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D4.3.1: Field-testing and evaluation methodology

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1 Introduction

The CASTWATER online tool aims to offer innovative monitoring and self-assessment services for businesses, SMEs and organisations operating in the tourism sector, to evaluate and compare their sustainable water management performance. The tool also aims to support public authorities to identify patterns, design policies and adapt plans in response to sustainable tourism water management monitoring data and territorial needs.

The "testing" work package (WP4) involves the implementation of a small scale field-testing (A4.5), with end-users (i.e. tourism sector SMEs), to pilot test the final version of the online tool, determine their water management performance and evaluate its technical performance, usability, and relevance of criteria and indicators on which the tool is based. Participants' feedback will allow to evaluate the final version of the online tool. No changes will take place during the testing and evaluation phase (A4.5 – A4.6), only debugging if something goes wrong. The structure and activities of WP4 are presented in more details in section 3.

Activity A4.3 aims to elaborate a methodology to guide partners throughout the implementation of field testing and evaluation processes of the online monitoring tool. The field-testing and evaluation methodology presents the testing approach to be employed for assessing the tool's usability and practicality, the setting where testing will be performed, participant' profile, scheduling and monitoring considerations as well as the breakdown of testing and evaluation tasks. In addition, it suggests feedback collection methods, addresses sampling considerations and provides guidelines on how to conduct follow-up interviews with testing participants (optional phase).

Based on this methodology and partners' input, IPTPO will analyse the input provided by test participants (stored in tool's database) to develop a report on the pilot's raw data (A4.5), presenting the profile of participants, aggregated statistics and measurements related to water management for each partner territory, self-assessment trends, scores and ratings. At a next stage, MRDDF will analyse users' feedback and develop the evaluation report (A4.6) to present the results' on the tool's usability, effectiveness and policy transferability potential.

2 The CASTWATER online tool

The CASTWATER project will make available an online (monitoring) tool for tourism sector SMEs to understand, compare (with other SMEs), assess and rate their performance on water efficiency & water management.

The CASTWATER online tool was designed to serve two (2) key functions:

1. To enable tourism SMEs to self-evaluate their performance in sustainable water management, and learn what they can further do to promote water efficiency in their establishment.
2. To measure the degree of good governance and the effectiveness of water-tourism policies to improve sustainable water management, especially at regional and local level.

To this end, the CASTWATER online tool integrates a system with two different types of indicators; one intended for tourism SMEs and one for Public Authorities (PAs).

1. The indicators addressed to tourism sector SMEs are automatically displayed in the CASTWATER online tool to inform users about their performance in promoting water efficiency and what measures they can take to further improve water sustainability.
2. The indicators aimed for Public Authorities are made available as aggregate statistics for the tourism sector as a whole.

The CASTWATER online tool consists of two sections: a) self-assessment (indicators for SMEs), and b) monitoring (indicators for Public Authorities).

A. Self-assessment

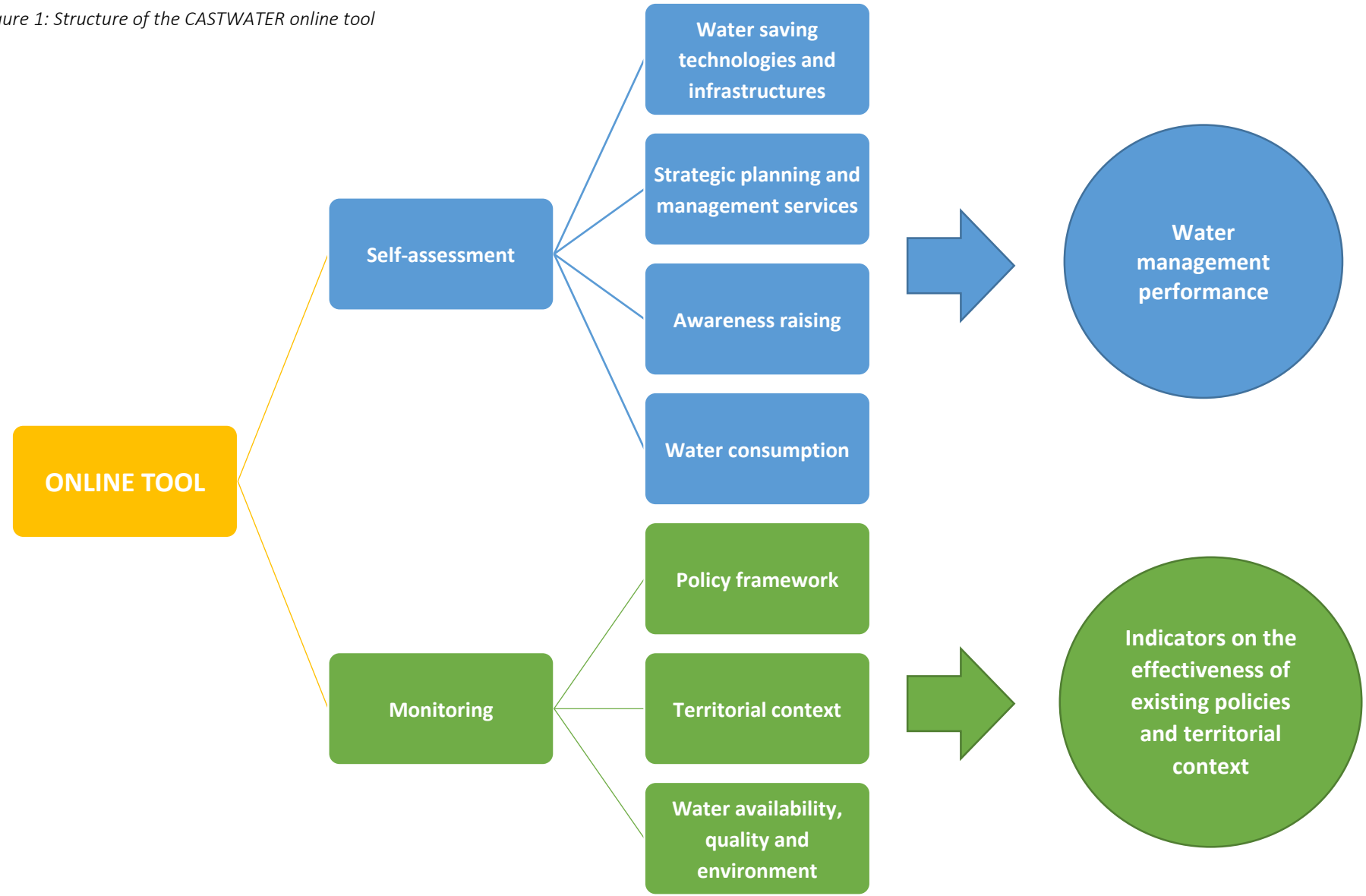
The "self-assessment" section provides evidence to facilitate the evaluation of SMEs' performance in fostering sustainable water management. Users rate their current level of achievement in implementing measures that target the promotion of water efficiency. This section yields indicators (exclusively addressed to tourism SMEs) that help users estimate their capacity to deal with water scarcity issues and excessive water demand. This is realised by calculating an aggregate score from users' replies in four (4) assessment areas; namely a) water saving technologies, b) strategic planning and management services, c) awareness raising, and d) actual water consumption. The tool employs a traffic light system (red, yellow, green) to present the results of the self-assessment process. The tool also integrates a mechanism to rank users'

performance compared to other users' results, providing users with recommendations on how to improve their water management performance, especially in areas where more actions and investments are required.

B. Monitoring

The "monitoring" section provides evidence to evaluate whether the systems of governance for water resources are functioning properly. This section yields a number of indicators and information resulting from SMEs' replies, exclusively addressed to public authorities, to measure the effectiveness of existing policies on water management and pave the way for improvements and further action. These indicators are not directly displayed in the tool, as they are not addressed to tourism SMEs (i.e. end-users). Nevertheless, they are to be used by public authorities in MED regions (upon request), to derive useful conclusions on the strengths and weaknesses of their region's water management system and evaluate the surrounding environment (i.e. policy framework, territorial context) affecting water sustainability. Three thematic areas are covered in the "monitoring" section: a) policy framework, b) territorial context, c) water availability, quality and environmental health.

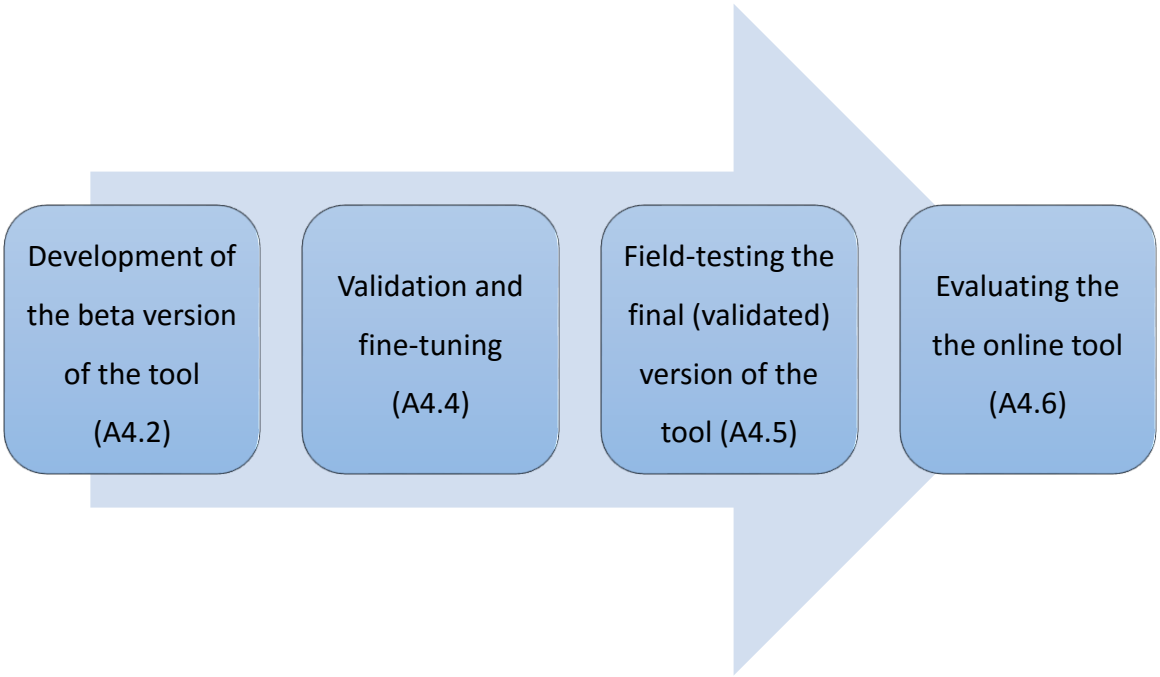
Figure 1: Structure of the CASTWATER online tool



3 Testing phases and workplan

The fourth Work Package (WP) involves pilot activities, where project partners will have the possibility to test the CASTWATER online tool in order to make available a solution that will address users' expectations and needs, and will be applicable to a wide set of users and territories across the Mediterranean (Macro) Region. The testing package includes both the preliminary work for testing and evaluation procedures (i.e. methodological issues) and the implementation of the pilot activity, followed by an analysis stage that will allow to evaluate it, and finally make it available to end-users and beneficiaries. The development and testing of the CASTWATER online tool will be implemented in four (4) stages a) development of the beta version of the tool (A4.2), b) validation and fine-tuning (A4.4), c) field-testing the final (validated) version of the tool (A4.5), and d) evaluating the online tool (A4.6). The flow of testing activities as well as the distribution of tasks among project partners are depicted in the following figures.

Figure 2: Testing phases and task allocation



Stage A: Development of the beta version of the online tool (A4.2)

- Develop the beta version of the online tool, based on the specifications developed in A3.8 (UPATRAS)
- Translate the online tool in all CASTWATER languages (All partners)

Stage B: Validation and fine-tuning (A4.4)

- Create a (online) form to streamline data collection during the validation stage (F-IEA)
- Promote the beta version of the online tool (incl. the validation form) to industry and policy stakeholders (All partners)
- Try out the beta version of the tool and fill in the validation form (Target groups / Stakholders)
- Analyse the data collected through validation forms and draft the validation report (FIEA)
- Fine-tune the online tool based on the results of the validation report (UPATRAS)

Stage C: Field-testing the final (validated) version of the tool (A4.5)

- Invite tourism sector SMEs to try out the final (validated) version of the online tool (All partners)
- Monitor and facilitate the field-testing process (All partners)
- Report observations and conclusions to IPTPO (All partners)
- Analyse the raw data from the tool's databse to develop the testing report that will present the profile of participants, aggregated statistics and measurements related to water management in each partner territory, self-assessment trends, scores and ratings (IPTPO)

Stage D: Evaluating the online monitoring tool (A4.6)

- Develop the online instance of the evaluation form (i.e. questionnaire) provided by this methodology (MRDDF)
- Distribute the online evaluation form to own contacts that participated in the field-testing process (All partners)
- Fill in evaluation forms (Participants / stakeholders)
- Develop the evaluation report based on testers' feedback (MRDDF)

4 Validation methodology (A4.4)

The CASTWATER Application Form (AF) does not foresee the elaboration on a methodology to guide the validation and fine-tuning process (A4.4). Notwithstanding this, in order to facilitate data collection and analysis and despite the fact that the field-testing and evaluation methodology has a different scope, this methodological report will address a range of methodological issues to guide and streamline data collection during the validation stage.

The CASTWATER A4.4 includes promoting the beta version of the online tool to industry and policy stakeholders (e.g. SMEs' representatives, tourism organisations, public authorities) to receive feedback and validate it. Validation refers to the process of demonstrating that the tool works (properly) according to technical specifications, maintains the desired level of usability and functionality in all sections, and is capable of addressing end-users' needs and expectations. **The results drawn from the validation process will be used by developers (i.e. UPATRAS) to fine-tune the online tool and develop its final version.**

4.1 Schedule and tasks for partners

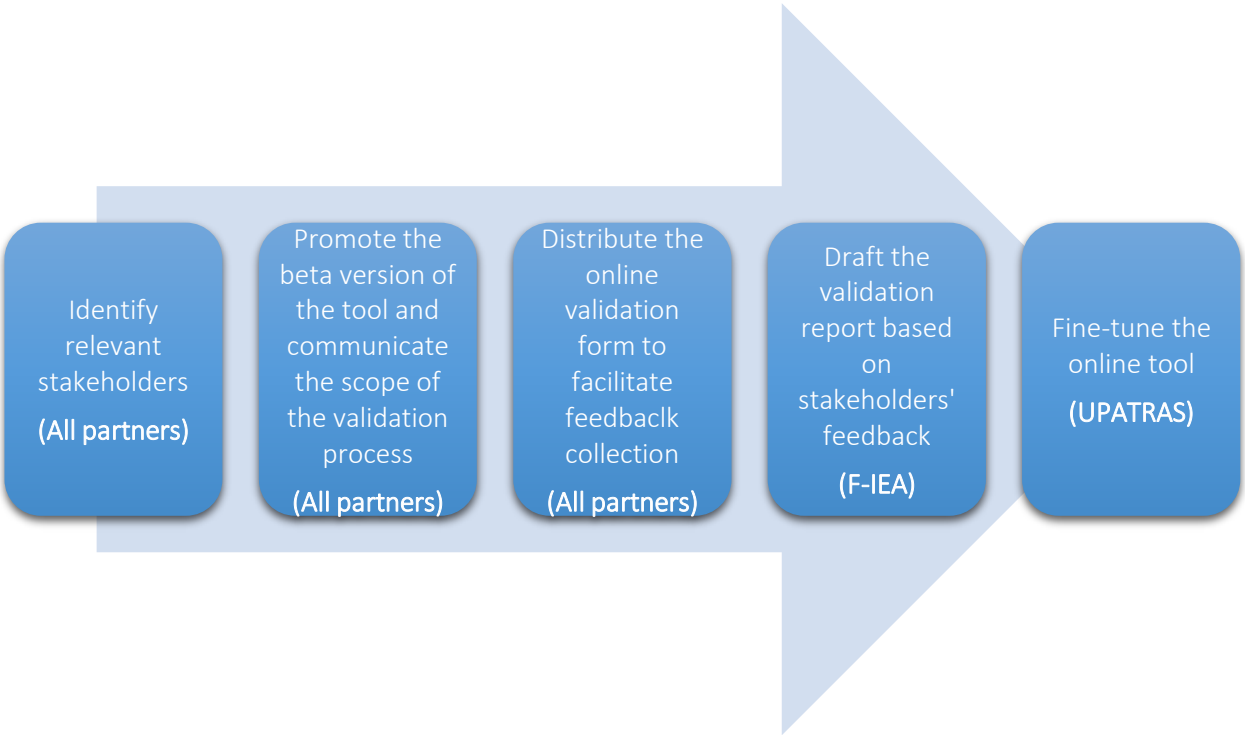


Figure 3: Work-planning

4.2 Target groups

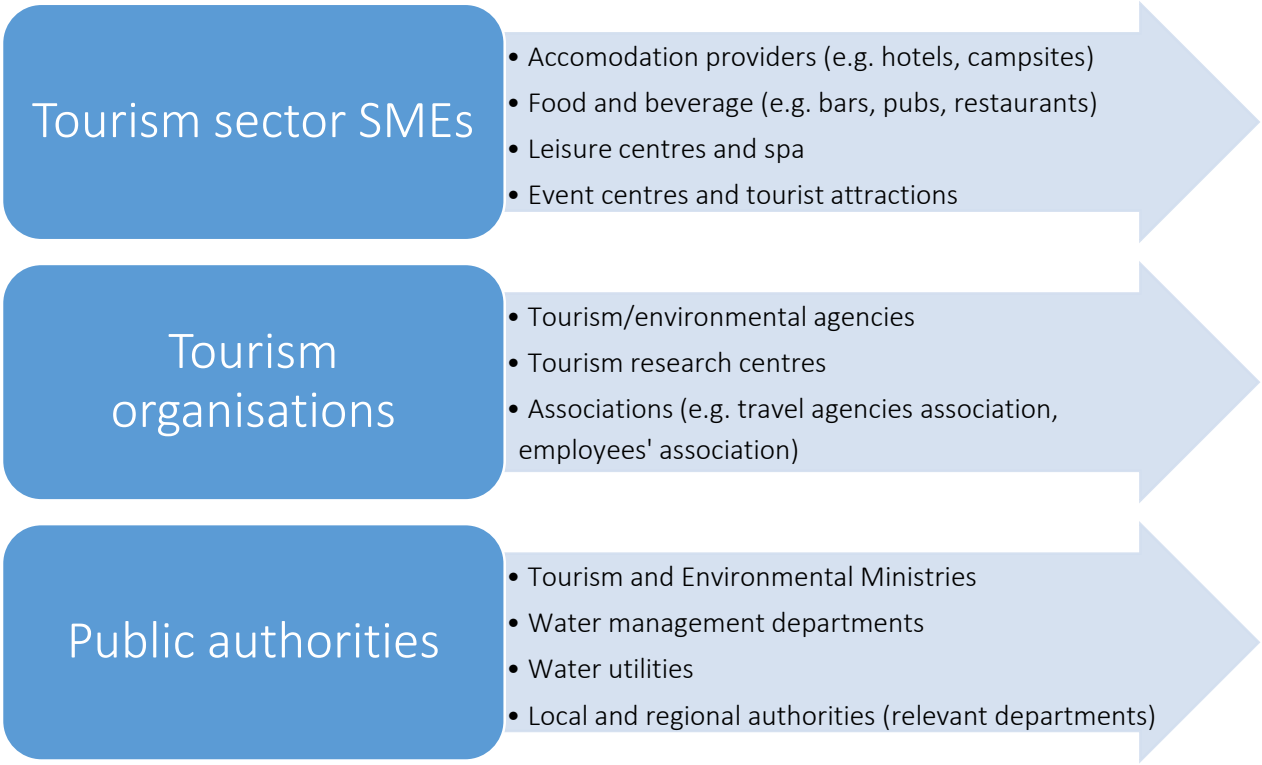


Figure 4: Target groups

4.3 Validation form (to be filled by industry and policy stakeholders)

*** This is only an indicative validation form that can be used to streamline data collection during the validation process. F-IEA, which is the partner responsible for A4.4, will update and finalise the validation form and develop its online instance.**

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FEEDBACK AND VALIDATION FORM

Country	
Region	
Municipality	
Type of organisation	
Email	
Device used (desktop, laptop, tablet, mobile)	

1. Please indicate how much agree or disagree with each of the following statements

					
1. The tool can be used by tourism SMEs for measuring their water management performance.					
2. The tool provides useful recommendations on how to improve a company's water performance.					
3. The tool allows regional authorities to estimate and monitor the tourism industry's (overall) performance in sustainable water management.					
4. The tool provides guidance to regional authorities on how to improve water related policies and adapt plans towards water sustainability.					

5. The intended functions of the online tool are clear to users.					
6. Indicators are relevant to water sustainability.					
7. Questions are easy to understand.					
8. The tool integrates a ranking system that enables comparisons.					
9. The scoring system is easy to understand.					
10. The interface is attractive.					
11. The interface is practical.					
The tool includes controls and notifications that make it easy to use and navigate					
12. Registration to the online tool is quick and easy.					
13. The tool is loading fast.					

3. What are the main weaknesses of the online tool?

2. What aspects of the online tool should be improved? Please give examples.

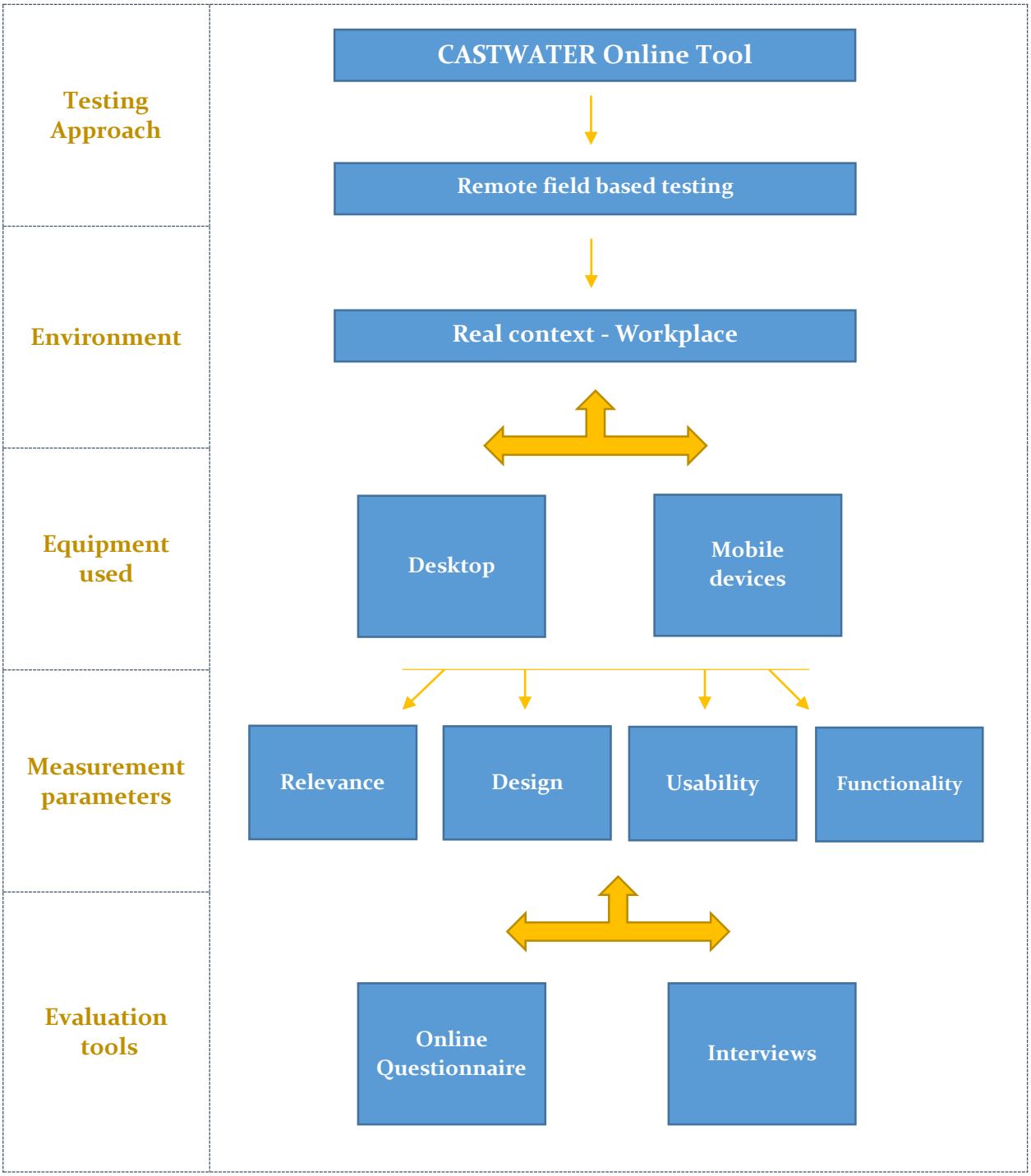
5 Field testing and evaluation methodology (A4.5 – A4.6)

Field testing is a testing and evaluation method that involves trying an offering (e.g. product, service, system, application) in a real-life usage context, so as to identify shortcomings and flaws that could be experienced by end-users. The aim is to minimise risk by making sure that the offering works properly according to technical specifications. In field testing, participants (a representative sample of end-users) trial the offering under actual use conditions, to report their experience as they follow their own work processes in everyday situations.

This methodology prescribes the general process for preparing the testing, performing the evaluation tasks, and handling failures and shortcomings. It determines the profile of testing participants, describes the environment (context) where testing will be performed, the equipment (technical specs) that will be used, how project partners will monitor the procedure, and other organisational requirements.

Figure 5 displays the framework upon which the field testing and evaluation methodology has been developed. The building process comprised five stages; a) the selection of the most appropriate and fit-for-purpose testing approach, b) the decision where the testing should take place, c) the devices and equipment to be used by participants for testing the online tool, d) the definition of measurement parameters and variables, and e) the methods and tools that are aimed at measuring the previously defined parameters and the setting of the survey.

Figure 5: Overview of field-testing and evaluation methodology



5.1 Testing objectives

All partners will invite tourism economic actors for own territory to pilot test the final version of the CASTWATER online tool and assess its usability and functionality. This will enable the partnership to monitor users' self-assessment, collect territorial data to present aggregate statistics, and most importantly evaluate the online tool's effectiveness in addressing SMEs' and territorial needs in measuring and monitoring sustainable water management. **It must be noted that no changes or improvements in the tool will take place during the testing and evaluation phase (A4.5 – A4.6), only debugging if something goes unexpectedly wrong.** Nevertheless, testing results can be further utilised by public authorities to build on the online tool, include additional functions, and improve it in any way they desire.

The testing objectives are as follows:

- Understand users' actual needs and discover opportunities to address them.
- Explore if end-users are able to complete all sections (i.e. self-assessment and monitoring fields) successfully without any malfunctions.
- Identify problems, dependencies and interactions in a real application context (i.e. business setting).
- Collect qualitative data about the target audience that is impossible through lab/computer testing.
- Evaluate users' understanding as regards the presentation of results (i.e. score and rating) and feedback provided.

5.2 Testing principles

The methodology builds on the following principles to assure the effectiveness and quality of the testing process.

1. Testing will be focused on addressing the testing objectives defined in the methodology and the CASTWATER Application Form.
2. Testing will contain common and consistent procedures for all participants (regardless of their country of origin, job position, type of tourism establishment they represent) taking part in the process.
3. Testing will be a repeatable, quantifiable and measurable activity. Participants may trial the online tool several times before they fill in the feedback form. Testing foresees only one evaluation per

participant. More than one feedback forms from the same participant will not be taken into consideration during the analysis.

4. Testing consists of three (3) distinct phases; namely a) registering and using the online tool, b) completing the feedback form based on actual usage and experience, and c) discussing the usability and functionality of the tool with project partners in a follow-up interview (optional).
5. There will be specific requirements/criteria for participating in the testing and evaluation procedure.

5.3 Testing approach

The CASTWATER partnership will employ a **remote process** to evaluate the usability and technical performance of the online tool. This implies that the researcher and user will be in different locations while the test is being conducted. The main reason why this approach has been selected is that remote testing allows the evaluation process to take place in users' workplace, enabling also to achieve multiple sessions that increase the validity of the evaluation results.

Testing that takes place in the participant's natural environment (i.e. business setting) can provide more realistic insights than lab or context-specific testing. Especially in workplaces, the technological capacity and the equipment used (e.g. computer, software, Internet service provider) can affect users' experience and behaviour with the tool. Work-space size, heavy work-load, background noise, and interruptions from customers and colleagues may be considerable factors affecting users' engagement, as well as the validity/quality of the input provided by them.

The partnership will run an **un-moderated** test where the test participants will be provided with full instructions on how to progress through the testing session and assess the tool using an evaluation form (e.g. questionnaire). In un-moderated remote testing, researchers do not communicate with the participants in real-time; however they may carry out a follow up interview (after reviewing the session) to retrieve additional information and ask for clarifications.

There are numerous advantages for selecting an un-moderated testing approach. To begin with, the researcher doesn't need to be present during the testing process which entails that all sessions can be completed concurrently by several participants. This allows to invite as many users as possible to use/test the online tool and provide their feedback and comments during the evaluation period. Multiple sessions

can provide a critical mass of information/data that will reduce the margin of error and provide a clear, objective and un-biased image about the usability of the online tool. In addition, participants are able to complete the testing session and fill in the evaluation questionnaire when it's more convenient for them, so there's no need to schedule or set up appointments. Other advantages are that it is easier to engage participants as they do not have to be present in a specific location a given time and date; it offers the possibility to test higher numbers of participants and it can involve users from different geographical locations.

** In case the (unmoderated) remote approach leads to low participation rates (and subsequently a small number of evaluation forms), the partnership will employ a moderated approach where partners will need to be present in the testing process (in tourism SMEs work area), prompting them to trial the tool and facilitating the entire process. Their role will be also to provide guidance on how to navigate within the tool and execute testing and evaluation tasks. This approach will allow to investigate users' actual interaction with the tool, and understand what they are thinking by capturing spontaneous reactions and comments.*

5.4 Testing plan and implementation (steps and tasks)

This section outlines the procedures that need to be followed in order to prepare and execute the field-testing and evaluation process (A4.5 – A4.6). This will guide partners on how to execute preliminary work (e.g. preparatory phase) and provide them with an overview of how the testing and evaluation should be performed.

5.4.1 Performing the field-testing and evaluation process: Guidelines for project partners

Stage 1: Recruiting participants

1. Create a list of relevant stakeholders to take part in the testing. Compared to the validation stage, field-testing will be conducted only with representatives of tourism SMEs, who are the end-users of the CASTWATER online tool. For more information on the users' profile, please refer to section 5.5.1.
2. Select the most appropriate communication channels to reach target participants (e.g. social media, email campaign, website and newsletters).

3. Contact stakeholders to promote the (validated) final version of the online tool and communicate the scope and objectives of the testing. Inform participants about the testing period and how they can participate. The invitation email should contain the URL of the online tool, as well as the evaluation form (the evaluation form can be optionally sent to test participants after the completion of the testing process).

Stage 2: Running the testing and evaluation process (guidelines to be provided to test participants)

1. Schedule the testing to be carried out in your workplace during work hours. What you will need is a computing device and a notebook to keep comments and write your remarks during the test.
2. Open the tool's URL, as provided in the invitation email or the project website. The tool is cross-browser compatible and functions fully on mobile devices.
3. Register to the online tool by creating a user account. To create a new account, you have to a) enter your first name & last name (optionally) and a valid e-mail address to use as the login, b) indicate their identity (i.e. tourism SMEs, public authorities, and administrators).
4. Enter your personal information. You have to declare your country, region and municipality as well as the type of your tourism establishment (e.g. hotel, restaurant). You also need to insert a valid email address in case you desire to have early access to the final version of the online tool.
5. Start with the "self-assessment" section, answering all the questions in the four (4) assessment areas. You will be asked to provide business information on water consumption so mind to have access to relevant files and data. Your replies in this section will be processed by the tool to determine your company's performance in sustainable water management.
6. Continue with the "monitoring" section. In this section, you will be asked to evaluate the effectiveness of water policies in your region and assess the surrounding environment affecting sustainable water management.
7. Compare your score with those of other participants (ranking table) and try to interpret the feedback received so as to start planning your next actions to improve your company's water performance.
8. You can run as many sessions until you feel confident to fill in the evaluation form.

9. Exit the application only if you have completed all sections and received a score that reflects your company's performance based on your replies.
10. Fill-in the evaluation form with your personal, experience-based views as drawn from your interaction with the tool. You will find the evaluation either as an attached file in the invitation email or through an external link to be completed online (in case an online version will be developed by MRDDF). Test participants are allowed to complete only one evaluation form. Multiple forms from the same participant will be disregarded.
11. The partnership might contact you for further information on the usability of the tool in case you have been selected to participate in a follow-up interview.

Stage 3: Test monitoring

1. Facilitate the testing process, acting as a helpdesk for participants facing accessibility issues or require clarifications on the procedure and the use of the online tool.
2. Monitor testing activity against pre-defined targets (i.e. number of evaluation forms completed by test participants).
3. Take remedial actions to foster participation and reach the defined targets.

*Stage 4: Follow-up interviews *optional stage*

1. Identify potential interviewees.
2. Review their sessions and evaluation forms to get prepared for the interview.
3. Communicate with representatives of tourism sector SMEs to schedule a face-to-face or virtual meeting (or a phone call).
4. Carry out interviews. For more information on how to conduct the interviews, refer to section 5.7.2.
5. Prepare a summary report with the main conclusions from the discussion. Forward the summary report to MRDDF, which is the partner responsible for preparing the evaluation report (A4.6 – final deliverable).

Stage 5: Reporting observations and conclusions

1. Compile participants' observations and inquiries as reported by them during the testing process.

2. Describe all the actions you took during the testing period to address participants' inquiries and troubleshoot any technical problem they may have faced.
3. Prepare short reports with participants' insights and views with regards to the monitoring, benchmark and grade results of the tool.
4. Forward these reports to IPTPO, which is the partner responsible for drafting the testing report (A4.5 – final deliverable).

5.4.2 Tasks for IPTPO concerning the development of the testing report (A4.5)

1. Compile and review the reports (to be delivered by project partners) with participants' observations and insights/views as reported during the field-testing procedure (through the interaction with project partners).
2. Extract raw data from the CASTWATER tool's database.
3. Run descriptive statistics to identify and present the main features of the dataset.
4. Cross-tabulate raw data to analyse the relationship between multiple variables.
5. Interpret the results and present the main findings such as:
    - Participants' profile
    - Aggregate statistics and measurements related to water management in each partnership territory
    - Self-assessment trends
    - Scores, ratings and grade patterns arisen during the testing process
6. Draft the testing report. An indicative structure of the testing report may be the following:
    - Introduction
    - The CASTWATER online tool
    - Testing objectives and processes (employed)
    - Demographics and participants' profile
    - Key metrics and findings
    - Participants' observations and main lessons learnt
    - Conclusions

5.4.3 Tasks for MRDDF concerning the development of the evaluation report (A4.6)

1. Develop the online instance of the evaluation form (i.e. questionnaire) provided by this methodology.
2. Collect the online evaluation forms completed by test participants.
3. Gather and review the summary reports (to be delivered by project partners) with the main conclusions drawn from interviews (*optional stage).
4. Perform statistical data processing and analysis (incl. descriptive statistics and cross-tabulation analysis).
5. Interpret the results and present the main findings drawn from the evaluation process, covering the following measurement parameters (as defined in section 5.6)
    - Relevance
    - Design
    - Usability
    - Functionality
6. Draft the evaluation report. An indicative structure of the evaluation report may be as follows:
    - Introduction
    - Methodology
    - Evaluation results
        i. Participants' profile and demographics
        ii. Initial expectations
        iii. Relevance
        iv. Design
        v. Usability
        vi. Technical performance
    - Discussion and recommendations on further improvements
    - Conclusions

5.5 Participants and context

5.5.1 Users' profile

The field testing will be carried out with participants, who represent the real or potential users of the CASTWATER online tool. Otherwise, the generated results will not translate into useful guidelines for addressing any potential bugs before making the tool available to beneficiaries.

The Application Form (AF) prescribes that the online monitoring tool will be used by tourism sector SMEs, which are the end-users, to self-evaluate, compare and rate their performance in sustainable water management and assess the effectiveness of water related territorial policies.

According to the AF and the objectives of the field-testing, the target participants should comprise the representatives of tourism sector SMEs, who have been involved in the process of implementing or deciding upon the adoption/integration of water management practices, within their organisation. Thus, the field testing participants will include owners, managers and executives of tourism SMEs with significant experience in the implementation of water efficiency and saving measures, and knowledge about company's water consumption and environmental performance. An indicative, not exhaustive, list of participants could involve the following actors:

- Decision-makers
- Owners
- Administrative managers
- Operations managers
- Staff of tourism SMEs with important knowledge on the company's initiatives and actions to improve water management

The tourism sector is a broad category of fields within the service industry that includes accommodation, leisure activities and theme parks, food and beverage services, transportation, event planning, and attractions. The CASTWATER online tool is addressed to tourism sector SMEs that fall into the following categories:

- Hotel
- Guesthouse / Apartments
- Hostel

- Restaurant
- Bar or Pub
- Kiosk / Snack Bar
- Coffee shop / Take away
- Leisure centre
- Spa
- Tourism attraction
- Event centre
- Bathing facilities/establishment

5.5.2 Setting

Field tests are traditionally conducted in test laboratories, which is a specially designed area where participants can concentrate on the given tasks to evaluate the performance of a system or application without noise and interruptions. Nevertheless, testing in a laboratory environment does not simulate the real conditions where a system is used and lacks the desired evaluation validity. The reason is that the external factors (e.g. interruptions from customers and colleagues, background noise, heavy workload, movement) that can affect users' experience are not present in such a setting, and hence they are not taken into account by participants during evaluation.

To this end, the CASTWATER online tool will be tested by end-users in their working environment so that the partnership can identify the problems that end-users might face in a real application context. Participants will trial the online tool in their own environment with their own equipment (e.g. desktops, mobile devices), data and files. Testing in users' workplace will help observe users' natural behaviour (when using and interacting with the online tool), and find out how easy is to complete all sections and provide all the information required (on company's water performance) under every day working conditions. It will also allow to account for the surrounding environment, which sets additional requirements and essentially affect users' overall experience.

5.5.3 Technical requirements

The CASTWATER online tool is available through the Internet at the following link (URL goes here after tool's deployment). To access the tool, users will need a computing device and a strong broadband connection. Users can also access the online tool through a mobile device as it has been deployed to function fully on smartphones, tablets, and laptops. Overall, the CASTWATER online tool is compatible with the following (versions) operating systems and web browsers.

- Operating systems (minimum requirements)
    - Desktop: Windows, Mac and Linux
    - Mobile devices: Android 4.0 and above & iOS 7 and above
- Web browsers
    - Google Chrome
    - Firefox
    - Safari
    - Internet Explorer

A strong internet connection is necessary for good performance. A minimum download speed of 1.5 Mbps will be required for using the CASTWATER online tool; however faster connection will reduce lag and ultimately enhance online experience.

5.6 Measurement parameters

Performance measurement can be defined as the process of collecting, analysing and interpreting information on the performance/effectiveness of a product or service. This process estimates the parameters under which the system or application under examination is working as intended and reaches the targeted results. These parameters refer to the parts or elements of the system that need to be measured for assessing its performance, status and usability.

Hence, in order to build an effective testing methodology, it is necessary to specify the technical and functional parameters that determine the performance of the CASTWATER online tool and select the variables to estimate them. The selection of performance metrics (or else measurement parameters) should reflect the following:

- Testing objectives and goals
- The intended functions of the tool
- Users' profile and expectations
- Testing environment and conditions

In addition, analysts (i.e. researchers) should be able to understand what is behind these parameters and interpret the results correctly. This section presents the measurement parameters and the variables to be evaluated by the end-users during the field-testing. Four (4) parameters will be measured against technical and functional specifications, as defined in A3.7.

1. Relevance (e.g. conceptual design, questions, indicators, grading system)
2. Design (e.g. user interface, visual elements, user-centred design)
3. Usability (e.g. effectiveness, efficiency, satisfaction, learnability, errors)
4. Functionality (e.g. connectivity, openness, processing capability, security)

Relevance

This parameter includes variables that will allow to evaluate the relevance and conceptual design of the online tool. The objective is to determine whether the tool concept meets real users' needs and expectations. The partnership aims to review the performance of the tool, in addition to competitive offerings, to see whether the concept provides a practical solution to a real challenge. Areas to be

investigated include the structure of sections/content, the coverage of topics, questions' relevance and usefulness of sustainability indicators. Participants' feedback on these variables will help the partnership comprehend whether the former can adequately understand the tool's concept and main functions (e.g. grading system and ranking), address their needs/expectations in measuring water management performance and are provided with useful recommendations and feedback on how to improve water efficiency in their establishment.

- Structure and purpose: Users comprehend the tool's main functions/elements and the structure of the content is easy to follow
- Relevance of questions: The tool contains questions that meet users' needs and expectations to estimate their water management performance and get feedback on how to decrease their consumption during high touristic seasons.
- Usefulness of indicators: The tool contains indicators that are relevant to water sustainability, act as a proxy to measure a company's performance in sustainable water management, and are easy to understand among users.
- Grading system: The tool allows to rate and compare performance with those of similar establishments in the same region or across the MED area; the grading system is easy to understand; users feel confident to plan their future actions based on the score and feedback received.

Design

Design is the most critical component in creating an attractive and successful application (Piece and Wooldridge, 2010). Online tools need to be combined with design excellence to attract users' attention and increase application's value and usability. A system with a well-designed user interface, supported by eye-catching visual elements, has the potential to create positive impressions to users and increase their retention and engagement. In the same context, the strategic use of experience-centric details and emotional elements (animation, notifications, etc.) will assist in developing a connection with users, evoking sentiments and improving user experience (Smashing Magazine, 2013). Users will be asked to evaluate the following design variables.

- User interface design: It refers to the application's visual environment (i.e. interface) that incorporates elements that are easy to access, understand and use, so as to facilitate users' navigation within the system and tasks accomplishment. An attractive, friendly and practical user interface design can

essentially enhance user experience, efficiency and satisfaction. These elements include a) input controls (e.g. text field, checkboxes), b) navigation components (e.g. breadcrumb, slider and tags), and c) informational elements (e.g. instructions, notifications and progress bar).

- Emotional design: This refers to the process of designing the tool, both functionally and aesthetically so that it will have a major impact on how users feel about the final outcome. A well-designed and visually appealing application produces a series of positive emotions and sentiments, increasing users' engagement and willingness to use it again.
- Clarity of questions: Questions fit to the purpose, are clearly stated and free of spelling and grammar mistakes.
- Objectivity: Questions have been formulated in a way that do not bias answers/replies in a particular direction.

Usability

Usability testing refers to evaluating the usability (or easiness of use) of a product or service with representative users in a specific context of use and under specific conditions (i.e. users' workplace). It is a measurement of the usefulness of a system from the users' point of view, as drawn from actual experience. This includes participants trying to complete typical tasks that are connected with (specified) desired outcomes, and recording/writing down their comments and remarks. Field testing will be carried out remotely; which means that users and researchers will not be in the same location while the testing is being completed. Feedback on the usability of the tool will be analysed and utilised by developers to fine-tune the application and correct possible design or content mistakes. A successful usability test will diminish the number of bugs experienced by users in the interface and increase the reliability and usability of the tool. William (2004) suggests that usability consists of three fundamental elements (effectiveness, efficiency and user satisfaction); Nivala (2005) expanded the set of usability variables with three additional elements; namely learnability, memorability, and errors. For the purposes of this testing, usability can be measured/evaluated via the following metrics.

- Efficiency: The amount of effort required to perform specific tasks
- Effectiveness: The capability of the system to allow users completing all sections and achieving the desired outcomes

- Simplicity & Familiarity: It is a measure of how complicated is to operate the tool and how much the tool resembles other systems with similar functions. A common user interface will make easier the handling and navigation within the tool and minimise the time required to complete all sections.

Functionality

Functional testing is carried out to ensure that the online tool behaves according to the technical specifications (A3.7). In other words, this testing is to verify that the service is working as intended, without lag and technical errors. Users will be asked to evaluate the tool's technicalities such as connectivity, processing capability and security.

- Connectivity: Capacity of a system to connect to the Internet providing access to users and administrators.
- Processing capacity: Ability and speed of a system to support a critical mass of operations and data in a given amount of time.
- Openness: Ability of a system to offer unrestricted access to users (without barriers and prerequisites), regardless their existing level of ICT skills, educational background, country of origin, type of device used.
- Security: Protection framework to guarantee that personal information will not be shared with third parties or hacked, creating a sense of security and confidentiality among users.

5.7 Feedback collection methods

5.7.1 Evaluation form

A purpose-made evaluation form (Annex A) will be the main method for investigating the interaction of participants with the CASTWATER online tool, and measuring users' engagement and experience. The evaluation will focus on how easy is for participants to use the tool and complete all sections in order to achieve their needs in terms of estimating their performance in sustainable water management.

A questionnaire will be used to establish a structured, organised and well documented way to collect participants' personal views on the usability of the CASTWATER online tool, as drawn from contextual use (i.e. in a business setting). The questionnaire will comprise a textual form of questions that will be available for participants after they have completed the testing process.

It is highly recommended that a web-based approach (in the form of an online questionnaire) should be employed so as to facilitate the data collection, coding, and analysis process. The questionnaire will be structured in a clear and simple manner to encourage participation and facilitate communication with participants. As there will not be a physical interaction between participants and researchers, all questions will be designed to be clear and understandable, providing working definitions and clarifications for terms/procedures that participants may not be familiar with.

The questionnaire will be distributed to participants as an attachment (or external link if a web-based approach will be finally preferred) within the invitation email that will receive, asking them to participate in the testing process. The email will also provide participants with all the necessary directions to carry out the evaluation/testing and fill in the feedback form.

The survey questionnaire will comprise mostly closed-ended questions (likert scale multiple choice questions) as they are easier and quicker for respondents to answer; offer better coding, analysis and comparison possibilities. Likert scale questions will help researchers identify the degree to which users agree or disagree with a number of statements referring to the usefulness and effectiveness of the online tool.

Open questions will be also included so that participants can express their opinion and state anything they feel is relevant, clarify and justify their answers, provide more accurate information on the usability of the

tool and make recommendation on how to improve it. Overall, open-ended questions will allow the partnership to a) collect more detailed feedback and accurate data on the usability of the tool, b) uncover issues that close ended questions have not adequately covered, and c) capture participants' feelings and emotions when using the online tool.

To ensure consistency and facilitate data analysis, the questionnaire will be developed, communicated and completed in English. Where feasible, and in cases where communication can only be established in national language(s), project partners may translate both the questionnaire and responses.

5.7.2 Interviews (optionally)

An interview based research on the usability and technical performance of the CASTWATER online tool can be optionally launched to complement the results and findings drawn from the evaluation forms. This research activity will include the verbal interaction between researchers and participants, after the latter having completed the testing process and has a distinct idea about the tool's strengths and weaknesses.

Each partner may contact 2 or 3 participants (i.e. representatives of tourism SMEs) from its own territory to gather (through a semi-structured interview) additional information and insights on the usability of the tool, in a manner not possible via the online evaluation form.

The representatives of tourism SMEs, who have tested the online tool, will be asked to further contribute to the research by reporting their actual usage experience. Representatives' insights and feelings will be recorded through a purpose made questionnaire that will address the following issues:

- Elements and functionalities of the online tool
- Location and conditions of testing (e.g. context of use, surrounding environment)
- Structure and content (e.g. clarity and appropriateness of questions)
- User interface design
- Display resolution, connectivity and processing capability
- Usability (ease to use, availability of data required, effectiveness in addressing users' needs)
- Limitations and areas of improvement

The interview will combine a pre-defined frame of open questions to prompt discussion for each measurement parameter (defined in section 5.6) with the possibility for the interviewer to modify freely

any part of the process in order to explore particular responses further. The process will be short (not exceeding 10 questions), providing also respondents with the opportunity to discuss and raise issues that may have not been considered during the deployment phase.

First contact will be established with interviewees through email or phone, to introduce the topic under examination, to explain the reasons why a more detailed investigation is required, and proceed with the face to face interview.

Guidelines for conducting the interviews

1. Get prepared for the interview. Be sure about the type of information you want to obtain through the interview and to whom you are going to speak. Before the interviews, partners should gather basic facts about the interviewee's professional profile.
2. Inform the interviewee about the scope of the survey and the means you will use to record his/her views.
3. Choose the most appropriate methods to record interviewees' answers. Recording answers can be done by taking notes, audio or video recording.
4. Build a rapport with the interviewee. It is important to use words and actions that will make the respondent feel welcome and give him the desire to commit to the discussion, in order to gain the interviewee's confidence and get useful insights about the topic under investigation.
5. Ask questions that lead to targeted answers. Phrase questions in a way that you will receive detailed answers rather that simple "Yes" or "No". It is recommended that you should focus on the aspects that you have not managed to retrieve sufficient information through the online evaluation form.
6. Time to end the interview. It is important to know when you must end the interview. This may occur the time you understand that the interviewer feels tired with the process or he/she does not provide any new information. A good practice is to summarise the key points and provide the respondent with a last opportunity to complement any already mentioned points or raise new issues.
7. Upon the completion of interviews, project partners need to prepare a summary report, presenting the answers provided by tourism SMEs' representatives and highlighting the main conclusions drawn from the discussion.

5.8 Sampling

The CASTWATER Application Form prescribes that the sample of users (testing participants) to pilot-test the CASTWATER online tool is to be drawn from the countries represented in the project consortium (Greece, Italy, Cyprus, Spain, Croatia, France and Malta). The methodology suggests two scenarios, regarding the expectations for the target number of participants to test the tool and consequently the number of evaluation forms to be collected: a moderate and a good scenario. In the moderate scenario, the desirable number of participants is 150; the good scenario foresees 300 participants.

The distribution of testing participants per country will be based on:

a) Partners' type of organisation (e.g. public authority, higher education institution, interest group, sectoral agency)
b) The size of the sector in partners' countries, reflected as the number of tourism enterprises
c) Partners' capacity to reach stakeholders, as demonstrated from their participation/access to relevant networks and associations.

Table 1: Factors that determine participants' distribution among partnership countries

Partner	Country	Type of organisation	Tourism enterprises in the country	% share in the partnership
Municipality of Rethymno		Local authority	140,300	11,8%
University of Patras		Higher education institution		
Emilia Romagna Region		Regional authority	377,200	31,8%
Veneto Region		Regional authority		
Water Board of Lemesos		Public service provider	6,900	0,6%
Euro Mediterranean Water Institute Foundation		Interest group	322,000	27%
Valencia Tourism Organisation		Sectoral agency		
Institute of Agriculture and Tourism		Higher education and research institution	23,000	2%
Departmental Council of Herault		Local authority	317,400	26,6%
Malta Regional Development and Dialogue Foundation		Interest group	2,300	0,2%
Energy and Water Agency		Sectoral agency		
All partners			**1,189,100**	**100%**

Taking into consideration the above factors (i.e. type of organisation, number of tourism enterprises, partners' access to stakeholders) an indicative target number of participants per project partner and consortium country is presented in the following table.

Table 2: Target number of answers per consortium country and project partner

Partner	Country	Target (moderate)	Target (good)	Total per country
Municipality of Rethymno		12	24	24-48
University of Patras		12	24	
Emilia Romagna Region		26	52	42-84
Veneto Region		16	38	
Water Board of Lemesos		8	16	8-16
EuroMediterranean Water Institute Foundation		16	32	32-64
Valencia Tourism Organisation		16	32	
Institute of Agriculture and Tourism		10	20	10-20
Departmental Council of Herault		20	40	20-40
Malta Regional Development and Dialogue Foundation		7	14	14-28
Energy and Water Agency		7	14	
All partners	Interreg Mediterranean	**150**	**300**	**150-300**

6 Key Performance Indicators (KPIs)

To ensure the quality of testing, it is pertinent for all partners to have a clear perception of the validation (A4.4) and testing/evaluation (A4.5 - A4.6) objectives, as well as accepted quality assurance considerations. To this end, a series of quantitative key performance indicators (KPIs) have been set to guide feedback collection on the usability and technical performance of the online tool and evaluate the achievement of activities' goals (A4.4, A4.5, A4.6). Table 3 presents indicative targets per partner.

Table 3: Key Performance Indicators (KPIs) per partner

Partner	Country	Validation forms	Participants	Evaluation forms	Interviews
Municipality of Rethymno		8	12-24	12-24	*Optional
University of Patras		8	12-24	12-24	*Optional
Emilia Romagna Region		14	26-52	26-52	*Optional
Veneto Region		12	16-32	16-32	*Optional
Water Board of Lemesos		6	8-16	8-16	*Optional
EuroMediterranean Water Institute Foundation		10	16-32	16-32	*Optional
Valencia Tourism Organisation		10	16-32	16-32	*Optional
Institute of Agriculture and Tourism		8	10-20	10-20	*Optional
Departmental Council of Herault		14	20-40	20-40	*Optional
Malta Regional Development and Dialogue Foundation		5	7-14	7-14	*Optional
Energy and Water Agency		5	7-14	7-14	*Optional
All partners		**100**	**150-300**	**150-300**	***Optional**

7 Annex A: Evaluation form - Questionnaire

CASTWATER online tool to monitor performance on "Sustainable Tourism Water Management"

What is the purpose of survey?

To evaluate the usability and technical performance of the CASTWATER online tool. Your input will help the partnership develop and make available an online tool for tourism sector SMEs to monitor, rate and compare their performance on sustainable tourism water management.

Who should participate?

Representatives of tourism sector SMEs

How long does it take?

Approximately 15 minutes

Thank you very much in advance for your participation and valuable contribution!

All participants (providing their email) will have early access to the final version of the CASTWATER online tool!

A. Participant profile & expectations

1. Country

2. Region

3. Municipality

4. Please select the type of your establishment

- Hotel
- Guesthouse / Apartments
- Hostel
- Restaurant
- Bar or Pub
- Leisure centre (e.g. water park, golf centre)
- Spa
- Bathing establishment
- Other (please specify) ……

5. Which of the following best describes you?

- Owner
- Manager
- Staff of tourism SMEs with knowledge on sustainable water management
- Other, please specify……

6. Email* (Optional, provide in case you want to have early access to the final version of the CASTWATER online tool)

7. Where did you use the CASTWATER online tool?

- Workplace
- Home
- Other, please specify……

8. What type of electronic device did you use to access the CASTWATER online tool?

- Desktop
- Laptop
- Smartphone
- Tablet
- Other, please specify……

9. What were your expectations from the CASTWATER online tool?

B. Relevance

When thinking of your experience with the CASTWATER online tool, how much do you agree/disagree with the following statements?

						Not applicable
10. I was able to assess my company's performance in water management						
11. I was able to identify my company's specific weaknesses related to water management						
12. I was able to compare my company's performance with other touristic SMEs						
13. The tool provides useful recommendations on how to improve my company's water performance						
14. Indicators provide useful information on my company's specific performance						
15. I feel confident to plan my company's further actions based on the score and feedback received						

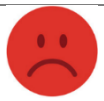
C. Design / Interface

I found that...

						Not applicable
16. The overall visual design of the tool was appealing to me						
17. The interface was attractive						
18. The interface was practical						
19. The tool includes controls and notifications that make it easy to use and navigate						

D. Usability

When thinking of your experience with the CASTWATER online tool, how much do you agree/disagree with the following statements?

						Not applicable
20. The intended functions of the online tool were clear to me						
21. The tool is easy to use						
22. It was easy for me to find and provide the data/information required by the online tool						
23. I would need the support of a water expert to be able to use the online tool						

24. The instructions (provided within the invitation email) were effective in helping me complete all sections						
25. Questions (embedded in the tool) were easy to understand						
26. The tool can be used by any type of tourism facilities, wishing to measure and monitor its performance in water management.						

E. Functionality

When thinking about how others would use the CASTWATER online tool, I think that...

						Not applicable
27. Registration to the online tool is quick and easy						
28. The tool is loading fast						
29. Access through mobile devices is easy and convenient						
30. The tool has all the functions and capabilities a user expects it to have						

F. Other

31. Did the online tool meet your expectations? Please explain.

32. Do you think that the CASTWATER online tool can be used by other types of tourism facilities for measuring their water management performance?

a. Yes

b. No (Please specify the reason)……

33. Would you recommend the CASTWATER online tool to other tourism sector SMEs in your region?

c. Yes

d. No (Please specify the reason)……

8 Annex B: Interview Guide

Instructions: Let the interviewee tell his/her story in each section and use the follow-up questions below as probes[1]. Upon the completion of interviews, prepare a summary report presenting the answers provided by interviewees and highlighting the main conclusions drawn from the discussion, as regards the usability and technical performance of the CASTWATER online tool.

Questions

1. What were your expectations from the CASTWATER online tool?

   Probe: Estimate water management performance?

   Identify specific weaknesses related to water management?

   Compare your performance with those of other tourism sector SMEs?

   Delivery of recommendations and guidance on how to improve water management?

2. Can you describe the setting and conditions under which you used the CASTWATER online tool?

   Probe: Workplace?

   Background noise?

   Interruptions?

   Heavy workload?

   Equipment used?

   Duration to complete all sections?

3. Did you experience any technical problem?

   Probe: Connectivity?

   Registration?

   Processing capability?

   Accessibility through mobile devices?

[1] Interview probes: An important part of interviewing is following up on things people tell you. Your initial question opens the door to an issue, and your interviewee's response is a first draft of an answer to your question. One that draft is on the table, you need to ask more questions to get the full story (Source: https://msu.edu/).

4. How easy to use did you find the CASTWATER online tool?

   Probe: Registration?

   Interface?

   Questions easy to understand?

   Instructions?

   Data required easy to provide?

   Rating system?

   Feedback?

5. Overall, did the CASTWATER online tool meet your expectations?

   Probe: Measure actual water consumption?

   Monitor water performance real-time?

   Compare your performance with those of other tourism sector SMEs?

   Delivery of recommendations and guidance on how to improve water management?

6. If you could change one thing/feature of the CASTWATER online tool, what would it be and why?

7. How can we improve the online tool? What are your ideas and suggestions?

   Probe: Questions?

   Visual design?

   Grading system?

   Presentation of the results?

8. Anything else you want to share with us about the tool?

Thank you for your time!

9 Bibliography

Delikostidis I. (2007), "Methods and techniques for field-based usability testing of mobile geo-applications", International Institute for Geo-information Science and Earth Observation.

European Parliament (2015), "Tourism and the European Union – Recent trends and policy developments", EPRS, September.

Kaikkonen A., Kekalainen A., Cankar M., Kallio T., Kankainen A. (2005), "Usability testing of mobile applications: a comparison between laboratory and field testing", Journal of Usability Studies, vol. 1, issue 1, pages 4-16.

Nivala A. (2005), "User-Centered design in the development of a Mobile Map application", Licentiate Thesis, Helsinki University of Technology, Finland.

Pierce and Wooldridge (2010), The Business of iOS App development, Apress.

Smashing Magazine (2013), "Emotional design elements", Smashing eBooks Series Book 40.

Stephens S., Kreader J., Smith S., McCabe L., (2011), "QUALITYSTARSNY – Field Test Evaluation Report".

Williams J. (2004), "Developing Performance Support for Computer Systems: A Strategy for Maximising Usability and Learnability", CRC Press.

http://se.inf.ethz.ch/~meyer/publications/testing/principles.pdf

http://teced.com/services/usability-testing-and-evaluation/field-usability-testing/

http://www.testbytes.net/blog/how-usability-testing-benefits-the-end-user/

https://www.experienceux.co.uk/faqs/what-is-remote-usability-testing/

https://www.interaction-design.org/literature/article/the-basics-of-recruiting-users-for-usability-testing

https://www.centercode.com/blog/2017/10/five-ws-field-testing