

**Peaceful Banana**  
**Usability Test Plan**

**Version: 1.0**

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## 2 Document Overview

This document describes a test plan for conducting a usability test during the development of *PeacefulBanana*. The goals of usability testing include establishing a baseline of user performance, establishing and validating user performance measures, and identifying potential design concerns to be addressed in order to improve the efficiency, usability, and end-user satisfaction.

The usability test objectives are:

- To determine design inconsistencies and usability problem areas within the user interface and content areas. Potential sources of error may include:
  - Navigation errors – failure to locate functions, excessive actions to complete a function, failure to follow recommended screen flow.
  - Presentation errors – failure to locate and properly act upon desired information in screens, selection errors due to labeling ambiguities.
  - Control usage problems – improper toolbar or entry field usage.
- Exercise the application or web site under controlled test conditions with representative users. Data will be used to assess whether usability goals regarding an effective, efficient, and well-received user interface have been achieved.
- Establish baseline user performance and user-satisfaction levels of the user interface for future usability evaluations.

The *PeacefulBanana* application is developed with developers in mind, and will be evaluated on fellow students in the field of Computer Science. The testing will occur in a controlled environment in a private room.

## 3 Executive Summary

The *PeacefulBanana* tool is aimed towards aiding reflection for developers through multiple representations of relevant data. The tool integrates with Github, which features version-tracking support and several useful tools for version control. The tool provides an additional layer of features aimed towards aiding reflection in an agile development project.

The tool has many different possible scenarios, but we have identified two main scenarios:

### **Scenario 1 – Individual use on a daily basis**

At the end of each work day, users entering the web-application will receive a notification with a request to do the daily notification. This daily notification consists with a summary of their individual activity the last 24 hours for the current active team. The user are prompted to input today's mood, their top 2 contributions and their top 2 points to improve on. These experiences can then be shared with the team, and is stored for later review.

### **Scenario 2 – Team use after each iteration**

Users will be using the tool as part of the two-week reflection sessions that are present in many agile methodics. The team will use the tool to indicate how the project has been progressing over the last iteration, tightly coupled with one or several identified milestones. The tool gathers relevant data and presents it using multiple representations in order to revisit experiences and trigger reflection in the users. Examples of such data are tagclouds generated based on the most active issues in milestones, activity graphs and mood trajectories.

If any notes from scenario 1 has been shared, these will also be available to the team. This allows the team to get even more details surrounding certain issues in the iteration, and create a discussion around the experiences made by the team. Revisiting these experiences and comparing the views of the different members may trigger reflection and users learn from these experiences.

We conduct this usability test in order to answer several important questions, regarding these scenarios. Is the application easy to use, and can users achieve their goals in a timely manner?

Also, does the tool present data and trigger reflection for the user? Feedback from the usability test will further aid design and help identify problem areas that might cause problems for users. Since the participants are all computer science experts, and are familiar with reflection we hope to receive valuable input regarding these concepts.

## **4 Methodology**

The usability test will be conducted on 5 participants. User-interaction with the PeacefulBanana tool will be done through an Internet Browser. We will have the users answer an entrance questionnaire, in order to collect demographic information. During the usability test we will take notes of the user's problems and concerns. When the test is completed we will have participants come with suggestions on improvement. Finally participants will answer a SUS form, which consists of 10 questions designed to measure user satisfaction.

## 4.1 Participants

As mentioned we expect at least 5 participants. As the *PeacefulBanana* tool will be used with developers, which all have computer science background, participants will be fellow master students on the Computer Science field.

These participants will all have a background from Computer Science, and will be familiar with usability testing and also have experience with the notion of reflection.

The participants' responsibilities will be to attempt to complete a set of representative task scenarios presented to them in as efficient and timely a manner as possible, and to provide feedback regarding the usability and acceptability of the user interface. The participants will be directed to provide honest opinions regarding the usability of the application, and to participate in post-session subjective questionnaires and debriefing.

## 4.2 Procedure

Participants will take part in the usability test in a private room at the university. A computer with the *PeacefulBanana* web application and supporting software will be used in a typical working environment. The participant's interaction with the application will be monitored by the facilitator seated in the same room. In addition to the facilitator, notes will be taken by a member of the team.

The facilitator will brief the participants on the web application and instruct the participant that they are evaluating the application, rather than the facilitator evaluating the participant. Participants will sign an informed consent that acknowledges: the participation is voluntary, that participation can cease at any time, and that their privacy of identification will be kept safe. The facilitator will ask the participant if they have any questions.

Participants will complete a pretest demographic and background information questionnaire. The facilitator will explain that the amount of time taken to complete the test task will be measured and that exploratory behavior outside the task flow should not occur until after task completion. At the start of each task, the participant will read aloud the task description from the printed copy and begin the task. Time-on-task measurement begins when the participant starts the task.

The facilitator will instruct the participant to 'think aloud' so that the facilitator may observe and take notes of user behavior and user comments.

After all task scenarios are attempted, the participant will complete the post-test satisfaction questionnaire.

## 5 Roles

The roles involved in a usability test are as follows. An individual may play multiple roles and tests may not require all roles.

### Facilitator

- Provides overview of study to participants
- Defines usability and purpose of usability testing to participants
- Assists in conduct of participant and observer debriefing sessions
- Responds to participant's requests for assistance

### Test Observers

- Silent observer
- Takes notes of identified problems, concerns, coding bugs, and procedural errors.
- Serve as note takers.

### Test Participants

- Provides overview of study to participants
- Defines usability and purpose of usability testing to participants
- Assists in conduct of participant and observer debriefing sessions
- Responds to participant's requests for assistance

## 5.1 Ethics

All persons involved with the usability test are required to adhere to the following ethical guidelines:

- The performance of any test participant must not be individually attributable. Individual participant's name should not be used in reference outside the testing session.
- A description of the participant's performance should not be reported to his or her manager.

## 6 Usability Tasks

The usability tasks were derived from test scenarios developed from user-stories, shortly introduced above. Due to the short time for which each participant will be available, the tasks are the most common and relatively complex of available functions. The tasks are identical for all participants in the study.

The application will be tested in a development environment and databases will be populated during use, and are not pre-populated. This will ensure a similar experience as to what the users get when they first use *PeacefulBanana*. The web application will run on a local computer, and not on a dedicated server as it will when deployed. This and the possible extra overhead from development mode, may impact performance slightly in a negative way.

**Tasks:**

Here are the most common and important tasks related to the two scenarios, the recruited experts will try to perform. These tasks are the most typical in the overall scope of tasks that the application will support.

**Context:**

PeacefulBanana is a tool intended to promote reflection and allow for revisiting and learning from previous experiences. *PeacefulBanana* integrates with and collects data from the version-control system *Git*.

**Scenario 1 tasks:**

**Task 1:** You start the application for the first time, and want to login, link your account with Github and set an active repository.

**Task 2:** View your notifications.

**2.2** – Find the “Congratulations” notification and archive it. Find the archive and see if the notification was indeed archived.

**Task 3:** Find the “Reminder: Daily Reflection” note and perform the daily summary.

**3.2** – Find a daily summary note and share it. Verify that it has indeed been shared.

**3.3** – Find your mood graph

**Scenario 2 tasks:**

**Task 4:** Create a team with the name “Tuttifrutti” and your previously chosen repository.

**4.2** – Find your created team and set it to active.

**4.3** – Identify the members on your team and their role.

**Task 5:** Find all your repositories’ milestones.

**5.2** – Identify your overdue milestones.

**5.4** – Find your repositories issues

**5.4** – Find issue #17 . What is the status of this issue? When was it opened and when was it closed?

**Task 6:** Generate a tagcloud for your current chosen repository.

**6.2** – Identify the most used *tag* for your team and yourself

**6.3** - Generate a tagcloud for your current chosen repository.

**6.4** – Find the commit impact for your repository.

## **7 Usability Metrics**

Usability metrics refers to user performance measured against specific performance goals necessary to satisfy usability requirements. Scenario completion success rates, error rates, and subjective evaluations will be used. Time-to-completion of scenarios will also be collected.

### **7.1 Scenario Completion**

Each scenario will require, or request, that the participant obtains or inputs specific data that would be used in course of a typical task. The scenario is completed when the participant indicates the scenario's goal has been obtained (whether successfully or unsuccessfully) or the participant requests and receives sufficient guidance as to warrant scoring the scenario as a critical error.

### **7.2 Critical Errors**

Critical errors are deviations at completion from the targets of the scenario. Obtaining or otherwise reporting of the wrong data value due to participant workflow is a critical error. Participants may or may not be aware that the task goal is incorrect or incomplete.

Independent completion of the scenario is a universal goal; help obtained from the other usability test roles is cause to score the scenario a critical error. Critical errors can also be assigned when the participant initiates (or attempts to initiate) an action that will result in the goal state becoming unobtainable. In general, critical errors are unresolved errors during the process of completing the task or errors that produce an incorrect outcome.

### **7.3 Non-critical Errors**

Non-critical errors are errors that are recovered from by the participant or, if not detected, do not result in processing problems or unexpected results. Although non-critical errors can be undetected by the participant, when they are detected they are generally frustrating to the participant.

These errors may be procedural, in which the participant does not complete a scenario in the most optimal means (e.g., excessive steps and keystrokes). These errors may also be errors of confusion (ex., initially selecting the wrong function, using a user-interface control incorrectly such as attempting to edit an un-editable field).

Noncritical errors can always be recovered from during the process of completing the scenario. Exploratory behavior, such as opening the wrong menu while searching for a function, will be coded as a non-critical error.

### **7.4 Subjective Evaluations**

Subjective evaluations regarding ease of use and satisfaction will be collected via questionnaires, and during debriefing at the conclusion of the session. The questionnaires will utilize free-form responses and rating scales.



## 7.5 Scenario Completion Time (time on task)

The time to complete each scenario, not including subjective evaluation durations, will be recorded.

## 7 Usability Goals

The next section describes the usability goals for *PeacefulBanana*

### 7.1 Completion Rate

Completion rate is the percentage of test participants who successfully complete the task without critical errors. A critical error is defined as an error that results in an incorrect or incomplete outcome. In other words, the completion rate represents the percentage of participants who, when they are finished with the specified task, have an "output" that is correct. Note: If a participant requires assistance in order to achieve a correct output then the task will be scored as a critical error and the overall completion rate for the task will be affected.

**A completion rate of 100% is the goal for each task in this usability test.**

### 7.2 Error-free rate

Error-free rate is the percentage of test participants who complete the task without any errors (critical **or** non-critical errors). A non-critical error is an error that would not have an impact on the final output of the task but would result in the task being completed less efficiently.

**An error-free rate of 80% is the goal for each task in this usability test.**

### 7.3 Time on Task (TOT)

The time to complete a scenario is referred to as "time on task". It is measured from the time the person begins the scenario to the time he/she signals completion.

### 7.4 Subjective Measures

Subjective opinions about specific tasks, time to perform each task, features, and functionality will be surveyed. At the end of the test, participants will rate their satisfaction with the overall system. Combined with the interview/debriefing session, these data are used to assess attitudes of the participants.

## 8 Problem Severity

To prioritize recommendations, a method of problem severity classification will be used in the analysis of the data collected during evaluation activities. The approach treats problem severity as a combination of two factors - the impact of the problem and the frequency of users experiencing the problem during the evaluation.

## 8.1 Impact

Impact is the ranking of the consequences of the problem by defining the level of impact that the problem has on successful task completion. There are three levels of impact:

- High - prevents the user from completing the task (critical error)
- Moderate - causes user difficulty but the task can be completed (non-critical error)
- Low - minor problems that do not significantly affect the task completion (non-critical error)

## 8.2 Frequency

Frequency is the percentage of participants who experience the problem when working on a task.

- High: 40% or more of the participants experience the problem
- Moderate: 20% - 39% of participants experience the problem
- Low: 20% or fewer of the participants experience the problem

## 8.1 Problem Severity Classification

The identified severity for each problem implies a general reward for resolving it, and a general risk for not addressing it, in the current release.

**Severity 1** - High impact problems that often prevent a user from correctly completing a task. Reward for resolution is reduced redevelopment costs.

**Severity 2** - Moderate to high frequency problems with moderate to low impact are typical of erroneous actions that the participant recognizes needs to be undone. Reward for resolution is typically exhibited in reduced time on task.

**Severity 3** - Either moderate problems with low frequency or low problems with moderate frequency; these are minor annoyance problems faced by a number of participants. Reward for resolution is typically exhibited in reduced time on task and increased data integrity.

**Severity 4** - Low impact problems faced by few participants; there is low risk to not resolving these problems. Reward for resolution is typically exhibited in increased user satisfaction.

## 9 Reporting Results

The Usability Test Report will be provided at the conclusion of the usability test. It will consist of a report and/or a presentation of the results; evaluate the usability metrics against the pre-approved goals, subjective evaluations, and specific usability problems and recommendations for resolution..