REDCOM Sigma Client Application for Windows

Usability Evaluation – Test Plan

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Introduction

A summative type of usability testing will be conducted for the REDCOM Sigma Client Application for Windows to get a better understanding about how good is the product. The study will help the client to recognize usability problems and to see if all the features of the product work properly.

Purpose

The main purpose of this usability study is to recognize serious usability issues with the product and to determine if all the components of the application are functioning well. The information architecture will be evaluated to see if it is possible to increase visibility of functions and information that are vital to the product.

The search feature to quickly find a person or number will be assessed to identify if there are any obstacles when the user is trying to connect with another user. The Sigma Client Application comes with the ability to customize many of its features. The study can help us evaluate if users are able to discover problems with the application, after various features have been customized. This is important as it can prevent the application from working properly and the users might therefore face more challenges while using the product.

We plan to assess the overall performance of users for various types of essential tasks. The feedback gathered from the key stakeholders in this study can help to indicate basic problems with the present design of the user interface. This study can also provide suggestions that can be helpful for future redesign of the product.

Research Questions

We plan on collecting Quantitative Data like:

- How much time does it take for the participants to make a call to another user?
- Are participants able to adjust the audio settings in the application to improve their sound quality for voice communication?
- How easily can the participants change the wrong number or a wrongly spelled contact after typing it in the search bar?
- What obstacles do the participants face when trying to save a contact to a speed dial button?
- How difficult is it to find and create a conference call?
- Can participants find a way to hide the speed dial buttons on the screen?
- How long does it take for the participants to find their call history?
- Can participants test if their audio out and notification sounds are working?
- Are participants able to check the input level of the microphone on the screen?
- Can participants use the call-forwarding feature in the application?
- How long and how much iteration does users take to get a clear video without lag during a video call?
- How many users in the call (apart from the user who has added the new user) are able to figure out immediately if another user has joined the conference call?
- How long does it take for users to realize if they have selected correct option (XMPP/SIP) while adding a contact to the list?

We also plan on collecting Qualitative Data like:

- Participants will think aloud along the task and will need to explain if they get confused or stuck on a certain task.
- Are participants comfortable not having a save button in the options menu after they have changed a few settings? How many times do participants feel the need for a save button in the option menu?
- Do users feel that the call history log is too technical and difficult to understand?
- In one-to-one communication, can a user identify if another user has joined the call or left it? (join and left actions have similar tones)?
- Do users want shortcut keys? If so, what functions do they want the shortcut keys for?
- Will participants be able to understand the buttons on the screen during a call?
- What do the users think about the hold tone?
- There will be a post test questionnaire conducted, to understand how the participants felt about using the application and to get additional information about the application.
    - Do participants require any additional features or options?
    - What does the participant think about the user interface and design of the application?
    - What other applications do users find this application similar to? And how well does it compare with these other applications?

Participant Characteristics

Participant distribution and participant characteristics are the two elements that will be considered for their recruitment, is given in the table 1, 2 and 3 below.

Participant Distribution: Total number of participants needed for this experiment is 8. In the table given below, Pilot study participant and back up participant not considered in the main participant group.

Category	Characteristics	Percentage of samples (%)	Number of participants
Profession	Students	37.5	3
	Professionals	25	3
	Military personnel	25	2
Age	18-25	62.5	5
	26-30	37.5	3
Education	Undergraduate	50	4
	Graduate	50	4
Total number of participants		100	8
Participant types	Pilot	9	1
	Regular	72.7	8
	Backup	18.1	2
Total number of participants		100	11

Table 1 (Participants groups based on characteristics)

Inclusion Criteria

1. Participant must have at least an undergraduate degree or be in an undergraduate program.
2. Participant must have some experience with personal computers or smartphones.
3. Participants must have used communication applications such as Skype, Hangouts, etc.

Exclusion Criteria

1. Not a RIT student, professional or military personnel.
2. Participants less than 18 years of age.

Methodology

This study will look into the usability and user experience of the REDCOM Sigma Client Application for Windows. We will be conducting a within-subjects test. Each participant will go through a one-hour session where 30 minutes of each session will be used for introducing the study, signing consent forms, filling post task questionnaire and debriefing. The participants will use the rest of the time to perform the task.

Participant Recruitment Process

- Flyers will be posted at Rochester Institute of Technology to attract potential participants. The flyer will include information about the test, compensation, location, timeframe and contact information.
- Each potential participant will fill out a screener questionnaire. This will help the evaluators screen participants according to the inclusion and exclusion criteria. Selected participants will be contacted through email to schedule the study.

The Study

The usability study will follow within-subjects test with a total of 8 participants. All participants follow the tasks assigned in a sequential order. The study would be conducted in a testing room (see The Environment) that will be prepped before starting each session. It will be a one-hour long session. During the first 15 minutes the moderator present in the testing

room with the participant will explain the session details, and ask the participant to review and sign the consent form. The participant will be further asked to complete the pre-task background questionnaire.

During the next 30 minutes, the participant will be then asked to perform the list of tasks using the Sigma Client Application. During the task, the moderator will be present to help the participant with any questions that may arise. The observers present in the observation room can question the participant through the moderator present using internal communication systems. All participant responses will be recorded by both audio and video.

The last 15 minutes of the study will be used for debriefing and the participant will be asked to fill out a post-test questionnaire. The participant will also be awarded the compensation promised.

Session Outline

Phase	Time allotted	Details
Introduction	2 Minutes	Read out the orientation script.
Review & Sign Consent form	2 Minutes	Handout the consent forms. Get it signed after reviewing.
Pre-Test Questionnaire	5 Minutes	Fill out background information.
Tasks	40 Minutes	Perform series of tasks through Redcom Sigma client application
Task 1	8 Minutes	To save contact and call Jennifer
Task 2	6 Minutes	Send a text message to Jennifer
Task 3	6 Minutes	Make changes in the settings
Task 4	10 Minutes	Make conference call
Task 5	10 Minutes	Receive conference call
Post-test Questionnaire	5 Minutes	Fill out the System Usability Scale form
Debriefing	5 Minutes	Answer any participant questions, give the gift card to the participant and hand over the gift card receipt

Table 2 (Total time of the experiment)

Task List

Task	Details	Success Criteria
Make a call and send message through the Sigma client application	1. Save a contact and make a call 2. Record their call during the call 3. Search the call in the call history 4. Send a chat message 5. Make and save settings in option menu	Participant can place a call, send a message, record the call and improve the settings
Make and receive a conference call through Sigma client application	1. Search for the contact added 2. Make a call to that contact 3. Add people to the call (conference call) 4. Let another person join the call	Participant is able to make and receive a conference call

Table 3 (Different tasks)

Task Scenario

1) It's your first week at work, you are working on a report that has to be dispatched by the end of the day. You need advice from your manager - Jennifer on the report but she is away. You know that the office uses SIGMA windows client for secured communication and decide to use it.

For calling jennifer, the software first needs you save her number. Please contact Jennifer on emperorpalpatine@hcin630.ist.rit.edu

[Evaluator who answers will acknowledge the call and ask them if they would like to record the conversation. Later ask the participant to move to the next scenario]

2) You forgot to ask a question but Jennifer is busy. You have to leave her a message asking about relevance of "Table 6 on page 2 in the report". Please let me know when you are done with the task.

3) To Auto-start REDCOM Sigma when computer restarts. You have to make changes to the software settings. Please let me know when you are done.

4) You have to schedule a meeting with your manager Jennifer and John at the same time so that you can talk to them together. You have the contact information of Jennifer. Contact information of John is darthvader@hcin630.ist.rit.edu . Please let me know when you are done with the task.

5) Abhishek and Nidhi from the research team will call the participant. The participant should be able to accept both the calls. Abhishek adds Zhuoxin to the call without verbally informing the participant. *(This scenario won't be given to the participant in writing as it is directly initiated by the research team. We intend to test whether the participant is able to accept both the calls and also know when someone has joined the call without being told)*

Test Environment

Location and Setting

We will conduct the testing at the HCI usability-testing lab, B. Thomas Golisano College of Computing and Information Sciences building, at RIT. There are two rooms; one is the testing room, which has a one-way mirror, where we will perform the usability testing with participants. The other room is the observation room; we will set up one webcam to record the participant in the testing room.

The lab computer with a Windows 7 operating system will be used to run the Redcom Sigma client application and Morae recorder software; the computer screen will be recorded as the participant performs each task to see how the participant interacts with the application. The webcam will be used to record the participant's facial expression while performing a task in the application. The data from the webcam will be feed into the observation room's computer, which will be running the Morae observer software.

Test Personnel Roles

For this study, team members will rotate between the following personnel roles. All team members except the moderator will sit in the observation room.

Moderator

The moderator will be in the testing room, guiding the participant during the whole evaluation. The moderator will meet and greet the participant, and then go over the consent form and nondisclosure agreement. During the test process, the moderator can guide the participant to finish all tasks in an appropriate way (without misleading the participant). If necessary, the moderator may intervene during a task in order to help the participant in case of issues or ask additional questions to get better feedback. Finally, the moderator will debrief and award the participant with the compensation.

First Observer

The first observer serves as the primary point of contact (via headphones) with moderator during the study.

Second Observer

The second observer formally notes participant comments and actions during the study.

Third Observer

The third observer will track session time and obtain and organize documentation collected from sessions.

Recorder

The recorder is responsible for setting up and adjusting the devices used to record each session. The recorder will use Morae to flag video timestamps of user tasks, errors, and additional events designated by first observer.

Data Collection and Evaluation Measures

Evaluation of a system is done based on usability goals which includes effectiveness, that refers to how well a system does what it is supposed to do; efficiency, or the way a system supports users in carrying out their tasks; and satisfaction, which relates to the subjective responses users have to the system. We have decided to capture effectiveness by the tracking task success, efficiency by time on task, and satisfaction with the help of Likert scale.

Quantitative data

Our team will collect quantitative data in following manner:

1. Likert Ratings
   Likert Scale will be used to capture ease of use of the application.

2. Count the number of failures while performing the assigned tasks
   Observer will note down the errors made by the participant during this study. Also, the number of time user clicked wrong option to perform assigned task will be recorded.

3. Time taken to complete a task
   An observer will record the time taken by a participant to complete each task.

4. Success score after completion of a task

   Success score determines whether participants were successfully able to finish the task without assistance of moderator.

5. System usability scale (SUS)
   SUS will be used to measure usability of the system

Qualitative data

Our team will collect qualitative data in following manner:

1. Verbal feedback gathered during and after the study
   Participants will be asked to think aloud while performing the task. Participants might also ask questions, doubts, or comment about the application. All this data will be recorded and analyzed as qualitative data.

2. Post Questionnaire
   We will ask participants to answer some questions about their experience while using the Sigma client software.

Topic	Number	Questions	Metric	Data
Performance	1	How much time does it take for the participants to make a call to another user?	QT,	Count number of failures or incorrect attempts Likert Scale used to measure the difficulty level of the task
Performance	2	How long does it take for the participants to find their call history?	QT, QT,	Count number of failures or incorrect attempts Time to complete the task
Performance	3	How long does it take for users to realize if they have selected correct option (XMPP/SIP) while adding a contact to the list?	QT	Count number of failures or incorrect attempts
Performance	4	How long and how much iteration does users take to get a clear video without lag during a video call?	QT	Count number of failures or incorrect attempts Time to complete the task

Performance	5	In one-to-one communication, can a user identify if another user has joined the call or left it? (join and left actions have similar tones)?	QT	Post Questionnaire
Usability	6	Are participants able to adjust the audio settings in the application?	QT	Success criteria and SUS scale will determine the usability of this function.
Process	7	What obstacles does the participant face while trying to assign contact to a speed dial button?	QT	Success criteria (binary completed task or not)
General Problems	8	How easily can the participants change the wrong number or a wrongly spelled contact after typing it in the search bar?	QT	Success criteria (binary completed task or not)
General Problems	9	What obstacles do the participants face when trying to save a contact to a speed dial button?	QT	Success criteria (binary completed task or not)
General Problems	10	Do users feel that the call history log is too technical and difficult to understand?	QL	Participants Feedback
Discoverability	11	What are the difficulties faced by the participant while making a conference call?	QT, QT,	Likert Scale used to measure difficulty level of the task Count number of failures or incorrect attempts
Affordance	12	If participants are able to check the input level of the microphone on the screen?	QT,	Success criteria (binary completed task or not)

Affordance	13	Can participants hide the speed dial buttons on the screen?	QT, QL	Success criteria (binary completed task or not) Post-Test Questionnaire
Affordance	14	Can participants test if their audio out and notification sounds are working?	QT, QL	Success criteria (binary completed task or not) Post- Test Questionnaire
Affordance	15	Do users realize whether they have selected correct option (XMPP/SIP) while adding a contact to the list?	QT	Success criteria (binary completed task or not) Time to complete the task
Affordance	16	Will participants be able to understand the buttons on the screen during a call?	QT	Success criteria (binary completed task or not)
Expectation	17	Can participants use the call-forwarding feature in the application?	QT	Success criteria (binary completed task or not)
Expectation	18	How many users in the call (apart from the user who has added the new user) are able to figure out immediately if another user has joined the conference call?	QT	Success criteria (binary completed task or not)
Expectation	19	Do users want shortcut keys? If so, what functions do they want the shortcut keys for?	QT	Post-Test Questionnaire
Scope	20	What additional features or options do participants want in this application?	QL	Post- Test Questionnaire

Scope	21	What other applications do users find this application similar to? And how well does it compare with these other applications?	QL	Post- Test Questionnaire
Aesthetics	22	What does the participant think about the user interface and design of the application?	QL	Post- Test Questionnaire
Aesthetics	23	What do the users think about the hold tone?	QL	Post-Test Questionnaire Participants' feedback
Product Expectations	24	What are the participant's expectations from the application on the basis of design and UI?	QL	SUS Scale Participants' Feedback
Product Expectations	25	Are participants comfortable not having a save button in the options menu after they have changed a few settings? How many times do participants feel the need for a save button in the option menu?	QL	Participants' Feedback

Table 4 (Relation of research questions and relevant metrics)

QT – Quantitative, QL – Qualitative

Report Contents and Presentation

Deliverables:

- Summary of findings
- Participant demographics
- Details on measures
- Answers to research questions
- Issues with severity ratings
- Presentation to client - Redcom
- Highlight all the concerns found in the Client's application