University of Victoria

FACULTY OF ENGINEERING

**Room Raider**

A social app for students

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# 1.0 Introduction

The following report is a summary of findings from the usability study performed on the Room Raider prototype application created by Hop-Scotch Mafia. Room Raider is a project management tool that allows people to create groups within the app and provides a chat interface, URL sharing resource, and a medium to book a study room on the Uvic campus for group meetings. The purpose of the app is to make it easier for university students who are in a group to interact with each other and organize group activity.

# 2.0 Objectives

The evaluations performed on Room Raider aimed to gather critically important data on the app’s usability, effectiveness, and overall functionality. The objectives of this study were the following:

* Identify, eliminate, or mitigate issues that lead to poor task completion times and/or unsuccessfully completed tasks.
* Ensure that the current user interface provides the most intuitive and rewarding experience possible for the user.
* Identify structurally deficient interface design.
* Explore options for improved user experience by means of qualitative data gathered from the participants.

The prototype, while not fully functional, allowed for essential interactions between the user and system. Some of the prototype’s functions include: viewing, creating, and managing groups from the home screen; chatting with group members in the chat room; viewing a URL history for each group’s chat; and booking rooms using Room Raider’s customized room booking interface. The results from this user evaluation study will be used to improve both the look and functionality of the Room Raider application.

# 3.0 Research Methods

## 3.1 Participants

A total of five participants completed the usability evaluations, with every developer evaluating one participant. Because the app is designed specifically for use at the University of Victoria, only participants who were either current or former Uvic students were considered. Three of the participants were female while the other two were male, and their ages ranged from 20 to 29. To ensure the greatest accuracy of results, a broad range of users from various faculties were tested: one from the faculty of engineering, two from arts, and two from the sciences were selected. All participants owned smartphones at the time of the study, and as such were familiar with the general look and behaviour of mobile applications.

## 3.2 Tasks

Each participant was asked to complete 8 tasks, which were determined beforehand by the developers and designed to test every aspect of Room Raider’s interface. The tasks were as follows:

1. *Register a username and password with the system, then log out.*
2. *Log in to the system.*
3. *From the main page, create a group (Study group #256).*
4. *Once the group has been created, add users to “Some group I own”.*
5. *From the main page, simulate chat with users in CSC 225.*
6. *From the main page, search for the URL sent by Jim on December 1st, 2015.*
7. *From the main page, book a study room for February 29th, 2015 from 7:00 to 9:20 in ECS 116.*
8. *From the main page, delete “some other group”.*

## 3.3 Setting

Each evaluation was performed in a closed environment free from distraction to ensure the most accurate data, as well as the comfort of the user. Due to the online nature of the prototype, it was necessary for the evaluations to be performed on a computer; all participants used a PC to complete the assigned tasks. The sole point of interaction between the participant and the prototype was the mouse, as all the values were hardcoded into the prototype and did not require user input.

## 3.4 Measures

Quantitative measures for each task included the time to complete, the number of times the back button was used in error, the number of times the participant expressed distress/frustration, and a binary success/failure report. Additionally, users were asked to rate Room Raider’s usability on a 1-10 scale. Qualitative data was also gathered in the form of three open ended questions, copies of which can be found in the appendix.

## 

## 3.5 Procedure

Our research consisted of two portions, and employed both co-discovery and question asking data collection techniques:

* **Stage one**: each participant was asked to complete the 8 tasks described above, while the researcher recorded various data for each task.
* **Stage two**: the participants were asked follow up questions regarding their experience with Room Raider in order to gather qualitative data.

Each session began with the researcher welcoming the participant, and thanking them for participating in the study. At this point the participant was asked to read and sign the consent form (a copy can be found in the appendix), before the evaluation began. Next, the researcher recorded the start time for the study, and exposed the participant to the interface for the first time. By design, the participants were not given any time to practice with the user interface beforehand. This was preferred, as the developers felt this would be the best test of usability for Room Raider’s interface. The researcher then gave the participant their first task to complete, and began a timer. As the participant was performing each task, the researcher recorded various qualitative metrics. This format was continued for tasks 2-8, at which point the researcher asked a few follow up questions before thanking the participant once again and ending the session. The average time to complete the usability study was 16 minutes.

# 4.0 Results

## 4.1 Quantitative

After performing the usability evaluations, the following data was gathered:

* In order of fastest → slowest to complete, the tasks were:
  + Log in, Chat, Create Group, URL Search, Leave Group, Register, Book Room, Add Users.
* The fastest task to perform was logging in to the system with an average of 5.4 seconds, followed by chatting with group members at 7.8 seconds.
* The longest task to perform was adding users to a group, taking 38.4 seconds on average. One participant took 98 seconds to complete this task.
* The most the back button was used in error was 2 times, while completing the add users task. It was also used once while performing the URL history task and once while booking a room.
* Participants expressed the most distress while registering and adding users, totalling 4 and 14 “expressions” of distress, respectively.
* There was a 100% success rate for task completion among all evaluations.
* The app was given an average usability rating of 7.4 / 10 by the participants.

## 4.2 Qualitative

When asked, 80% of participants said that they enjoyed using Room Raider, citing it’s simple interface, chat feature, and the dark background. The negative feedback we received from this question was mostly due to the hard coded nature of the prototype, and included the buttons being difficult to press, overall inoperability of some of the functions (such as scrolling), and the colour scheme chosen for the buttons. One of the participants said they would like to see the added feature of currently active/inactive group members in chat.

# 5.0 Discussion

## 5.1 Assumptions

Several assumptions were made regarding this study and its participants. First, the researchers assumed that all participants had at least some experience with mobile applications and their general functionalities. Second, it was presumed that all participants had previously used the current University of Victoria room booking system due to them all being current or former Uvic students, and as such had something to compare Room Raider against.

## 5.2 Limitations

While we were able to gather a large amount of useful data from the usability study, the limitations should also be mentioned. First, the study consisted of a total of 5 participants, which is a very small sample size and certainly not enough people to gather significant quantitative data. Should this app be developed further, it would be largely beneficial to redo this usability study with a minimum sample size of 20 students. The second limitation was with the prototype itself. The developers chose to create the prototype using a popular prototyping tool, however, the tool chosen was not designed specifically for mobile applications and did not allow for several aspects of the application, such as inputting data with the keyboard and fully functional buttons, on many of the screens. The limited functionality, while enough to perform the tasks assigned, created a partially incomplete feel and distracted users from the key exercises which almost certainly had an effect on the gathered data.

## 5.3 Suggestions for Improvement

As expected, the results of the usability study were both enlightening and informative. Some key aspects of the interface were clearly more intuitive than others and do not need much further improvement, such as logging in to the system, chatting with group members, and searching for old URLs. However, a few of the tasks took much longer to complete than anticipated, most notably the ‘add users to a group’ task. The primary suspect for this is the ambiguity of the “Group Management” page. The icon used to show group ownership was clearly not as intuitive as the developers had intended, and the choice to use a “Send Invitations” button rather than “Add Members” was, in hindsight, not a good design choice. An improvement for this would be to change the icons used on the “Group Management” page, as well as changing the text on the “Send Invitations” button.

A second major flaw discovered from the usability evaluations was the overly complex log-out button. Rather than a simple text button, the developers opted for a log-out icon displaying an exit sign. Participants of the study had difficulties understanding the intended use for this button, or the fact that it was a button at all and not simply part of the background. Future versions of Room Raider should replace the current icon with a text-based one.

Yet another task that took longer than anticipated was task 3, which asked users to create a study group. While the participants had no difficulty navigating to the “Group Creation” page, the button to create the group once all information had been entered did not clearly indicate that it would have the desired effect of creating a group. An easy fix for this is to change its current label from “Send Invitations” to “Create Group”.

A few other changes are recommended from the qualitative data gathered during the study, including: changing the colour scheme to be more in line with good design principles (fewer colours, increase readability and cohesiveness), simplifying the layout, adding a ‘currently active’ list to the chat interface, and moving the prototype to a better mobile application prototyping platform to increase fidelity and fluidity of operations.

With respect to the study's objectives, the developers feel that while a few tasks did have less-than-satisfactory completion times, the data gathered will produce effective changes that will mitigate these issues in further iterations of the application. Additionally, moving to a better prototyping platform should provide a better, more realistic experience for the user in later evaluations. The interface should also be simplified as was stated above. Structurally, Room Raider’s interface is satisfactory, but that should not deter from further improvement by the developers.

In conclusion, this usability study was a good first step in meeting our objectives, but there is much more to be done before Room Raider is ready for public release. Even though there was a 100% success rate for task completion, implementing the recommended changes should bring down the excessively high completion time of the add users task, as well as offset many other difficulties the participants had with the prototype itself. The qualitative data obtained was especially informative, and should be given a high priority when implementing future changes to the Room Raider interface.

# 6.0 Appendix

## 6.1 Consent form

## Consent Form

**For Participation in the Study Entitled:**

**“Designing and Evaluating a Study Group Application”**

You are being invited to participate in a study entitled *Designing and Evaluating a Study Group Application*that is being conducted byHop-Scotch Mafia. You may contact Konrad Schultz by email at schultzk@uvic.ca if you have further questions.

The purpose of this research project is to design and evaluate the user interface of a simple group forming application. You will be interviewed about your previous experiences with study groups and the tools you used to communicate.

You will be asked to answer a series of questions about your experience with group study, How often you work in groups, the applications you like, and new features you would like to have. Your participation should require about 10 minutes of your time. The results will be reported in a project report for SENG 310 in the Faculty of Engineering at the University of Victoria.

Your participation is completely voluntary and you can withdraw from the study at any time, without explanation. You have the right to refuse to answer **any** questions for any reason.

Any data collected in the study will remain confidential; interview results and questionnaires will be kept in a locked filing cabinet in a locked office. Only the principal

and co-investigators (Jim Galloway and Jakob Roberts) will have access to the data. Your name will not be attached to any published results, and your anonymity will be protected by using code numbers to identify results obtained from individual subjects.

Whether you participate or choose not to participate will have no bearing on your

grade / employment status / academic standing / job / services received.

**Signature of participant: Researcher:**

**Date: Phone:**

***A copy of this consent will be left with you, and a copy will be taken by the researcher.***

## 6.2 Research Sheet

Name of Participant: \_\_\_\_\_\_\_\_\_\_\_\_\_ Age: \_\_\_\_\_ M / F Start time:

Name of Researcher: \_\_\_\_\_\_\_\_\_\_\_\_\_ End time:

**STAGE ONE: Tasks to complete**

*Each task should be performed starting from the specified start screen. All input is simulated.*

1. Register a username and password with the system, then log out.

*Time to complete: \_\_\_\_*

*Number of times back button was used (in error):*

*Number of times the participant expresses distress:*

*Success Failure*

2. Log in to the system.

*Time to complete: \_\_\_\_*

*Number of times back button was used (in error):*

*Number of times the participant expresses distress:*

*Success Failure*

3. From the main page, create a group (Study group #256).

*Time to complete: \_\_\_\_*

*Number of times back button was used (in error):*

*Number of times the participant expresses distress:*

*Success Failure*

4. Once the group has been created, add users to “**Some group I own**”.

*Time to complete: \_\_\_\_*

*Number of times back button was used (in error):*

*Number of times the participant expresses distress:*

*Success Failure*

5. From the main page, simulate chat with users in **CSC 225.**

*Time to complete: \_\_\_\_*

*Number of times back button was used (in error):*

*Number of times the participant expresses distress:*

*Success Failure*

6. From the main page, search for the URL sent by **Jim** on **December 1st, 2015.**

*Time to complete: \_\_\_\_*

*Number of times back button was used (in error):*

*Number of times the participant expresses distress:*

*Success Failure*

7. From the main page, book a study room for **February 29th, 2015** from **7:00 to 9:20** in **ECS 116.**

*Time to complete: \_\_\_\_*

*Number of times back button was used (in error):*

*Number of times the participant expresses distress:*

*Success Failure*

8. From the main page, delete “**some other group**”.

*Time to complete: \_\_\_\_*

*Number of times back button was used (in error):*

*Number of times the participant expresses distress:*

*Success Failure*

**STAGE TWO: Follow up questions**

**(don’t forget to get them to sign the consent form)**

1. “On a scale of one to ten, how would you rate Room Raider on its usability?”

1 2 3 4 5 6 7 8 9 10

2. “Did you enjoy using Room Raider? Why/why not?”

3. “What did you like about Room Raider’s UI? What didn’t you like?”

4. “Were there any problems that you encountered while performing a task? What were they?

What task were you performing at the time?”