
USABILITY REPORT

DATE: 28TH APRIL 2022
TO: Dr. Hundhausen, CptS 443/543 Instructor
FROM: Prasanth Atluri, Rushabh Shah, Harsh Tyagi, Sanjita Bhavirisetty, Eshwar Pilli, HCI Consultants
RE: Coug Wallet Usability Test
HIGHLIGHTS VIDEO URL: [Insert link to unlisted YouTube video here]

SUMMARY

Purpose and Scope

On April 29th and 30th, we conducted a usability study of Coug Wallet, which enables one to trade using coug coins (WSU crypto currency) on the coug wallet. In the study, participants should be able to use the application to transfer money to buy i.e., the user should be able to check the account statistics, transact using coug coins, convert from one crypto currency to other, keep track of the wallet status by checking the transaction history and be able to make changes on profile.

Methods

We recruited 5 participants for this preliminary usability study. All of them are registered with WSU as either a graduate student or a TA. All of them are international students in the range of 20-30 years of age.

We ran the study through an online platform called Zoom where we shared our survey link and asked the participants to complete it while we video recorded their performance i.e., the user solving each task.

Every participant was first asked to read a set of instructions for performing the tasks and then sign a consent form for participating in the usability study. This was followed by a few demographic questions and asking the participants about how they are related to schools which makes them relevant to the study. See Appendix A for all the background questions we asked the interviewees before starting the study.

The participants were guided to think aloud when performing the tasks as their screens and audios were recorded to understand what part of the tasks caused problems for them. There was no specific time limit set for users to perform the given tasks so they don't feel any added pressure to complete them swiftly.

Participants were asked to start straight away without exploring the software to see how a new user would react to the software.

After the warm-up exercise, participants were asked to use the Cougar Wallet app to complete a series of eight tasks. See Appendix B for a copy of the original task sheet that participants received for the test. As they worked through these tasks, participants were instructed to think aloud by verbalizing their thoughts and actions. If they became silent, or if it was unclear what they were up to, they were prompted to explain what they were doing.

Upon completion of the tasks, participants filled out an exit questionnaire that solicited their impressions of Cougar Wallet Software. Appendix C includes the exit questionnaire and participants' responses.

FINDINGS

Overview

Overall, the Cougar Wallet Application UI design can be considered a success. The software received the following ratings (out of 100):

- Average overall task completion: 100%
- Average UI rating: 94%
- Average user satisfaction: 92%
- Average user understanding: 92%

Table 1. Summary of key results vis-à-vis the usability and user experience goals we established for our software.

| Usability or U.E. Goal | Relevant Empirical Result | Commentary |
|---|---|---|
| User must be able to find total balance on a particular day. | All participants were able to find the total balance easily. | This task was completed with no difficulties at all. |
| User must be able to transfer from USD to Cougar coin. | Few participants needed hint to direct them to the right tab to complete the task. | Users found it little difficult to navigate to the right tab to perform the task. |
| User must be able to exchange from one digital currency to another. | All participants were able to exchange from one digital currency to another easily. | A fairly simple task that participants had no problem completing. |

| | | |
|--|--|--|
| User must be able to change profile details. | All participants were able to change profile details easily. | This task was completed with no difficulties at all. |
| User must be able to change account password. | All participants were able to change account password. | A fairly simple task that participants had no problem completing. |
| User must be able to view balance of different currencies. | All participants were able to view balance of different currencies. | This task was completed with no difficulties at all. |
| User must be able to check transaction history. | All participants were able to check transaction history easily. | This task was easily completed by the users without any confusion. |
| User must be able to copy and paste the address for the required digital currency in the transfer section. | All participants were able to find and use the address for transactions. | A fairly simple task that participants had no problem completing. |

Users were well-informed about how to make the most of technology services. The application was created with the goal of receiving general comments. As a result, it was difficult to identify actual concerns that were difficult to overcome.

1. Transfer Coin Task

In the process of currency transfer it is important for the user to be able to send the currency from different crypto currency on their wallet using address.

Problems:

1. The user found it difficult to transfer from USD to Coug coin *Evidence:*
2 of 5 participants struggled to identify the tab in which the task can be completed.

Diagnosis:

The Match between the system term “Transfer Coin” and the real world is missing which is a knowledge gap. This problem can be identified as Nielsen’s usability heuristics.

Recommendations:

The knowledge gap can be bridged by educating the user about all the services of the application in detail. This is incorporated in the info page of the application.

2. A user found it difficult to use the wallet address

In the process wallet address needs to be copied which can further be used in transferring currency.

Evidence:

1 of 5 participants could not copy the wallet address as the button was not functioning.

Diagnosis:

This is a backend programming issue. But this can be considered as a failure to achieve Norman's principle of affordance which made it difficult for the user to complete the task.

Recommendations:

The Code can be corrected to remove the bug and make the copy address button functional.

3. The user found it difficult to transfer from one coin to another in the same wallet.

Evidence:

2 of 5 participants struggled to identify the tab in which the task can be completed.

Diagnosis:

A knowledge gap exists because there is not much awareness and experience with using digital currency. Nielsen's usability heuristics are the source of this issue.

Recommendations:

The knowledge gap can be closed by thoroughly educating the user on all the application's features. This is included on the application's information and FAQ pages.

x. General problems

In observing the usability study and listening to participants' suggestions, we identified several general problems with the interface. These problems, which span multiple user tasks, are collected in this subsection. Note that, unlike the previous subsections, this subsection does not always cite evidence. In most cases, it draws on established usability guidelines, and on the suggestions of participants in the study.

Problems:

1. Transfer coins from one currency to another (Severity 2, Scope 2).
2. Not able to copy wallet address (Severity 2, Scope 1).

3. Transfer coins from one currency to another in the same wallet. (Severity 2, Scope 1)
4. Bridge the knowledge gap. (Severity 2, Scope 2)

Recommendations:

1. *A user guide with clear instructions must be mentioned. All the services of the app must be described with clear instructions on why, how and what.*
2. *FAQ page must be used. The user must be informed with the FAQ page to help them use it when in need.*

APPENDIX A: BACKGROUND QUESTIONNAIRE RESPONSES

| Question | P1 | P2 | P3 | P4 | P 5 |
|---|-------------------|------------------|-----------------------------|----------------------------|-------------------------------------|
| What is your age? | 25 | 20-25 | 25-30 | 20-25 | 25-30 |
| Briefly describe your educational background. | Masters in CS, TA | In university | B.Tech in Computer Science. | PhD Mechanical Engineering | Bachelors in Information Technology |
| How many years of experience do you have with using a digital wallet? | 2 | Less than a year | 4 years | 0 | 0 |
| How much experience do you have with using websites? | A great deal | A little | A great deal | A great deal | A lot |

| | | | | | |
|--------------------------------------|-------|-----------|-------|-----------|-------|
| Did you trade in crypto | Never | Sometimes | Never | Sometimes | Never |
| currency? | | | | | |
| Are you open to investing in crypto? | Maybe | Maybe | Yes | No | Yes. |

APPENDIX B: INFORMED CONSENT FORMS

Informed Consent Agreement to Participate 1 In Usability Study of CougWallet

Prasanth Atluri, Sanjita Bhavirisetty, Eshwar Pilli, Rushabh Shah, Harsh Tyagi
School of Electrical Engineering and Computer Science
Washington State University

Description of Study: You have been asked to participate in a usability test of new software created as part of the above persons' (henceforth, "the researchers") course project for CptS 443/543 at Washington State University. Your participation in this usability test will help the researchers to better understand the software's strengths and weaknesses. You have been asked to spend about 20 minutes participating in this test. This will involve your doing some or all of the following things:

- Reading aloud and studying brief task descriptions;
- Interacting with a computer;
- Interacting with the researchers and/or other students;
- Thinking aloud (explaining what you're doing and thinking), and
- Filling out questionnaires.

The researchers will record the session on videotape. Although your voice, and possibly your face, will appear on the recording, your name will not be on the recording. The recordings will be viewed only by the instructor and students affiliated with CptS 443/543 at Washington State University in order to fulfill a course requirement. When the researchers describe their work to the class, they will not use your name.

Risks and Benefits Expected: The study will not incur any risks beyond the minimal risks associated with interacting with a computer. The study is not

expected to help you directly. The results may help the researchers to improve the design of their software.

Confidentiality: Any information about you that is obtained from this study, including what you say, will be confidential. Your real name will be kept in a locked file and only the researchers will have access to it. Only your code name will be on the video recording and in reports of the study.

Right to Refuse or End Participation: You may refuse to participate in this study or stop participating at any time.

Certification: By signing below, you certify that you have read and that you understand the foregoing, that you have been given satisfactory answers to your inquiries concerning projects procedures and other matters, and that you have been advised that you are free to withdraw your consent and to discontinue participation in the usability test at any time.

You herewith give your consent to participate in this test with the understanding that such consent does not waive any of your legal rights, nor does it release the researchers or any agent thereof from liability for negligence. You understand that you shall remain anonymous in all written and verbal reports of this test. You may make a copy of this form to keep.

I consent to this usability study.

Yes

Signature:

A black rectangular redaction box covers the signature area. A horizontal line is visible behind the box, and a vertical line is to its left. The signature itself is not legible.

Informed Consent Agreement to Participate 2 In Usability Study of
CougWallet

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School of Electrical Engineering and Computer Science
Washington State University

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I consent to this usability study.

Yes

Signature:



**Informed Consent Agreement to Participate 3 In Usability Study of
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School of Electrical Engineering and Computer Science
Washington State University

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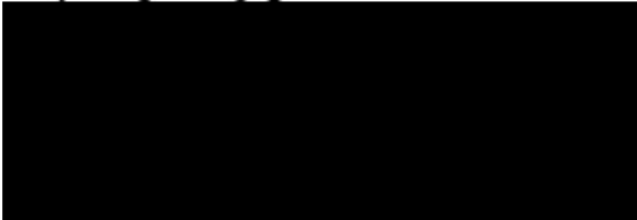
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I consent to this usability study.

Yes

Signature:



Informed Consent Agreement to Participate 4 In Usability Study of
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I consent to this usability study.

Yes

Signature:



**Informed Consent Agreement to Participate 5 In Usability Study of
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School of Electrical Engineering and Computer Science
Washington State University

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- Thinking aloud (explaining what you're doing and thinking), and
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Yes

Signature:

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APPENDIX C: USABILITY TEST TASKS

Task 1

In Coug wallet App there is a graph that displays the change in the total balance to get an overall view of status of the wallet overtime.

This graph lets the user know total balance on a particular day.

In this task, you are asked to find out the total balance on a particular day.

Task 2

In the process of currency transfer it is important for the user to be able to send the currency from different crypto currency on their wallet using address.

In this task, you are asked to transfer from USD to Coug coin

Task 3

In the third task you should be able to perform inter-digital currency exchanges in your wallet. That is for example if you need to pay in cougcoin from your wallet and you don't have it then you can exchange your bitcoin.

In this task, users must be able to exchange from one digital currency to another in his wallet.

Task 4

As users profile data is important in maintaining their digital account identity and ownership. A user must be able update their profile information whenever they feel it's necessary.

In this task users must be able to change their profile details.

Task 5

Account security is important for handling digital wallet, users must be able to have the flexibility to change the password whenever they deem it necessary.

In this task users must be able to change the account password.

Task 6

As our wallet is the hub of different currencies, it is important for the users to be able to keep track of different currencies through an immediate view option.

In this task, users must be able to view the balance on different currencies through the immediate view.

Task 7

Users should be able to check the transaction history as this is very important to users to be able to keep track of all their spending.

In this task users must able to view the transaction history of last 10 transactions.

Task 8

For currency transfer every digital currency would be provided with the specific address to send the currency to the wallet.

In this task users must be able copy and paste the address for the required digital currency in the transfer section.

APPENDIX D: EXIT QUESTIONNAIRE RESPONSES

| Question | P1 | P2 | P3 | P4 | P5 |
|---|----------------------------------|------|---|----|---|
| Look and feel of the User Interface: 1-Poor, 10-Excellent. | 10 | 8 | 10 | 9 | 10 |
| Placement of functionalities throughout the Interface. 1-Poor, 10-Excellent. | 10 | 9 | 10 | 10 | 10 |
| Understandability of functionalities. 1-Poor, 10-Excellent. | 9 | 8 | 9 | 10 | 10 |
| Complexity of the Interface. 1-Very complex, 10-User friendly. | 10 | 9 | 10 | 9 | 10 |
| Was there any section which needs improvement while using the user Interface? | I was comfortable using the app. | None | User interface seems nice and no improvement is needed. | No | I was able to complete the tasks without any problem. |

| | | | | | |
|---|---------------------|--|--|-------------------|--|
| | | | | | em, so I don't think any improvements are needed. |
| Can you navigate through the menu section on the lefthand side of the User Interface? | Yes | Yes | Yes, I can navigate through the menu section | Yes | Yes. |
| How understandable are the functionalities provided? | Very Understandable | Most of them were clear and understandable | I am able to understand the functionalities provided properly | Good | Functionalities match with the task. So I was able to understand them without any problem. |
| Can the user understand the completion of task execution? | Yes | Yes | Yes, the task execution completion is notified to the user every time. | Yes | Yes. |
| Any improvements to be done on specific page? | No | None | In my wallet section, click on copy should copy the address of the wallet. | Looks good to me. | It looks good to me. |

APPENDIX E: CRITICAL INDICIDENTS LOGS

Participant 1

| Time | Task | Subtask | Description of Incident |
|------|------|---|--|
| 2:37 | | 1 Find total balance on a particular day | Was able to identify and read the graph on the dashboard tab. |
| 3:29 | | 2 Transfer from usd to coug coin | unable to find the transfer coin page until the hint was given. |
| 4:45 | | 3 Exchange from one digital currency to another | Was able to identify and complete the task in the transfer coin tab. |
| 5:20 | | 4 Change profile details | Was able to identify and complete the task in the profile tab. |
| 6:49 | | 5 Change account password | Was able to identify and complete the task in the profile tab. |
| 7:56 | | 6 View balance of different currencies | was able to identify and complete the task in the dashboard tab. |
| 8:36 | | 7 Check transaction history | Was able to identify and complete the task in the transactions tab. |
| 9:26 | | 8 Copy and paste the address for the required digital currency in the transfer section. | Was able to identify and complete the task in the transfer coin tab. |

Participant 2

| Time | Task | Subtask | Description of Incident |
|-------------|-------------|---|---|
| 7:27 | 1 | Find a total balance on a particular day. | I was able to identify and read the graph on the dashboard tab. |
| 8:01 | 2 | Transfer from USD to Coug coin | I was unable to find the transfer coin page until the hint was given. |
| 9:09 | 3 | Exchange from one digital currency to other | Participant was able to understand the task but looked confused with inter-digital currency transfer. The participant mistook the transfer by copying another address |
| 10:30 | 3 | Exchange from one digital currency to another | Participant was able to understand the task but looked confused with inter-digital currency transfer. The participant mistook the transfer by copying another address |
| 10:36 | 4 | Change profile details | I was able to identify and complete the task in the profile tab. |
| 11:31 | 5 | Change account password | I was able to identify and complete the task in the profile tab. |
| 12:16 | 6 | View balance of | I was able to identify and |

| | | | |
|-------|---|---|--|
| | | different currencies | complete the task in the dashboard tab. |
| 13:19 | 7 | Check transaction history | Was able to identify and complete the task in the transactions tab. |
| 13:52 | 8 | Copy and paste the address for the required digital currency in the transfer section. | Was able to identify and complete the task in the transfer coin tab. |

Participant 3

| Time | Task | Subtask | Description of Incident |
|------|------|---|--|
| 6:43 | 1 | Find a total balance on a particular day. | Was able to identify and read the graph on the dashboard tab. |
| 8:10 | 2 | Transfer from USD to Coug coin | Was able to find the transfer coin page and do the transfer. |
| 9:09 | 3 | Exchange from one digital currency to other | Was able to find the transfer coin page and do the transfer. |
| 9:13 | 3 | Exchange from one digital currency to another | was able to identify and complete the task in the transfer coin tab. |

| | | | |
|-------|---|---|---|
| 12:45 | 4 | Change profile details | was able to identify and complete the task in the profiltab. |
| | | | |
| 13:47 | 5 | Change account password | was able to identify and complete the task in the profile tab. |
| 15:05 | 6 | View balance of different currencies | was able to identify and complete the task in the dashboard tab. |
| 16:01 | 7 | Check transaction history | was able to identify and complete the task in the transactions tab. |
| 16:50 | 8 | Copy and paste the address for the required digital currency in the transfer section. | Faced some difficulty because copy button was not working. |

Participant 4

| Time | Task | Subtask | Description of Incident |
|------|------|---|-------------------------------|
| 9:56 | 1 | Find a total balance on a particular day. | Was able to identify and read |

| | | | |
|-------|---|---|---|
| | | | the graph on the dashboard tab. |
| 11:06 | 2 | Transfer from USD to Coug coin | Unable to find the transfer coin page until the hint was given. |
| 11:41 | 3 | Exchange from one digital currency to other | The user had a problem due to the copy and change in the notation of the currency function not working but eventually was able to identify and complete the task. |
| 14:28 | 4 | Change profile details | Was able to identify and complete the task in the profile tab. |
| 15:27 | 5 | Change account password | Was able to identify and complete the task in the profile tab. |
| 16:31 | 6 | View balance of different currencies | Was able to identify and complete the task in the dashboard tab. |
| 17:10 | 7 | Check transaction history | Was able to identify and complete the task in the transactions tab. |

| | | | |
|-------|---|---|--|
| 17:42 | 8 | Copy and paste the address for the required digital currency in the transfer section. | Was able to identify and complete the task in the transfer coin tab. |
|-------|---|---|--|

Participant 5

| Time | Task | Subtask | Description of |
|------|------|---|---|
| | | | Incident |
| 4:52 | 1 | Find a total balance on a particular day. | Was able to identify and read the graph on the dashboard tab. |
| 5:39 | 2 | Transfer from USD to Coug coin | Unable to find the transfer coin page until the hint was given. |
| 6:58 | 3 | Exchange from one digital currency to other | The user had a problem due to the copy and change in the notation of the currency function not working but eventually was able to identify and complete the task. |
| 8:02 | 4 | Change profile details | Was able to identify and complete the task in the profile tab. |

| | | | |
|-------|---|--|---|
| 9:15 | 5 | Change account password | Was able to identify and complete the task in the profile tab. |
| 10:26 | 6 | View balance of different currencies | Was able to identify and complete the task in the dashboard tab. |
| 11:07 | 7 | Check transaction history | Was able to identify and complete the task in the transactions tab. |
| 11:59 | 8 | Copy and paste the address for the | Was able to identify and |
| | | required digital currency in the transfer section. | complete the task in the transfer coin tab. |

APPENDIX F: SUMMARY OF USABILITY PROBLEMS

| Problem Description | Evidence * | Severity | Scope | Diagnosis | Design Recommendation |
|--|-------------------|----------|-------|---|---|
| Transfer from usd to coug coin exchange from one digital currency to another | P1 3:29, P2 8:01, | 2 | 2 | The Match between the system term “Transfer Coin” and the real world is missing which is a knowledge gap. This problem can be identified as Nielsen’s usability heuristics. | The knowledge gap can be bridged by educating the user about all the services of the application in detail. This is incorporated in the info page of the application. |
| A user found it difficult to use the wallet address | P3 15:50 | 2 | 1 | This is a backend programming issue. But this can be considered as a failure to achieve Norman’s principle of affordance which made it difficult for the user to complete the task. | The Code can be corrected to remove the bug and make the copy address button functional. |
| Transfer coins from one currency to another in the same | p4 11:06 p2 8:01 | 2 | 1 | A knowledge gap exists because there is not much awareness and experience with using digital | The knowledge gap can be closed by thoroughly educating the user on all the application |
| wallet. | | | | currency. Nielsen's usability heuristics are the source of this issue. | 's features. This is included on the application's information and FAQ pages. |

APPENDIX G: SEVERITY AND SCOPE RATINGS

Severity and scope ratings are included to communicate which problems are most important.

Severity

Severity is an assessment of a problem's impact on user performance. The following scale is derived from Dumas and Redish (1993):

- ✓ **Severity 1** problems prevent users from completing a task. Participants give up after a few tries or they need a hint to continue. For example, users consistently select an incorrect dialog option and do not know what else to do.
- ✓ **Severity 2** problems create significant delay and frustration. Participants continue to get lost or to use inefficient methods to accomplish a goal. For example, the lack of feedback to users confirming what they have just done causes them to do the task over to make sure they did it correctly.
- ✓ **Severity 3** problems have a minor effect on usability. For example, an unusual term in a dialog causes users to hesitate for a moment before making the correct choice.
- ✓ **Improvements.** While not problems *per se*, improvements will make the task even easier to perform or learn. The interface doesn't hamper users but there is something that could make it even better.

Scope

Scope is an assessment of how frequently users will encounter a problem. The more users that a problem affects, wider its scope.

- ✓ **Scope 1** problems will affect almost all users.
- ✓ **Scope 2** problems will affect many users.
- ✓ **Scope 3** problems will affect few users.

Participants Videos Link

https://drive.google.com/drive/folders/0B_nODVC1geidc0IUWHdZQnVjWms?resourcekey=0hwGWyrrN2DZ_Uy1hsVIFZw&usp=sharing