TEST PLAN

Evaluation Techniques and Usability Testing

2023

MEINF UDL-EPS

CampManager

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1. Product definition

1.1 Product specification

Summer camps are supervised programs for children based on the philosophy of education in recreation. In summer camps, children (called "campers" when they join the camp) participate in lots of activities prepared and guided by the camp counsellors, a team dedicated to providing these amazing experiences.

Even though on the surface it may not look like it, preparing a summer camp as a camp counsellor is not an easy feat, and it requires lots of effort, preparation, and organisation, especially if the summer camp is a sleep-away camp, in which campers stay the night at the camp.

Therefore, it's necessary for the team of counsellors to organise a table of counsellor tasks to define who must take care of which tasks the counsellors have to do around the camp to ensure that everything goes smooth, such as serving the food in the dining halls, making sure campers are not making noise at night, making sure each camper correctly washes their dishes, and so on.

The task of creating the table of counsellor tasks has always been done by hand. A counsellor needed to create this table by making sure that no one is missing, that all tasks have assigned counsellors, that since some tasks are less desirable than others, some counsellors don't repeat it more than others, that some counsellors may not be at camp for its whole duration and considering lots of restrictions to create this table. And sometimes, after the table is done, some unexpected changes might cause the need to redo it all.

So, one of the team members, based on his experience as a camp counsellor, proposed the idea of developing an app that, given a list of counsellors, tasks, and restrictions, can automatically create the table.

However, with the supervision of the different mentors in the economic viability of this project, the team made the decision to generate a management tool for organisations focused on managing the members of the organisations that manage summer camps, with extra tools such as a social page to post information to the participants of the activities of the organisation, managing whole summer camps and the activities inside them, but also including the initial idea as a feature and not as the main focus of the app.

So, we have finally decided to create a summer camp organisation management tool that allows organisations to manage their counsellors, generate activities and even provide this tool to the parents of the children who attend their camps to offer a better service to them, providing security and making sure that their children will enjoy the activities.

1.2 Product state and problems in which to incise

Usability is a fundamental aspect in the development of mobile applications, since it influences the user experience and the effectiveness and efficiency in carrying out tasks. For this reason, it is important to carry out usability tests to identify problems and difficulties in the user's interaction with the application and to make improvements that ensure a satisfactory user experience.

The mobile app is a comprehensive and effective solution for organizations looking to improve efficiency in managing their camps and provide a better experience for participants, their parents, and staff.

Currently the application has implemented the necessary functionalities to create, manage and modify organizations, camps, and counsellors. It also has implemented the creation of new tables to assign the tasks to the counsellors. Even though the application is in an advanced state, it should be noted that small features still need to be implemented.

It is expected that once the usability test is finished and after analysing the results obtained, they can be improved on the points that developers currently classify as possible points of confusion.

2. Purpose and test objectives

2.1 The purpose of the test

CampManager is an app focused on the environment of summer camps. The system helps leisure organisations manage their activities' management tasks. The app joins together all functionalities that this type of organisations needs for their day-to-day activities. Even though it might not look like it, preparing a summer camp is not an easy task and requires a lot of effort, preparation and organisation, especially if it is a camp that spans various days in which campers spend the night in the camp. Therefore, it's necessary that the team of counsellors have their activities and timetables planned.

The app joins together all aspects related with an organisation's management, so it has a broad set of functionalities divided between the different pages of the platform. During all the development of the app, the developers detected some points in which a user could maybe get lost due to the large number of actions taken while navigating through the pages in a nested way.

For this reason, the main objective of this usability test is certificating if this hypothesis is true. That is why it has been chosen to use a semi-formal test oriented to the formulation of specific questions.

The main points in which a user could have any problem and the questions to evaluate them are:

Concern	Description	Questions
The system to create tables might be confusing	Being able to access the tables page and realize the action is not a trivial task	Can the user create a table starting on the main page?
The user might not know how to add an organisation while being in another organisation's space	The user might not know how to add an organisation while being in another organisation's space	The user might not know how to add an organisation while being in another organisation's space
The tables system is not instantaneous	The system does not instantly generate the tables, so the user might think there is an error and get nervous if the system's message is not effective.	How did the user feel when creating a table?

2.2 Test plan objectives

As observed previously, the main objective of this evaluation is putting the users to the situations where the developers detected confusing situations, this way it will be able to apply upgrades thanks to this information.

The aspects under test are based on the user's capability of a certain action, such as assessing the precision with which the users can find their objectives using their system and how good the system is at providing the users with the services to obtain their goals, so the first key property is Effectiveness. For that there will be a series of scenarios based in the previously formulated questions, in which the user will try to realize the chosen answer based on the initial conditions that the developers detected as possible confusion points.

At the same time, on top of validating that the user can complete the actions in a precise way, it is also important to evaluate that the actions can be done in an optimal time, so the key property Efficiency. This refers to the effort spent in reaching the goals while satisfying expectative. For this application, it is important because if it does not speed up and simplify the management, organisations will stick to their original management.

Finally, it is important to consider user experience. For this, evaluating the Engaging property will be useful because it raises user satisfiability, helps with product adaptation, and reduces frustration. For this study case it is vital that user experience is satisfactory, which means, they find the app easy to use and that it satisfies their needs. The app can be used by different profiles, so it needs to have satisfactory experiences for all user profiles, or else the app won't be useful to organisations. If the users don't like the app, it will be a bad investment for organisations.

3. Target audience, user profile definition and the target user sample

3.1 Target Audience

The target audience of the mobile application are organizations that create and promote summer camps for children and youth. These organizations can be businesses, schools, community groups, or other entities that offer summer camp services. This audience can be classified into the following groups:

- **Camp Managers**: These individuals are responsible for planning and organizing camps. They can use the mobile app to create and manage camp programs, schedules, activities, accommodations, and other details.

- **Monitors/Counsellors**: these users oversee supervising and coordinating the activities and programs of the camps. They can use the mobile app to access information about scheduled activities, participant lists, logistics, and other relevant details.

- **Parents**: Parents can use the mobile app to register their children for camps, make payments, receive updates, and communicate with camp organizers.

- **Camp Participants**: children and youth who attend camps can use the mobile app to access information about scheduled activities, location of facilities, camp rules and regulations, and communicate with coordinators and other participants.

Discarding features

- Users without experience in the field of summer camps: This is an application aimed at people who are related to the activity of summer camps, any inexperienced user must be ruled out.

- Legal tutors who are not interested in the children's extracurricular activities: The app offers a set of features that allow tutors to see how the activities unfold. All that person without interest should be discarded.

Non-Discarding Features

- Age: The application was not designed for a particular age range since it works in an activity in which age is indifferent.

- Gender: The application is not designed to make gender distinction.

- Technical skills: The objective of the product is to introduce this type of leisure organizations into the digital world, where many of the members do not have high knowledge.

3.2 User Profile

For the different groups of users, the focus is on the counsellor user, as they are one of the main targets of the test and the functionalities that are in the test are more oriented towards them. This group can be divided according to their age range.

User profile 1	
Age Range	16-29 years old
Characteristics	- High technology experience - Frequent use of mobile devices - Low/medium experience in the field of summer camps.

User profile 2	
Age Range	30-50 years old
Characteristics	- Medium technology experience. - Moderate use of mobile devices. - With experience in the field of summer camps.

User profile 3	
Age Range	51+ years old
Characteristics	- Low technology experience. - Reduced use of mobile devices. - With experience in the field of summer camps.

3.3 User Sample

The target audience of our application will be all those people that manage organizations in charge of creating and managing summer camps as well as those in charge of these camps, the monitors and the parents of the young people who will attend these camps.

In the case of this test, the sample of users will be focused on the counsellors. This sample is described by the following characteristics:

- Gender:
  - Men (50%).
  - Women (50%).
- Age:
  - Between 16 and 29 years old (50%).
  - Between 30 and 51 years old (40%).
  - 51+ years old (10%).
- Technological knowledge:
  - High technological level: (40%).
  - Medium technological level: (50%).
  - Low technological level: (10%).

4. Participant recruitment process

The recruitment process is one of the most important stages for a usability test. It is important that users are carefully selected to perform the test well. The recruited participants must be users who have never interacted with the system and are not familiar with it.

For the process, the first step that has been followed is the identification of the recruitment needs. The application development team identifies the characteristics and skills that are needed in the participants so that they can carry out the usability test effectively. This may include technology skills, experience managing summer camps, etc.

Then, the user profiles were identified. In our case, we focused on the monitors because is the target user sample for the test.

Once the user profiles have been chosen, the recruitment process begins using the Screener form, a questionnaire that allows to check if the future participants are valid for the test sample. In addition, as the test uses the Eye-traking methodology, the questionnaire allows us to rule out those users who, even though they may be valid due to ocular problems, are not valid.

Next, the team coordinated and organized to prepare the necessary material to carry out the usability test. Once the final candidates were selected, the details of the usability testing process were communicated to them, such as the duration of the test, the objectives and expectations, and any relevant information.

5. Methodology

In this sense, an effective methodology to carry out a usability test for the Camp Manager App involves setting clear and specific objectives, selecting representative participants from the target audience, designing relevant and realistic test scenarios, testing while observing user behaviour, evaluating the results, and making improvements to the application through iterations of usability testing.

Following this methodology, problems and difficulties in user interaction with the application can be identified and improvements can be made to ensure a satisfactory and efficient user experience in the application. Ultimately, usability testing can make the difference between an application that meets user expectations and one that doesn't.

5.1 Procedure and protocol

The participant will be taking the test while the moderator guides and follows the protocol to be done, helps the users feel comfortable and answers the doubts that they may have. Participants must sign an informed consent that acknowledges: the participation is voluntary, and it can cease at any time, and that the session will be videotaped but their privacy of identification will be safeguarded.

The test session consists in a welcoming and pre-test, the three tasks (with its pertinent post task questionnaire), and finally the post-test questionnaire. The duration of the session is around of 35 minutes.

• Welcoming and Pre-test questionnaire (5 minutes).

• Tasks Scenarios (21 minutes).

   o **Tasks 1 and post task questionnaire**: Create campaign table from main organisation page. (8 minutes)

   o **Task 2 and post task questionnaire**: Validate if the table it is created and its status (6 minutes).

   o **Task 3 and post task questionnaire**: Add a new organisation in his space while being in some organisation's space (7 minutes).

• Post-Test questionnaire. 7 minutes.

5.2 Eye-tracking

In this project, eye-tracking technology will provide additional data to fulfil the test's objectives. Heat maps and gaze maps will be used to visualize the points on the screen where the participant looks and the direction and trace of their gaze, respectively. This data will help us evaluate if our interface structure, objects, and design architecture are well-organized, enabling the user to efficiently complete task objectives. Additionally, as the user becomes more familiar with the application, their eyes should more quickly locate relevant information. This data will not only help answer these questions but will also guide changes to our user interface to improve task completion in future tests.

To track participants' gaze during the test, we will use Tobii Studio Pro software in the laboratory. Tobii is a robust program that allows us to design the study, run test sessions, observe participants' gaze in real-time, visualize results, and analyse statistics. The software can easily extract meaningful interpretations from eye movements on the application screen, provide utilities to compare different sessions, and offer an intuitive workflow to start using eye-tracking technology.

5.3 Number of participants

The number of participants that should be included in a usability test will depend on several factors, such as the budget, the time available, the scope of the project, the complexity of the application, among others. For a semi-formal test, in general, the number of recommended participants is between 10 and 20 participants.

In our case we considered that 22 users. Even though from 15 it may be enough, it is necessary to have a margin to avoid last minute absences or if some participants present problems with the eye-tracking.

Estimated number of participants needed, it is necessary distribute this number in function of the user sample previously defined.

- Gender:
  - Men: 11 participants.
  - Women: 11 participants.
- Age:
  - Between 16 and 29 years old: 11 participants.
  - Between 30 and 50 years old: 9 participants.
  - 51+ years old: 2 participants.
- Technological knowledge:
  - High technological level: 9 participants.
  - Medium technological level: 11 participants.
  - Low technological level: 2 participants.

5.4   Description of the tasks to be evaluated

The objective of this section is to define the different tasks that the users must solve throughout the session. These tasks are based on the questions previously formulated in the Purpose and test objectives section.

- **Tasks 1: Create campaign table from main organisation page**

    o **Description:** Create may be a not trivial task, the user must be taking a lot of actions after creating a table. The objective of this task is check if the user can find the tables creation panel and create a new table.

    o **Scenario:** You are a counsellor who is on the main screen of the organization, and you want to create a new table for a 2023 campaign with the following data:

    - **Name:** weekend 1

    - **Counsellors:** Alejandro, Carlos, Joel, Jordi, Dídac, Joan, Josep Maria.

    - **Days:** Friday, Saturday, and Sunday.

    - **Tasks:**

Task name	Min assigned persons	Max assigned persons
Cleaning	2	3
Dining room	3	5

- **Task 2: Validate if the table is created and its status**

    o **Description:** The automatic generation of the tables takes a while, so when a table is created it cannot be displayed directly, to solve this the application shows an information message. The objective of this tasks validates if the user can see the message, or it is necessary to remodel the format of the message.

    o **Scenario:** You are a counsellor that has just created a "week 1" table and you want to check if it has been created. You are on the campaign tables screen, look for the "week 1" table and check its status.

- **Task 3: Add a new organisation in his space while being in some organisation's space**.

  o **Description:** The user can add a new organisation in its space. The app includes a direct button that links to the user organisation space and here the user can enter a new organisation. The main propose of this task is check if the user can see the button and check the user's failures during the tasks.

  o **Scenario:** You are a counsellor who volunteers with multiple organizations and today you have joined a new organization. You have the invitation code, and you want to join the organization, but you are in the space of another organization. Your task is to go to your organization space and enter the organization using the code AB123 and select the user Jordi.

6. Test environment and equipment

The usability test will be carried out in the usability laboratory of the Polytechnic School (Jaume II number 69, Lleida), located in room 3.03. Within the laboratory we can find two differentiated areas:

- **User space**: Space in which the user performs the test together with the facilitator who guides him throughout the process. This space has the following equipment:

    o **A computer**: Used to present the app to the participants and record eye movements.

    o **Tobii eye-tracker**: This device is placed in front of the user and records the movements of their eyes. It is usually placed at a certain distance from the user so that they can see the screen comfortably and the eye-tracker's camera can accurately record eye movements.

    o **Camera Microphone**: Used to capture the user expressions, corporal language, and user comments during the test session (qualitative data). This information is collected with the consent of the user using the Informed consent form (Located in the Annexes: Informed consent form).

- **Observers space**: Space where the team monitors the user throughout the test. The equipment of this area is the following:

    o **A computer:** Used to monitoring the test.

    o **Video recording studio (Tobii Studio software):** Tool to monitor collect user data during the session.

7. Metrics to be handled (data to be registered)

The aspects under test are based on the user's capability of a certain action, such as assessing the precision with which the users can find their objectives using their system and how good the system is at providing the users with the services to obtain their goals, so the first key property is Effectiveness. For that there will be a series of scenarios based in the previously formulated questions, in which the user will try to realize the chosen answer based on the initial conditions that the developers detected as possible confusion points.

At the same time, on top of validating that the user can complete the actions in a precise way, it is also important to evaluate that the actions can be done in an optimal time, so the key property Efficiency. This refers to the effort spent in reaching the goals while satisfying expectative. For this application, it is important because if it does not speed up and simplify the management, organisations will stick to their original management.

Finally, it is important to consider user experience. For this, evaluating the Engaging property will be useful because it raises user satisfiability, helps with product adaptation and reduces frustration. For this study case it is vital that user experience is satisfactory, which means, they find the app easy to use and that it satisfies their needs. The app can be used by different profiles, so it needs to have satisfactory experiences for all user profiles, or else the app won't be useful to organisations. If the users don't like the app, it will be a bad investment for organisations.

The metrics to be used will be defined below.

1. **Effectiveness**: One of the main objectives of this evaluation is to verify if the user can complete the tasks classified as problematic, therefore it is important to count the number of tasks in which the user has problems. Thus, the main metrics to use are:

- Percentage of tasks completed correctly.

- The success rate in completing a task.

This metrics help to confirm if the usability issues reported by developers are true and detect the tasks that the users have more problems to solve.

2. **Efficiency**: In addition to measuring the effectiveness of a task, it is important to consider the effort taken by the user, in this way cases in which the user luckily manages to complete the task can be ruled out. Furthermore, this type of metric can help to understand the reasons why the user is not able to achieve a task.

- Time required to complete a task. The dispersion time should be analysed, and the task don't must be required.

  - In addition, a maximum value of theoretical time is defined by which, if this is exceeded, the tare is given as not completed. These values are defined in the following table:

Task	Theorical Max time
Task1	5 mins
Task2	2 mins
Task3	4 mins

- Number of errors made during the task.

3. **User satisfaction**: Another important aspect to deal with will be to review the experience that the user has had using our application to detect any type of discomfort or shows a positive attitude with the use of the application:

- Percentage of users who think that their experience has been satisfactory at the end of all tasks.

- Number of positive/negative expressions/comments during the development of a task.

With these metrics it is possible to measure if the user experience in the tested tasks is good and to detect possible false success results due to the user's luck after performing a random action.

4. **Eye-tracking metrics**: Finally, it will be reviewed how the user interacted with the screen through his view. With this metric you can get information about which interface elements the user is fixing, for how long and in what order.

- Average duration of the user fixing a single point on the screen.

- Percentage of users looking at an area of interest.

- Scan path duration (In order to conclude that the user spends a lot of time looking for the next action).

In this way, it will be possible to detect the points that a user looks at the most and detect areas with little interest. This information can help to understand the reasons by which the user has problems to solve the task.

8. List of complementary documents

8.1 Screener

Hello, the Camp Manager application software development team is looking for camps monitors to participate in a usability test to test their application.

The team is recruiting users to perform a usability test. The objective, improve the usability of the management part of the application, for this reason, we are looking for people with experience as volunteers in some summer camp or leisure activities. It is necessary that you answer these questions as honestly as possible in the following questions to draw the necessary conclusions to know if you will be suitable or not to take the test.

General questions

1. Could you define your gender?

   ❑ Male.

   ❑ Female.

   ❑ Other.

2. Have you ever participated in a usability test?

   ❑ Yes.

   ❑ No.

3. Could you define your age range?

   ❑ 18-25.

   ❑ 26-39.

   ❑ 40-59.

   ❑ 60-74

   ❑ 75 and older.

Eye-tracking questions

4. Do you wear contacts or eyeglasses to read the computer screen?

❑ Yes. [CONTINUE]

❑ No. [SKIP 8]

5. Are your glasses for:

❑ Reading only. [CONTINUE]

❑ Seeing distant objects only. [CONTINUE]

❑ Both (Do you wear bifocals, trifocals, layered lenses, or regression lenses). [TERMINATE]

6. Can you read a computer screen and the Web without difficulty with your contacts and/or eyeglasses on?

❑ Yes. [CONTINUE]

❑ No. [TERMINATE]

7. Do you have cataracts?

❑ Yes. [TERMINATE]

❑ No. [CONTINUE]

8. Do you have any eye implants?

❑ Yes. [TERMINATE]

❑ No. [CONTINUE]

9. Do you have Glaucoma?

❑ Yes. [TERMINATE]

❑ No. [CONTINUE]

10. Do you use a screen reader, screen magnifier or other assistive technology to use the computer and the Web?

❑ Yes. [TERMINATE]

❑ No. [CONTINUE]

11. Are either of your pupils permanently dilated?

❑ Yes. [TERMINATE]

❑ No. [CONTINUE]

Computer Expertise

12. What are typical activities you do on the mobile?

❑ Gaming/entertainment.

❑ Reading news.

❑ Shopping/banking.

❑ Texting.

❑ Other.

13. About how many hours per week do you spend on the mobile?

❑ 0h-10h per week.

❑ 11h-25h per week.

❑ +26h per week.

14. What mobile operating system do you use?

❑ iOs.

❑ Android

❑ Other

Domain Knowledge

15. Are you interested in summer camp activities?

❑ Yes.

❑ No.

16. Have you worked or are you currently working as a monitor in an organization?

❑ Yes.

❑ No.

17. Have you worked or are you currently working as an organizer of activities?

❑ Yes.

❑ No.

18. Do you have a minor in your charge?

❑ Yes.

❑ No.

19. Are you interested in enrolling the minors under your care in a summer camp?

- ❑ Yes.
- ❑ No.

20. Have you previously used similar applications for the management of activities and events of camping organizations?

- ❑ About once or twice.
- ❑ A couple of times.
- ❑ Often/daily.
- ❑ Never.

21. Would you use a mobile application to inform you about the events and activities of a camp?

- ❑ Yes.
- ❑ No.

22. Would you like to have access to the information of the camp and of your child in real time through the mobile application?

- ❑ Yes.
- ❑ No.

Thank you for completing our questionnaire. We greatly appreciate your time and consideration!

8.2 Pre-test questionnaire

First of all, thank you for joining to the usability test of CampManager. We are thankful for your interest about the application and your participation. Before starting the test, we want you to answer the following questions.

1. How old are you?

- ❑ 18-25.
- ❑ 26-39.
- ❑ 40-59.
- ❑ 60-74.
- ❑ 75 and older.

2. Could you define your gender?

- ❑ Male.
- ❑ Female.
- ❑ Other.

3. Have you ever worked as a camp monitor?

- ❑ Yes.
- ❑ No.
- ❑ No, but I would like to.

4. About how many hours per week do you spend on the mobile?

- ❑ 0h-10h per week.
- ❑ 11h-25h per week.
- ❑ +26h per week.

5. Have you ever used a management and planning app?

    ❑ Yes.

    ❑ No.

In case of Yes, give your opinion on applying this type of application in the camp environment.

Thank you for completing our questionnaire!

8.3 Post-task questionnaire

Complete these few questions about your feels for this task.

Instructions: For each of the following statements, mark one box that best describes your reactions to the application today using the following scale:

I was able to complete the task.

❑ Yes (continue)   ❑ No (please, explain the reasons)

	Strongly disagree				Strongly agree
The task was easy	1	2	3	4	5
I think I did the task correctly	1	2	3	4	5
The structure of the interface has helped me to solve the task.	1	2	3	4	5
I needed little effort to solve the task	1	2	3	4	5
The task was well defined, and I understood exactly what I had to do	1	2	3	4	5
I felt satisfaction after completing the task	1	2	3	4	5

Thank you for completing our questionnaire!

8.4 Post-test questionnaire

Thank you for doing the task!

Here we attached some final questions you to answer:

	Strongly disagree				Strongly agree
I think that I would like to use this system frequently	1	2	3	4	5
I found the system unnecessarily complex	1	2	3	4	5
I thought the system was easy to use	1	2	3	4	5
I think that I would need the support of a technical person to be able to use this system	1	2	3	4	5
The interface has a clear and easy to understand terminology	1	2	3	4	5
I thought there was too much inconsistency in this system	1	2	3	4	5
The elements with which you have interacted have been easily accessible	1	2	3	4	5
I found the system very cumbersome to use	1	2	3	4	5
I felt very confident using the system	1	2	3	4	5
I could get going with this system	1	2	3	4	5

Thank you for completing our questionnaire!

8.5 Informed consent form

Welcome and thank you for participating in this study. To guarantee the fulfilment of your privacy and security, we provide you this explaining document:

In this session, a software tool is going to be evaluated, this by no means implies the evaluation of the person. This session has the objective of evaluating the software with the help of potential users, such as testing the main features or evaluating if the software is intuitive.

This document has the purpose of informing the user that a video and audio recording are going to be done, to help the evaluating team with a posterior analysis of the recordings. Furthermore, the user has the right of quitting the test in any moment without any justification. As stated by Organic Law 3/2018, of General Data Protection Regulation, your permission is needed to do the recording already mentioned.

All the data extracted with these recordings will be used internally by the team members and with the purpose stated previously. The recording will not be published or used for any other reason, and it will be destroyed five years after the project deployment. If you agree with all the stated previously, please fill the section below.

I, …...................…...…..........., confirm that I have read, and I understand all the points of this document and I give my authorization to record the today's test sessions with the purpose described previously. I authorise to record:

❑ Audio

❑ Video

❑ Eye-Tracking

Signature:

Date: …...,

Thank you for the participation!