report), in this deliverable is relevant to the implementation of the data centre for the integrated solution, hardware and the network facility, and the preparation of the AS BUILT document describing the data centre facility;
- D 5.3.2 – Remote Units and Data Centre Communication Test Procedure and Report (Document); this deliverable will provide the procedures for testing the communication integration between remote units and the data centre, and the relevant reporting of the tests done to assure the quality of the solution provided;
- D 5.3.3 – Data Centre Test Procedure and Report (Document): this deliverable will provide the procedures for testing the features of the solution provide in the data centre, and the relevant reporting of the tests done to assure the quality of the solution provided, that will be done in cooperation with the main stakeholders;
- D 5.3.4 – Integrated System Final Test Procedure and Report (Document): this deliverable will provide the procedures for the integrated test cases testing the integrated solution, and the relevant reporting of the tests done to assure the quality of the solution provided, that will be done in cooperation with the main stakeholders.
- D 5.4.1 – Training documentation (document): this deliverable is relevant to the implementation of the required documentation for performing training to the personnel involved in the business simulation (as defined in the WP3.3 and the design of the solution);

- D 5.4.2 – Training assessment (report): this deliverable is relevant to the implementation of the training to be done for the personnel involved in the business simulation, with a reporting on evaluation of the training;
- D 5.4.4 – Questionnaire for platform assessment (report) this deliverable is relevant to the preparation of a questionnaire for evaluation of the platform from the user point of view involved in the business simulation;
- D 5.4.5 –Cost Benefits Analysis – CBA of the platform (Document); this deliverable will provide a final document with lessons learnt during the real use of the platform, an evaluation of the benefits of the platform, and costs for full exploitation of the solution, including the future recommendations on potential improvement, and including a business plan for a full implementation of the platform.

1.2   Purpose of the report

This document is the **deliverable D.5.1.5 – Test Procedures and Reporting Report**: it provides details regarding the procedures for testing the data centre and the integrated solution in the test bed environment, and the reporting of the tests done to assure the quality of the solution provided;

This deliverable is within the activity 5.1 of the Net4mPlastic project – Implementation of the platform (Hw/Sw) for field and lab data. This activity shall have as input the deliverables of WP3.3 relevant to the design of the solution to proceed with the execution of the following tasks:

- Implementation of custom software modules and data interfaces with existing data modelling software, GIS applications and other commercial software modules;

- Integration and configuration of the Data Centre hardware infrastructure as test bed for the required implementation;

- Implementation of the DataBase;

- Population of the DataBase with existing historical data and new data;

- Installation of the commercial and custom software

- internal testing of the integrated platform.

The coordinator will be Hydra Solutions in cooperation with Prosoft, UNIFE, UNITS, Marche Region. The purpose of this document is summarised as follows:
- Identification of the test cases
- Definition of the test procedures associated to each test case
- Report of the internal test

1.3 Reference documentation

No	Title	Rif/Report N.	Pubblished by
[R1]	**APPLICATION FORM - NET4mPLASTIC Project - New Technologies for macro and Microplastic Detection and Analysis in the Adriatic Basin** 2014 - 2020 Interreg V-A Italy - Croatia CBC Programme Call for proposal 2017 Standard - NET4mPLASTIC Priority Axis:Environment and cultural heritage	Application ID: 10046722, dated 30/06/2017	Lead applicant: UNIVERSITY OF FERRARA
[R2]	D 5.1.4 –Hardware and Network Integration Report (Report)	HYD514-REP-001.0	ACT5.1 – Net4Mplastic
[R3]	D 5.1.6 –Hardware & Network Maintenance Manual	HYD516-MAN-001.0	ACT5.1 – Net4Mplastic
[R4]	D 5.1.7 –Software User and Maintenance Manual	HYD517-MAN-001.0	ACT5.1 – Net4Mplastic
[R5]	D 5.2.4 – Marine OBU / Drone Test Procedure and Report	HYD524-PRO-001.0	ACT5.2 – Net4Mplastic
[R6]	D 5.2.5 –Marine OBU / Drone Maintenance Manual	HYD525-MAN-001.0	ACT5.2 – Net4Mplastic
[R7]	D 5.2.6 – Marine OBU / Drone User Manual	HYD526-MAN-001.0	ACT5.2 – Net4Mplastic
[R8]	D 3.3.1 – EWS Requirements definitions based on the stakeholders and users' needs, through questionnaires and specific meeting	HYD331-SPE-001.0	ACT3.3 – Net4Mplastic
[R9]	D 3.3.2 – EWS Hardware Architecture and network design (central Data Centre Hardware Architecture Client/Server, Data network architecture and related communication segments)	HYD332-SPE-001.0	ACT3.3 – Net4Mplastic
[R10]	D 3.3.3 – EWS Software Architecture design (data modelling software, GIS applications, early warning detection software, etc.), the Relational Database to manage all collected data with related meta data, the communication Front-End for web remote access, the Data Centre Software Interfaces for users	HYD333-SPE-001.0	ACT3.3 – Net4Mplastic

[R11]	D 3.3.4 – EWS Hardware and other software Components Specifications design (Integrated Marine Drone and Marine OBU, with details of required components (hardware and firmware), firmware and other software components (mobile apps for managing the drones and for remote mobile activities).	HYD334-SPE-001.0	ACT3.3 – Net4Mplastic
[R12]	D 3.3.5 - Report and database provision with all the collected data	HYD335-SPE-001.0	ACT3.3 – Net4Mplastic

2   Identification of Test Cases

The instrument used for testing the dynamic behavior of the functionality (use cases) of the system is constituted by a table like the one attached herebelow, in which are identifiable 4 macrosections:

1. header,
2. general information,
3. scenarios (related to the main scenario, alternative scenarios or error should be developed in the design phase of the system),
4. conditions for success of the feature.

TEST CASE: *Use Case Code*	*Name of the use case*	
Description:	*General description of the use case*	
Related functionalities:	*Other features related to the one described*	
Primary Actor:	*Name*	
	Interest in the execution of the use case	
Secondary Actors:	*Name*	
	Interest in the execution of the use case	
Preconditions:	*Description*	
Start:	*Description*	
Main Scenario.		
1.	*<STEP 1>*	
2.	*<STEP 2>*	
Conditions of Success		
1.		

Table for the formalization of the functionality test

The header shows a unique code, to be used to refer to the test case, and the name of the test case.
The description field provides a summary of the services offered by the case in question.
There is therefore a reference to any sub-features and related features.
Actors are entities, users, or subsets interested in the behavior of the overall system and a set of features in particular. In respect of a use case can be divided into primary and secondary actors: for primary actors are the ones that provide the initial stimulus that initiates the use case.
The pre-conditions are the conditions that must be met in order to execute the use case.
The main scenario is that scenario of success providing the service requested by the plaintiff in the event that everything is working properly: input data valid, no error, etc..

The start field describes the event that triggers the commencement of functionality.

Finally, the conditions of success are the results of the function with the correct execution of the same.

Herebelow are resumed the use cases to be tested:

Use Cases	Description of the functionality to be tested
NF-DB-001	Database instantiation
NF-DB-002	Automatic import procedure of the data in the Database
NF-DB-003	Database connection with the online WebGIS platform
F-DB-004	Database backup and rollback
NF-WG-001	WebGIS Platform online loading
NF-WG-002	WebGIS Platform visualization scripts (PHP) and map interpolation scripts (javascript) integration
F-WG-003	User Login/Logoff
F-WG-004	Photogallery navigation
F-WG-005	Drone-OBU Mission navigation and data retrieving
F-WG-006	Data Model navigation and data retrieving
F-WG-007	Microplastic Concentration (Plastic Index) navigation and data retrieving
F-WG-008	Lab Data Analysis navigation and data retrieving
F-WG-009	Sea Sentinel navigation and data retrieving
F-WG-101	General Table mode data retrieving, data visualization and csv export
F-WG-102	Generar Plot mode data retrieving, data visualization
F-WG-103	General Map mode data retrieving, data visualization ,rastering
F-WG-104	General Map mode fullscreen mode, map/satellite mode, zoom in/out, navigation and waypoint detailed info.

3 Test Procedures

Herebelow are illustrated the adopted test procedures for the functionalities (use case) to be tested described in the previous chapter.

TEST CASE: T-NF-DB-001	Database instantiation
Description:	Database tables have been created and primary, secondary and foreign keys have been istanced
Related Functionalities:	**NF-DB-001**
Related Sub-functionalities:	--
Primary Actor:	SQL Management Interface
	Connect to the DB Schema to perform the necessary operations
Secondary Actors:	-
	-
Prerequisites:	DB has been istanced
Start:	Always active
Main Scenario.	
1.	- DB Is online and ready to accept connection - Connect SQL Management interface to DB - Perform a DB Integrity check
Conditions of Success:	
1.	The database after an integrity check doesn't report any failure and/or error and/or warning condition and the DB Schema is coherent

TEST CASE: T-NF-DB-002	Automatic import procedure of the data in the Database
Description:	The software module dedicated to import the data on the database extract the data from the formatted tables supplied by the partners and populate the database accordingly
Related Functionalities:	**NF-DB-002**
Related Sub-functionalities:	NF-DB-001
Primary Actor:	DB
	Handles the data received and store it in the DB tableset
Secondary Actors:	DB Import Software module
	Parse the dataset tables provided and commit data to the DB formatting it accordingly to the specification
Prerequisites:	DB has been istanced and running Import software module is running Dataset tables are in the required directory
Start:	At user input, when data is available to be imported
Main Scenario.	
1.	- Connect SQL - Connect SQL Management interface to DB - Start data import and wait for end message
Conditions of Success:	
1.	The database has correctly imported all the data, with no duplicates and it can be checked directly on the DB tableset with SQL Management interface

TEST CASE: T-NF-DB-003	Database connection with the online WebGIS platform
Description:	Database is online and connecting with the WebGIS platform with the connection strings implemented in Javascript
Related Functionalities:	NF-DB-003
Related Sub-functionalities:	NF-DB-001, NF-WG-001
Primary Actor:	DB / Server Side
	Waiting to receive the connection
Secondary Actors:	WebGIS Platform
	Prompt the connection to the DB
Prerequisites:	DB online and running DB populated of data WebGIS platform is set online
Start:	Automatically at the startup of the WebGIS platform

Main Scenario.	
1.	- Connect to www.net4mplastic.net - Issue a javascript test code that communicate with the DB - DB respond with the requested data/string to the WebGIS script

Conditions of Success:	
1.	Communication is instantiated and the DB is correctly connecting to the WebGIS, replying with a test data to the WebGIS script request

TEST CASE: T-F-DB-004	Database backup and rollback
Description:	Database perform a backup on manual request Database perform a rollback from a backup on manual request
Related Functionalities:	T-F-DB-004
Related Sub-functionalities:	NF-DB-001
Primary Actor:	SQL Management interface
	Connect to the DB Schema to perform the necessary operations
Secondary Actors:	--
Prerequisites:	DB online and running

	DB populated of data
Start:	On user input

Main Scenario.	
1.	- User decide to perform the backup of the database using the backup functionality on SQL Management interface - The backup is executed and stored - DB data is manually altered by the user to simulate a fault - The backup is rolled back on the database

Conditions of Success:	
1.	Database is in the same initial condition, without data loss and/or loss of integrity

TEST CASE: T-NF-WG-001	WebGIS Platform online loading
Description:	Platform is loading while connecting at www.net4mplastic.net
Related Functionalities:	NF-WG-001
Related Sub-functionalities:	NF-DB-001, NF-DB-002,NF-DB-003
Primary Actor:	WebGIS HMI Interface
	Connects to the internal WebGIS Platform scripting system that perform the necessary action to show the data and interact with the user
Secondary Actors:	DB
	Connects to the WebGIS platform scripting system and provide data in bidirectional way
Prerequisites:	DB online and running WebGIS Platform running
Start:	On user connection at www.net4mplastic.net
Main Scenario.	
1.	- User load the indicated website www.net4mplastic.net on a web browser and get access with the following public credentials: User*name: **operator*** Password: ***operator3***
Conditions of Success:	
1.	The WebGIS main page is showing properly

TEST CASE: T-NF-WG-002	**WebGIS Platform visualization scripts (PHP), map interpolation scripts (javascript) and DB script (SQL) integration**
Description:	Platform is loading the test scripts while connecting at www.net4mplastic.net,
Related Functionalities:	NF-WG-002
Related Sub-functionalities:	NF-DB-001, NF-DB-002,NF-DB-003, NF-WG-001
Primary Actor:	WebGIS HMI Interface
	Connects to the internal WebGIS Platform scripting system that perform the necessary action to show the data and interact with the user
Secondary Actors:	DB
	Connects to the WebGIS platform scripting system and provide data in bidirectional way
Prerequisites:	DB online and running WebGIS Platform running Test Script ready to be executed
Start:	On user connection at www.net4mplastic.net and launch of the test script
Main Scenario.	
1.	- User load the indicated website on a web browser - User launch the PHP test script - User launch the Javascript map test script - User launch the SQL test script
Conditions of Success:	
1.	The WebGIS main page is showing properly PHP script is outputting properly Javascript script interact with the map and the map is outputting properly SQL script interact with the DB and it is outputting properly

TEST CASE: T-F-WG-003	User Login/Logoff
Description:	The user is able to login in the WebGIS Platform and then logoff
Related Functionalities:	F-WG-003
Related Sub-functionalities:	NF-DB-001, NF-DB-002,NF-DB-003, NF-WG-001
Primary Actor:	WebGIS HMI Interface
	Connects to the internal WebGIS Platform scripting system that perform the necessary action to show the data and interact with the user
Secondary Actors:	DB
	Connects to the WebGIS platform scripting system and provide data in bidirectional way
Prerequisites:	DB online and running WebGIS Platform running
Start:	On user connection at www.net4mplastic.net

Main Scenario.	
1.	- User load the indicated website on a web browser - User execute login with the credential - User execute logoff with logoff button

Conditions of Success:	
1.	The WebGIS main page is showing properly User is able to enter after the login screen in the WebGIS Platform User is redirected to the main login page after the logoff

TEST CASE: T-F-WG-004	Photogallery navigation
Description:	The user is able to navigate in the photogallery section
Related Functionalities:	F-WG-004
Related Sub-functionalities:	NF-DB-001, NF-DB-002,NF-DB-003, NF-WG-001
Primary Actor:	WebGIS HMI Interface
	Connects to the internal WebGIS Platform scripting system that perform the necessary action to show the data and interact with the user
Secondary Actors:	DB
	Connects to the WebGIS platform scripting system and provide data in bidirectional way
Prerequisites:	DB online and running WebGIS Platform running User logged in the WebGIS Platform
Start:	Click on Photogallery section
Main Scenario.	
1.	- User click on the photogallery section of the WebGIS Platform - User scroll between the pictures
Conditions of Success:	
1.	User is able to properly visualize the choosen pictures without errors, bugs or glitches

TEST CASE: T-F-WG-005	**Drone-OBU Mission navigation and data retrieving**
Description:	The user is able to navigate in the drone-OBU mission section
Related Functionalities:	F-WG-005
Related Sub-functionalities:	NF-DB-001, NF-DB-002,NF-DB-003, NF-WG-001
Primary Actor:	WebGIS HMI Interface
	Connects to the internal WebGIS Platform scripting system that perform the necessary action to show the data and interact with the user
Secondary Actors:	DB
	Connects to the WebGIS platform scripting system and provide data in bidirectional way
Prerequisites:	DB online and running WebGIS Platform running User logged in the WebGIS Platform
Start:	Click on Drone-OBU mission section

Main Scenario.	
1.	- User click on the Drone-OBU mission section of the WebGIS Platform - User can check the map and the data of the choosen section

Conditions of Success:	
1.	User is able to properly visualize the choosen section, including maps, tables and xy graphs

TEST CASE: T-F-WG-006	Data Model navigation and data retrieving
Description:	The user is able to navigate in the Data Model section
Related Functionalities:	F-WG-006
Related Sub-functionalities:	NF-DB-001, NF-DB-002,NF-DB-003, NF-WG-001
Primary Actor:	WebGIS HMI Interface
	Connects to the internal WebGIS Platform scripting system that perform the necessary action to show the data and interact with the user
Secondary Actors:	DB
	Connects to the WebGIS platform scripting system and provide data in bidirectional way
Prerequisites:	DB online and running WebGIS Platform running User logged in the WebGIS Platform
Start:	Click on Data Model section
Main Scenario.	
1.	- User click on the Data Model section of the WebGIS Platform - User can check the map and the data of the choosen section
Conditions of Success:	
1.	User is able to properly visualize the choosen section, including maps, tables and xy graphs

TEST CASE: T-F-WG-007	Microplastic concentration navigation and data retrieving
Description:	The user is able to navigate in the microplastic concentration section
Related Functionalities:	F-WG-007
Related Sub-functionalities:	NF-DB-001, NF-DB-002,NF-DB-003, NF-WG-001
Primary Actor:	WebGIS HMI Interface
	Connects to the internal WebGIS Platform scripting system that perform the necessary action to show the data and interact with the user
Secondary Actors:	DB
	Connects to the WebGIS platform scripting system and provide data in bidirectional way
Prerequisites:	DB online and running WebGIS Platform running User logged in the WebGIS Platform
Start:	Click on Microplastic concentration section
Main Scenario.	
1.	- User click on the Microplastic concentration section (Plastic Index) of the WebGIS Platform - User can check the map of the sources and concentrations and the data of the choosen section
Conditions of Success:	
1.	User is able to properly visualize the choosen section, including maps, tables and xy graphs

TEST CASE: T-F-WG-008	Lab Data Analysis navigation and data retrieving
Description:	The user is able to navigate in the lab data analysis section
Related Functionalities:	F-WG-008
Related Sub-functionalities:	NF-DB-001, NF-DB-002,NF-DB-003, NF-WG-001
Primary Actor:	WebGIS HMI Interface
	Connects to the internal WebGIS Platform scripting system that perform the necessary action to show the data and interact with the user
Secondary Actors:	DB
	Connects to the WebGIS platform scripting system and provide data in bidirectional way
Prerequisites:	DB online and running WebGIS Platform running User logged in the WebGIS Platform
Start:	Click on Lab Data Analysis section
Main Scenario.	
1.	- User click on the Lab Data Analysis section of the WebGIS Platform - User can check the data in a dynamic table format of the choosen archived laboratory analysis on the left-side menu
Conditions of Success:	
1.	User is able to properly visualize the choosen section data

TEST CASE: T-F-WG-009	Sea Sentinel navigation and data retrieving
Description:	The user is able to navigate in the sea sentinel section
Related Functionalities:	F-WG-009
Related Sub-functionalities:	NF-DB-001, NF-DB-002,NF-DB-003, NF-WG-001
Primary Actor:	WebGIS HMI Interface
	Connects to the internal WebGIS Platform scripting system that perform the necessary action to show the data and interact with the user
Secondary Actors:	DB
	Connects to the WebGIS platform scripting system and provide data in bidirectional way
Prerequisites:	DB online and running WebGIS Platform running User logged in the WebGIS Platform
Start:	Click on Sea Sentinel section

Main Scenario.	
1.	- User click on the choosen date range on the top left corner of the map and select the "filter" option - User can visualize on the map various waypoint, indicating the presence of a macro plastic picture on the pointed coordinates - User can press on the desired waypoint to collect additional information such as pictures, coordinates, etc.

Conditions of Success:	
1.	User is able to properly choose a date range
2.	User is able to visualize the waypoints corresponding to macroplastic pictures
3.	User is able to click on a waypoint and visualize extra information

TEST CASE: T-F-WG-101	General Table mode data retrieving, data visualization and csv export
Description:	Tables are correctly populated accordingly to the expected data, correctly visualized and the csv export data button perform its functionality
Related Functionalities:	F-WG-101
Related Sub-functionalities:	NF-DB-001, NF-DB-002,NF-DB-003, NF-WG-001 *F-WG-005,F-WG-006,F-WG-007,F-WG-008,F-WG-009*
Primary Actor:	WebGIS HMI Interface
	Connects to the internal WebGIS Platform scripting system that perform the necessary action to show the data and interact with the user
Secondary Actors:	DB
	Connects to the WebGIS platform scripting system and provide data in bidirectional way
Prerequisites:	DB online and running WebGIS Platform running User logged in the WebGIS Platform
Start:	Check every table mode in every section, by selecting search criterias and let the platform load the data

Main Scenario.	
1.	- For every functionalityF-WG-005, F-WG-006,F-WG-007,F-WG-008,F-WG-009 user input a search criteria - Tables are populated - User press export CSV data

Conditions of Success:	
1.	User is able to visualize without errors, bugs or glitches the data in the table Data shown in the table are coherent with the reference tables that have been imported in the DB CSV file has been correctly exported and shown the same data outputted in the WebGIS platform table view

TEST CASE: T-F-WG-102	General Plot mode data retrieving, data visualization and csv export
Description:	XY Plots are correctly populated accordingly to the expected data and correctly visualized
Related Functionalities:	F-WG-102
Related Sub-functionalities:	NF-DB-001, NF-DB-002,NF-DB-003, NF-WG-001 *F-WG-005,F-WG-006,F-WG-007,F-WG-008*
Primary Actor:	WebGIS HMI Interface
	Connects to the internal WebGIS Platform scripting system that perform the necessary action to show the data and interact with the user
Secondary Actors:	DB
	Connects to the WebGIS platform scripting system and provide data in bidirectional way
Prerequisites:	DB online and running WebGIS Platform running User logged in the WebGIS Platform
Start:	Check every XY Plot mode in every section, by selecting search criterias and let the platform load the data

Main Scenario.	
1.	- For every functionality F-WG-005,F-WG-006,F-WG-007,F-WG-008 user input a search criteria - User select a point in the map that require the XY Plot - Plots are populated

Conditions of Success:	
1.	User is able to visualize without errors, bugs or glitches the data in the XY Plot Data shown in the table are coherent with the reference tables that have been imported in the DB

TEST CASE: T-F-WG-103	General Map mode data retrieving, data visualization, rastering
Description:	General GIS maps are correctly populated accordingly to the expected data and correctly visualized, in terms of geographical referenced points with related values by clicking on them. Points are rasterized and coloured with a standard GIS gradient from green to yellows
Related Functionalities:	F-WG-103
Related Sub-functionalities:	NF-DB-001, NF-DB-002,NF-DB-003, NF-WG-001 *F-WG-005,F-WG-006,F-WG-007,F-WG-009*
Primary Actor:	WebGIS HMI Interface
	Connects to the internal WebGIS Platform scripting system that perform the necessary action to show the data and interact with the user
Secondary Actors:	DB
	Connects to the WebGIS platform scripting system and provide data in bidirectional way
Prerequisites:	DB online and running WebGIS Platform running User logged in the WebGIS Platform
Start:	Check every Map mode in every section, by selecting search criterias and let the platform load the data
Main Scenario.	
1.	- For every functionality F-WG-005,F-WG-006, F-WG-007,F-WG-009 user input a search criteria - Maps are populated - User can navigate inside the map and visualize the rasterized data
Conditions of Success:	
1.	Map is populated accordingly to the data Georeferenced points show different colours in base of the selected value Click on a point give info related to the point itself

TEST CASE: T-F-WG-104	General Map mode full screen mode, map/satellite mode, zoom in/out, navigation and waypoint detailed info
Description:	Normal operation such as full screen mode, map/satellite mode, zoom in/out, map navigation and waypoint detailed info are responsive
Related Functionalities:	F-WG-104
Related Sub-functionalities:	NF-DB-001, NF-DB-002,NF-DB-003, NF-WG-001 *F-WG-005,F-WG-006,F-WG-007,F-WG-009*
Primary Actor:	WebGIS HMI Interface
	Connects to the internal WebGIS Platform scripting system that perform the necessary action to show the data and interact with the user
Secondary Actors:	DB
	Connects to the WebGIS platform scripting system and provide data in bidirectional way
Prerequisites:	DB online and running WebGIS Platform running User logged in the WebGIS Platform
Start:	Populate a map in one of the sections
Main Scenario.	
1.	- Toggle the fullscreen mode - Check the zoom in/zoom out - Toggle the satellite/map mode - Check the waypoint detailed info
Conditions of Success:	
1.	Map goes fullscreen then get back to windowed Map goes zoom in and zoom out accordingly Map goes satellite then get back to windowed Waypoint popup appear providing point of interest info

4 Test Report

Herebelow is reported the report table of the performed test-cases, with its related result.

Test Cases	Description of the functionality to be tested	Result
T-NF-DB-001	Database instantiation	Passed
T-NF-DB-002	Automatic import procedure of the data in the Database	Passed
T-NF-DB-003	Database connection with the online WebGIS platform	Passed
T-F-DB-004	Database backup and rollback	Passed
T-NF-WG-001	WebGIS Platform online loading	Passed
T-NF-WG-002	WebGIS Platform visualization scripts (PHP) and map interpolation scripts (javascript) integration	Passed
T-F-WG-003	User Login/Logoff	Passed
T-F-WG-004	Photogallery navigation	Passed
T-F-WG-005	Drone-OBU Mission navigation and data retrieving	Passed
T-F-WG-006	Data Model navigation and data retrieving	Passed
T-F-WG-007	Microplastic Concentration navigation and data retrieving	Passed
T-F-WG-008	Lab Data Analysis navigation and data retrieving	Passed
T-F-WG-009	Sea Sentinel navigation and data retrieving	Passed
T-F-WG-101	General Table mode data retrieving, data visualization and csv export	Passed
T-F-WG-102	Generar Plot mode data retrieving, data visualization	Passed
T-F-WG-103	General Map mode data retrieving, data visualization ,rastering	Passed
T-F-WG-104	General Map mode fullscreen mode, map/satellite mode, zoom in/out, navigation and waypoint detailed info.	Passed