

Wet/Dry Mapping
Calm B4 the Storm

Usability Test Plan

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Document Overview

The purpose of this document is to outline the procedures and protocols for conducting usability testing during the development of the Calm B4 the Storm team's wet/dry mapping application. Usability testing is being done to establish a baseline and measure of user performance, to identify potential user design concerns to be addressed, and to improve the effectiveness of the design.

Usability test objectives are as follows:

- Identify usability and design problems within the user interface and application content. Potential error sources may include:
 - Navigation errors - failure to follow natural navigation between pages, failure to locate data entry fields.
 - Selection errors - failure to identify which field to input information, ambiguity in labels.
 - Control errors - improper use of navigation bar, improper field inputs.
- Test the application in a controlled environment with a representative user. Data from the users will be used to assess the achievement of usability goals regarding effectivity, efficiency, and interface design.
- Establish baseline performance and satisfaction of the users for application improvement and further usability testing.

The wet/dry mapping application will be launched in Arizona to a select trial group of The Nature Conservancy (TNC). The trial group will be comprised of volunteers with the TNC who have personal technology devices, such as a cell phone or tablet, which can download the application and has local storage and wi-fi capabilities. Usability testing will be completed by a small group of Michigan Technological University (MTU) students between the ages of 18 and 22, as well as a small number of individuals, ages 48 to 52. The MTU students will be randomly assigned through the use of an availability survey distributed upon determining the testing schedule. These students, once assigned, will be tested in a usability lab on April 18th and 19th, 2018. The older participants are family of one of the test administrators who fit within the expected audience of users. These participants will be tested remotely between April 14th to 21st, 2018.

Executive Summary

The usability test will be conducted with the intentions of identifying key usability concerns within the application contents. The tests will also serve as a means to establish baseline for user performance. In that regard, there are specific functions of the application which need to be tested to obtain the most inclusive results. These functions are as follows:

- Beginning a new data session
- Entering team data
- Entering waypoints

- Ending data entry
- Opening a local data file
- Submitting a complete data file
- Navigating to and from the help page
- Downloading the application

Upon reviewing this usability test protocol, including all preliminary design documentation and usability goals of the wet/dry mapping application, signed acceptance of the protocol is expected.

Methodology

Six in-person, one hour usability tests will be conducted. Each test will be proctored by one communications team member and one development team member. Per in-person test there will be one participant. Testing will be done in Michigan Tech's Walker building for the humanities, classroom 120A. All participants will be asked to arrive five minutes prior to their testing time slot with their phone/tablet. In the event that the participant does not bring a personal device the administrators will be expected to have another device to be used. Demographic information, prior technology familiarity, user satisfaction, and suggestions for improvement will be collected.

There will be several remote, one hour usability tests. Each remote test will be proctored by Taylor King, the product owner and one of the administrators. Testing will be done in the participant's home, workplace, or local environment. The participant will be responsible for having a personal device ready for use. To ensure this a reminder will be sent out prior to testing. Demographic information, prior technology familiarity, user environment, user satisfaction, and suggestions for improvement will be collected.

Participants

There are six participants for the in-person testing. They have been recruited from several classes at Michigan Tech through Dr. Robert Pastel. These participants are all students who have been incentivised to attend for points in their respective courses. They will be expected to be knowledgeable about general use of their personal phone or tablet, or a generic phone. This includes ability to access and open a Chrome web browser, ability to proficiently type with the alphanumeric keypad, and ability to navigate to a web address.

The responsibility of the participant is to attempt to complete a list of task scenarios presented to them as efficiently as possible, and to provide feedback on the applications usability and aesthetics of the interface. The participants will be asked to be completely honest regarding their thoughts and opinions, and to participate in both a pre-survey and post-survey.

Due to the nature of the audience and use scenarios of the application the in-person users will be asked to complete as much as possible of the entire list of task scenarios. It is not expected that these participants will have any familiarity with the material or task scenarios of testing. Remote participants will be asked to complete the first two task scenarios which will be taken from the complete list and will be standardized across remote participants. Remote participants will have a variety of experiences. Several are expected to be familiar with mapping and coordinate systems, several with programming, and some with have very little technological proficiency.

Training

Participants will be given a preliminary explanation of wet/dry mapping, the data involved in mapping, and the purpose of the application. The participants will also receive an overview of the testing procedures, voluntary participation guidelines, and the preliminary training instructional which will be built into the TNC's pre-training sessions. They will also be made aware of any non-functional areas within the application as it is at the time of testing. At this time the only non-functional areas to report are the inability to complete a final submission of the data and the inability to store and access local files for data revision and addition.

Procedures

Participants will complete in-person usability testing in room 120A of the Walker building on the Michigan Tech campus. They are expected to bring a personal phone or tablet. There will also be a phone available for use in the circumstance that the participant did not bring his/her personal device. The participant's interactions with the application will be monitored by the administrator seated next to the participant. The response logger will be in the room to monitor the test session and to record information provided by the participant. Additionally, the application developer will be in the room to respond to any technical errors or problems.

The administrator will brief the participants on the wet/dry mapping application and the concept of wet/dry mapping. Then, the participants will be instructed of the ethics of their participation and asked if they have any question regarding testing or their participation.

The administrator will then explain the measurements that will be taken during testing and asked to complete a short demographic and experience survey. Once testing begins the participant will be asked to complete each task individually, giving a verbal signal at the completion of each step. The response logger will, throughout the test, make note of user comments, questions, and interactions within the interface.

After completing the task list, participants will complete a post-test survey. The survey will be used to catalog user satisfaction responses and identify memorable areas of the application for improvement or as a base for improvement.

Remote participation will be completed in the participants location of choice on a personal device. The participant's interactions with the application will be recorded through the survey. All communication with remote testers will be done through email. This will limit the presence of test administrators and application developers which will further simulate the use environment. The testing schedule and materials will be distributed through email in the order outlined for in-person testing.

Roles

The roles of the people involved with the usability testing are listed below. Individuals may have more than one role and not all roles may be required for every test.

Administrator/Proctor

- Provides test overview to participants
- Defines usability and the goals of usability testing to participants
- Assists participant upon request during testing

Response Logger

- Records participant actions, reactions, and comments

Application Developers

- Provides logistic support during usability testing

Test Participants

- Assists in providing usability testing feedback

Ethics

All individuals involved in usability testing will adhere to the following ethical guidelines:

- All usability test results will be recorded without reference to the test participants name.
- The test participant may elect to stop the testing at any time and have all of his/her comments exempt from inclusion in final data analysis and reporting.

- The final results of the usability testing will be made available to all test participants upon request.

The use of these ethics is to ensure fair reporting and use of all testing data. It also maintains the privacy of all test participants and prevents against discrimination.

Usability Tasks

The usability tasks are derived from the nominal use scenarios developed prior to development of the application. The tasks have been adjusted to consider the extent of functionality currently built into the application and the timeframe of which participants will be available. For the purpose of comparison of data all tasks given to the participants will be the identical.

The application is being hosted on an application developer's personal computer, meaning participants will only be able to access the application while actively hosted. Also, due to the extensive date range for usability testing amongst our overseeing graduate students, some changes may be made prior or after testing which may impact results following testing. Also, the application is intended for offline use however the test will be conducted in an online environment and data not stored locally or on the unattached server.

Task Scenarios

All participants will complete the same tasks. The tasks have been chosen to encompass the entire data collection process typically done at one mapping session in the field. The test does not, however, incorporate any elements of the applications back-end abilities. Also, the submission and local storage elements of the application are not yet active and will, therefore, not be included in testing.

Task 1: Team Creation

The first task is to create a new team of three people. The participant will be asked to use his/her name, the administrator's name, and the application developer's name for each member of the team. He/she will also be assigned a reach name and told the direction of their data recording. Then, the participant will confirm the data is correct and navigate to the next task.

Task 2: Record Data

The second task is to start a reach and record a series of five waypoints. The participant will be given coordinates, accuracy, and additional comments to input into each data field.

Task 3: Edit Data

After completing task 2 the participant will be told to edit the third datapoint. The information to edit will be supplied by the test administrator.

Task 4: Delete Data

The participant will be asked to delete the fifth datapoint that was entered during task 2.

Task 5: Access Help Page

The participant will be asked to navigate to the help page and find information about editing waypoint information. Then, the participant is to navigate back to the page for editing data, and move to task 4.

Usability Metrics

Usability metrics are measures regarding user performance in comparison with usability goals. Scenario completion success, errors, and surveys will be used. These measures will provide a complete overview of the user interface's successful qualities and areas for improvement.

Scenario Completion

The task scenarios, outlined above, require the participant to input data similar to what would be collected in the field. The scenario will be considered completed when the participant indicates the task's goal has been accomplished or when a the participant requires significant guidance for completion, indicating an error.

Errors

Non-critical errors are those which the participant recovers from or which do not affect data entry or processing. These errors may go undetected because of this, and may indicate areas of confusion or poor instructional content. These errors, when discovered by a user, often result in confusion or frustration.

Critical errors are those in which the participant deviate from the task goal or which affect the data entry and processing of the application. These

errors most often go undetected by users and can indicate significant problems with the application instructional or the development of the application.

Survey Evaluation

A survey regarding participant satisfaction will be given to complete during or after each task, or at the conclusion of the test session. The survey will use rating scales and free-form responses.

Scenario Completion Time (Time per Task)

The time to complete each task scenario will be recorded. This does not include the time to complete the post-test survey or other related information processing at the beginning of the testing session.

Usability Goals

This section describes the usability goals for the wet/dry mapping application.

Completion Rate

The completion rate is the percentage of participants who successfully completed each task without critical errors occurring. This means the participant is able to achieve the goal of the task without assistance and without misunderstanding the goal of the task.

100% completion is the intended goal for this usability test.

Survey Measures

The surveys will measure participant opinions regarding specific tasks and the overall functionality and satisfaction with the application. This is done to assess the attitude of the participants towards the application.

On a 1-10 scale, an average participant rating of a 7 or 8 is considered satisfactory. A 9 or 10 is considered excellent. An average below 5 is considered unsuccessful.

Reporting Results

A usability test report will be provided to all individuals involved in usability testing. It will include an evaluation of the outlined usability metrics, the intended goals for usability testing, and the results of the survey information. It will also outline the specific usability problems identified through testing, ranked by severity or frequency of being reported.