

Assignment 2: Heuristic Evaluation and Cognitive Walkthrough-Signal App

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Julia Sowers, Joe Kubeshesky, Shaylan Tucker, Jaylen Thomas

Executive Summary:

Today our group will be reviewing the Signal application, looking through its features and identifying who the users of this app are, along with some of the problems that these users might face while using Signal. After reviewing the signal app, our team found a few problems that users might experience while navigating through the app. We will be outlining some of the problems that we found to impact the users experience.

The first problem we encountered violated the flexibility and ease of use heuristic. We found that the “note to self” feature which allows users to pin messages to the top of their screen can only be accessed by searching “note to self” in the search bar at the top of the page. We found that this issue could be avoided by placing a “note to self” icon next to the settings icon at the top of the screen, this would allow the user to know that this feature exists and that it's easily accessible. Another problem we found also violated the flexibility and efficiency of use heuristic. This was the microphone feature within the messaging feature of the app. The feature was confusing to use because you have to hold down the microphone as you talk and this differs from other messaging apps. Also, after recording the voice message, it automatically sends to your contact. A possible solution would be to change the button so you only have to click on it and not hold it down for recording a message. In addition, a solution would be to let the user listen to their voice message and then be given the option to send it. Also, a major problem we found in the user interface of the app involved the settings button. The settings button on the top left of the home screen displayed the users initials in a bolded circle. This icon would be hard to associate with a settings button. We recommend that this icon should be changed to something more familiar with the user, like a gear icon people are used to in IOS and Android. These are a few of the major problems that we found while analyzing the user interface of the Signal app.

Background Information:

Signal is a messaging application with a focus on privacy, that allows users to text, call, and video chat with their contacts. The app is used for encrypted messaging and calling and is endorsed by professionals in the tech field such as Edward Snowden (Former NSA employee and privacy advocate), Bruce Schneier (renowned security technologist) and Jack Dorsey (CEO of Twitter and Square) [1]. Signal is versatile and can be used on different kinds of devices including iOS and Android devices. The app has all of the typical features of a normal messaging app. For example, you can send pictures over the messaging app and create group chats.

The app is for users that want a secure and private messaging service that they can rely on. The typical user would have a knowledgeable background in technology. The age range for the users would be 13 and up [1]. They will use it whenever they need to contact someone by message or call. Messaging apps provide students, businesses, and families an easy way to connect with each other, all in one application. Examples would be students working on a project for class, co-workers keeping up to date on particular projects, and families communicating with each other with one click. The main users of this application would be the Android platform of devices, since native Android messaging applications aren't commonly used, they look for better alternatives that they can use, like signal or WhatsApp. On the IOS side, users would use this application less often because of the native ecosystem of apps that iPhones have, like iMessage, Facetime, and the Phone app. This ecosystem of apps on IOS allows iPhone users to make group chats and group video calls without the need for a messaging app like signal. Since Android users don't have a native collection of apps that work together like the apple ecosystem, they

have to turn to an app like signal, which has texting, calling, and video chatting in one app that can be used across all android and IOS devices.

The users have experience with messaging because they came to signal looking for a private messaging platform. This would also make them experienced in using cell phones. They know about privacy and encryption because that is the main point of seeking out and using this platform. One of the most popular messaging applications WhatsApp, was most commonly used among Android users until they wanted a more secure alternative. The main difference between WhatsApp and Signal is the privacy of Signal and how they do not sell the information you add into the app. They do not charge any money to the user which makes for a nonprofit app which is only supported off donations. This makes the company be able to have no ads while looking through the app [3]. Another way that Signal protects your information is by allowing the user to lock the messaging app. This makes the user use a fingerprint or passcode to open the app [2].

Usability Report

Homescreen:

Problem 1:

While completing our heuristic evaluations and the cognitive walkthroughs we discovered a few usability issues with the homescreen of the application. The first issue we noticed occurred during our heuristic evaluation. The first problem we encountered violated the flexibility and ease of use heuristic. We found that the “note to self” feature which allows users to pin messages to the top of their screen can only be accessed by searching “note to self” in the search bar at the top of the page. We found that this issue could be avoided by placing a “note to

self” icon next to the settings icon at the top of the screen, this would allow the user to know that this feature exists and that it's easily accessible. Many students can make a use of this feature, they just need to know that it exists.

Problem 2:

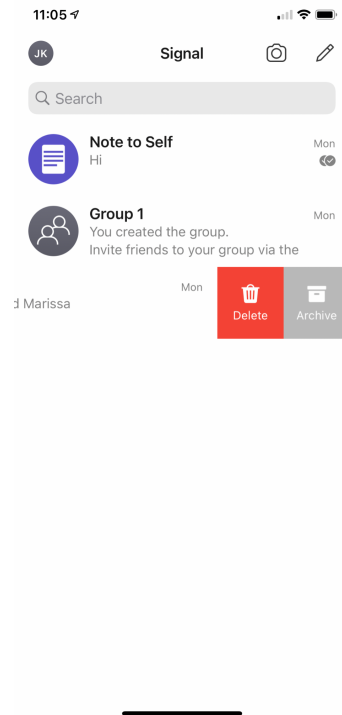
The next usability issue we noticed on the homescreen violated the same flexibility and ease of use heuristic. All of the messages on the homescreen of the application have no clear way to be deleted from the page. To delete a conversation, you would have to know to Swipe right on the message, then a button appears that gives you an option to delete the whole chat. We found this feature to be hidden to the user and hard to notice if they aren't a very experienced user. To fix this issue, we recommend that signal but an “Edit” button on the top navigation of the page. This button would prompt the user to be able to “Select” each conversation, then they would be able to hit a “delete” conversations button to delete all of the selected conversations. This solution would allow the user to know this feature exists, instead of hiding this feature with a swipe motion that the user may or may not find or know how to use. Deleting messages is an important feature to have because it allows you to group the messages you want at the top and keeps your messages more organized. Students and workers who use this app frequently for communication among team members will need to be able to delete and format all of their messages how they need to.

Problem 3:

Also, a major problem we found in the user interface of the app involved the settings button. During our cognitive walkthrough on linking another device to your account, we noticed that the settings button on the top left of the home screen displayed the users initials in a bolded

circle. This icon would be hard to associate with a settings button. We recommend that this icon should be changed to something more familiar with the user, like a gear icon people are used to in IOS and Android. Users should be able to easily identify what each button or tab does just by looking at the icon. This will allow the user to not have to think about what that button actually does, they will already know what the button does, making the experience more efficient.

Problem 2 and Problem 3

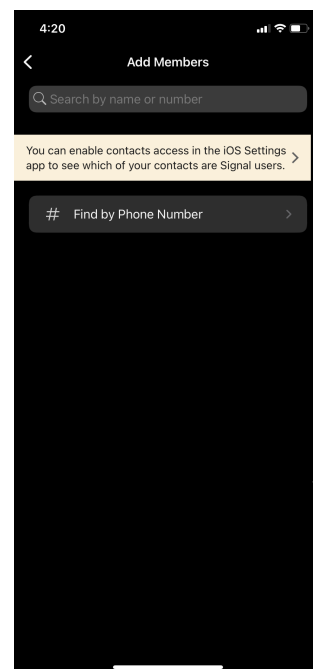
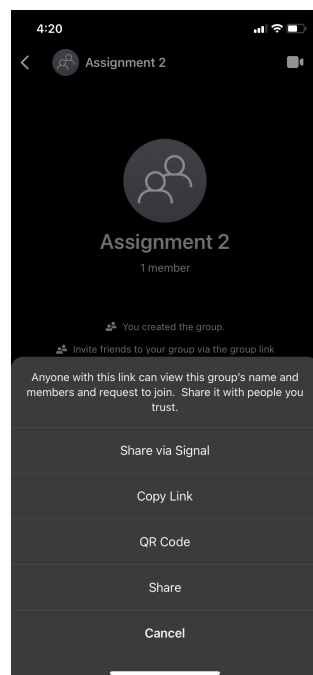


This image illustrates the settings issue and the delete message issue. The icon on the top left is hard to identify as a settings button. Also you can see the delete conversation button on the bottom right which only appears after you swipe right on the conversation which is hard to locate.

Message Thread:

Problem 1:

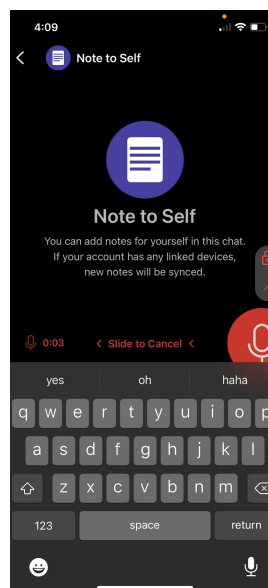
This section highlights some of the violations we discovered within the message thread area of the signal app during our heuristic evaluation. The first issue noted in our heuristic evaluation was a violation of the Flexibility and Efficiency of use heuristic. The amount of options users are provided when initially creating a group message are far more convenient (QR Code, Copy Link, Share). As the thread begins to grow in length the next way to add members is through the add members tab inside of the thread settings which only allows to add members by name or number. The fix we gave for this issue was to provide more options for faster and more efficient use of adding new members within the add members tab opposed to having to search for them.



The images above display the options users are given to add new members. On the left is the initial option which has plenty of options, on the right is the primary way to add members which only gives two options.

Problem 2:

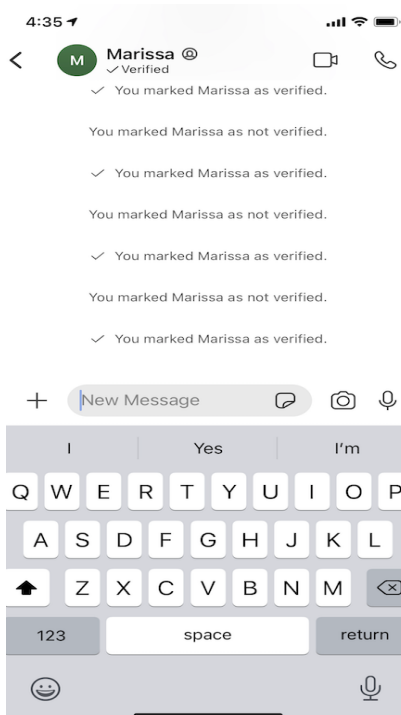
A problem that we noticed is the microphone within the message conversation. For an inexperienced user with any app the microphone allows the user to talk to send a message rather than typing a message to send. The user is given two microphone options located in the message conversation where the user has to hold down the microphone while they speak or “lock” it, so they do not have to hold it down. If the user lets go of the microphone it will automatically send the text instead of allowing the user to listen to the message first. A possible fix for this feature would be to allow an option for the microphone where the user is able to just click on the icon to allow a recording rather than holding the icon down to record. It is important for the user to listen to their message before sending.



This image represents the microphone problem where the user has to hold the microphone icon down in order to record themselves. There is an option to lock the recording which is a very small icon to move too. After letting go on the microphone icon the app will automatically send the message to the contact.

Problem 3:

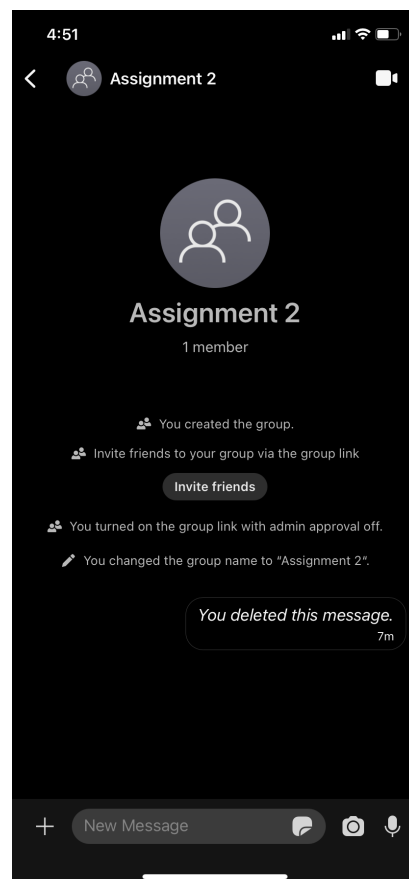
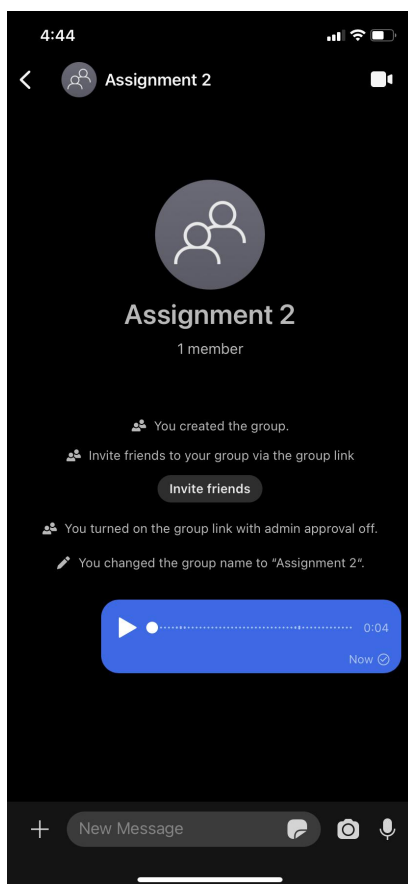
Another issue we found occurred with the microphone again. This problem was a violation of the Consistency and Standards heuristic. The microphone in this app is used for recording your voice and sending a voice message. However, in other messaging applications like iMessage, the microphone icon is used to convert talk into text. This inconsistency can be confusing for the user. This issue can be fixed by changing the microphone icon to something like a walkie talkie icon or something similar to indicate that you are recording a voice message. Changing this icon will help the user be able to have a clear understanding of how to send a voice message when needed.



You can see both microphone symbols next to the camera button and under the return button on the keyboard, these buttons are exactly the same and should be different so that the user can identify and differentiate both of the features.

Problem 4:

This problem was a violation of the Visibility of System Status heuristic. The user has the option to forward voice messages they record from one group to another. The issue is that members of the group are not notified whenever a voice message has been forwarded to another message thread. This could create a possible privacy/ security issue if the other members of the group aren't alerted. The fix for this problem is to have the system alert members in the chat that a message has been forwarded by a user.



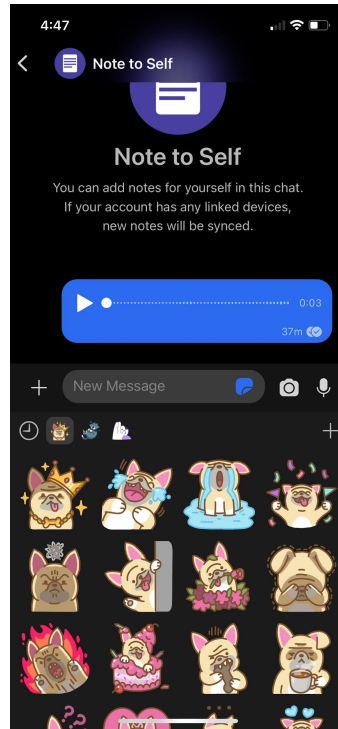
The image to the left above represents a voice message that has been forwarded to another chat. There is no notification within the chat to alert members that I have forwarded the message, but in the image to the right it alerts all users that I have deleted a message.

Problem 5:

This problem violates the Help Users Recognize and Diagnose Errors heuristic. When sending a message to a contact via SMS on the app, the message gives a check mark, indicating that the message went through. However, the message did not go through and the contact did not receive the message. This is a very important issue that needs to be addressed and fixed. This could be fixed by alerting a user when their text does not go through and also making sure that messages do go through when sending via SMS. Improving this problem is very important because users need to be able to contact people that do not have the Signal app. In addition, users need to know if their messages are sent and delivered. Fixing this issue will make the user's experience on the app more effective.

Problem 6:

One problem that we found while trying to form a message was the stickers located in the new message text in the bubble chat. When the user clicks on the stickers button, there is no clear "Emergency Exit" to get back to the original keyboard. To get back to the keyboard the user needs to click the new message bubble again to get back to their original place. An inexperienced person who is not well versed in common texting interfaces might not be able to find out how to get back to the normal keyboard successfully. A way to fix this problem would be to put a keyboard symbol on the stickers drop down menu that will bring the user back to their normal keyboard.



In this image you can see that there is no simple way for the user to move back to the normal keyboard. The user needs to either tap on the message to get back to the normal keyboard or create a new message.

Other Issues:

Problem 1:

This section highlights some of the problems that we encountered in a variety of areas on the app. We found an important issue in our first cognitive walkthrough when we were working on the task of verifying a contact. In Step 3, we found that the correct action of clicking on “View Safety Number” may not be associated with contact authenticity. This problem can be fixed by changing the “View Safety Number” button to something like “Verify contact”. When users want to verify a contact, it is important that they can figure out how to do this. Changing this name of this button will help users have an easier and more efficient experience on the app.

Heuristic evaluation vs Cognitive walkthrough

Both of these methods proved to be beneficial in identifying usability issues throughout the signal application. Also we found that each of these methods have their own strengths to them. For example, you use a cognitive walkthrough to identify how easy the steps are to complete a certain task within the application. This can be beneficial because you can identify potential usability issues in a particular sequence of actions. The heuristic evaluation identifies common user interface issues at any point in the application. These are problems that you can identify and change to make them more user friendly.

The cognitive walkthrough helped us as researchers to evaluate the intuitiveness of the signal app, from the perspective of users who may be more technically inclined. The cognitive walkthrough also helped us to examine the steps to complete specific tasks such as linking a device and authenticating a contact. In the heuristic evaluation we dove into the individual features of the application and rated how severe/detrimental they were to the users overall experience.

Both of these methods enhanced our perspectives as researchers on the overall usability of the Signal app. These methods helped us identify problems that even experienced users can face. From the recommendations we've made throughout the report, the results presented from both the heuristic evaluation and cognitive walkthrough aim to improve the overall usability of the Signal app.

Heuristic evaluation: Signal App

Heuristic Evaluation: Jaylen Thomas

D#	Heuristic	Description	Severity
JT1	Help & Documentation	<p>Location: Settings> Profile> About</p> <p>How Violated: Users are given terms to utilize in the About description of their accounts but, does not provide much documentation on what some terms mean and how they may relate to your profile. The tag, “🔒 Encrypted” is offered as an option and the casual user on the platform may not be too understanding of what that means in terms of interpersonal communications.</p> <p>Possible Fix: Adding an information button next to the tags to provide users who may be unfamiliar with the meaning of certain terms.</p>	2
JT2	Flexibility and Efficiency of use	<p>Location: Group chat settings> Members > Add Members</p> <p>How Violated: The amount of options Admin/group members are given to add/invite members on the message page of a group chat are far more convenient than the options given in the setting, under the add members tab. Admin/group members are only given the option to add members by name or number which could slow down the process in adding members later in a thread when participants</p> <p>Possible Fix: Providing options for faster and more efficient use of adding new members opposed to having to search for them.</p>	2
JT3	Flexibility and Efficiency of use	<p>Location: Search> Note to Self</p> <p>How Violated: I was only able to find access to the Note to Self-feature through utilizing the search bar if I were able to see this feature on the home screen though a small badge in the corner of the screen it would be a far more beneficial and faster to reach shortcut especially for people who may not have discovered this feature through the search bar.</p> <p>Possible Fix: Displaying the note to Self-feature on the home screen</p>	2
JT4	Consistency & Standards	<p>Location: Video Call Feature</p> <p>How Violated: There is no option to record a group a call for viewers to revisit topics covered during a conversation.</p>	3

		Possible Fix: Allowing the admin to have an optional record button that both records video and alerts group members that the call is being recorded. Having this be an optional would cover those who use the platform for privacy reasons and those who casually use the platform.	
JT5	Visibility of system status	<p>Location: Inside of Group chat thread</p> <p>How Violated: Users have the option to forward voice messages from one group chat to another. Once the message has been forwarded there is no sound or action to say that voice message has successfully been forwarded unless you exit the group chat and see if it has been sent to the intended thread.</p> <p>Possible Fix: Providing users with an action completed message, sound, or vibration in the phone to make users aware that the action has been completed. Also potentially notifying other members that a voice message was forwarded.</p>	3

Heuristic evaluation: Joe Kubeshesky

ID#	Heuristic	Description	Severity
JK1	visibility of system status and error prevention	<p>Location: The video chat and calling buttons at the top of a chat</p> <p>How Violated: When a previous user of the app deletes the signal app, you are still able to call them from the app even though they don't get your call, and the call keeps on ringing forever if you left it.</p> <p>Possible Fix: Signal should provide a clear and concise error message to the user. The message could say, "Error: Your contact no longer has the signal app installed so you will be unable to video chat or call them until they redownload the app".</p>	2
JK2	Consistency and standards	<p>Location: the microphone symbol to the right of the camera button in a chat and the keyboard microphone</p> <p>How Violated: There are two symbols that are the same and mean two different things. The microphone symbol to the right of the camera button is a voice message that records your voice that can be played to the person you sent the message to. The same microphone symbol is in Apple's keyboard, this button takes what you are saying and converts it into text that you can send so you don't have to type out a text.</p> <p>Possible Fix: Change the microphone button next to the camera button in the app to a different symbol, maybe a walkie talkie symbol.</p>	1
JK3	User control and freedom	<p>Location: the stickers button located on the new message text bubble in a chat.</p> <p>How Violated: When you click on the stickers button, there's no clear "Emergency Exit" back to the normal keyboard. You have to know to click the new message bubble again to get back to a keyboard. An inexperienced person who hasn't used common texting</p>	1

		<p>interfaces before might not be able to find out how to get back to the normal keyboard easily.</p> <p>Possible Fix: Put a keyboard symbol on the stickers drop down menu that takes you back to the normal keyboard.</p>	
JK4	Flexibility and efficiency of use	<p>Location: Home page that shows all of you different chats</p> <p>How Violated: There is no clear way to delete a chat for inexperienced users. To delete a chat you have to know to swipe right which gives you an option to delete the chat. This will only be known by experienced users and will be hard to find for inexperienced people.</p> <p>Possible Fix: add an edit button next to the settings button that for when you click on it an interface pops up allowing you to select multiple chats and hitting a delete button on the bottom of the page.</p>	3
JK5	Flexibility and efficiency of use	<p>Location: search bar > note to self</p> <p>How Violated: The only way to access the note to self feature is if you use the search bar on the top of the screen, and typing note to self. There should be multiple ways to access this feature, it should be more highlighted to the user</p> <p>Possible Fix: Add a note to self button on the top of the chats page, and add it in settings as well so it's easily accessible to users</p>	2

Heuristic Evaluation: Julia Sowers

ID#	Heuristic	Description	Severity
JS1	Help and Documentation	<p>Location: This is on the support center page.</p> <p>How Violated: When searching a simple question, "How do I call someone?", the results that came up were not related and were just other "how do I..." questions. There was not an effective answer.</p> <p>Possible Fix: The support needs to be changed so that it brings up answers to the question that the user typed in. More search results should be added to help</p>	3
JS2	Help users recognize and diagnose errors	<p>Location: The problem is in the message conversation with your contact.</p> <p>How Violated: The text did not go through using SMS to a contact who did not have the app. However, there is a check mark signaling that the text went through.</p> <p>Possible Fix: Make sure the sending by SMS feature works and if it does not, make sure to create a clearer notification that the message was not sent.</p>	4

JS3	Flexibility and efficiency of use	<p>Location: The app as a whole.</p> <p>How Violated: There are not really any shortcuts for a more experienced user.</p> <p>Possible Fix: Shortcuts and advanced options could be added to the app.</p>	1
JS4	Flexibility and efficiency of use	<p>Location: The microphone within the message conversation.</p> <p>How Violated: For an inexperienced user, the microphone that allows you to talk instead of type was confusing to use. The user has to hold down on the microphone while they speak or “lock” it so they do not have to hold it down. Also, when the user lets go of the microphone, it automatically sends the text instead of letting you listen first.</p> <p>Possible Fix: The microphone option would be easier to use by just clicking on the icon instead of holding it down. Also, it would be important to let the user listen to the message before sending it.</p>	3

Heuristic: Shaylan Tucker

ID#	Heuristic	Description	Severity
ST1	Help and Documentation	<p>Location: Help – Support Center – Getting Started – Group Calling</p> <p>How Violated: Only able to use group calling if all members have the latest version of the app, and all members need to all have the same version of the app also. Would be difficult to have all users update their app if the group call is an emergency, users would then need to wait</p> <p>Possible Fix: Allowing all users to group call with any version of the app</p>	3
ST2	Consistency and standards	<p>Location: Help – Signal Terms & Privacy Policy – About our services</p> <p>How Violated: States that the app is only available to people over the age of 13, although when signing up for the app there is no place where it asks you your age</p> <p>Possible Fix: When registering for the app have a screen where they ask the user their age, and if they are older than 13 allow the user to use the app and if they are under the age of 13 have a page that pops up showing that they are too young to use the app</p>	2

ST3	User Control and freedom	<p>Location: Linked Devices</p> <p>How Violated: Only allows the user to add a new device by scanning a QR Code, not allowing Bluetooth to connect devices with one another, little difficult to find QR Codes efficiently</p> <p>Possible Fix: Adding in other features for the user to connect more devices with one another (Bluetooth)</p>	2
ST4	User Control and freedom	<p>Location: Message – Microphone (top of message)</p> <p>How Violated: Have to hold down the microphone while talking into it or can either lock to message, after recording difficult to send, wants to cancel your message right away, very touchy</p> <p>Possible Fix: Having an option that shows after your recording on if you want to send, keep or delete your recording</p>	2
ST5	Help users recognize, diagnose, and recover from errors	<p>Location: Settings – Account – Registration Lock</p> <p>How Violated: Turning the registration lock on requires phone number and code to re-enter, if not entered correctly the first time when turning off, it will lock you out of your account for the next 7 days, will reoccur if happened again next time the user tries to unlock account</p> <p>Possible Fix: Having an option if the user does not know their passcode, have the app text the users number to reset code</p>	2

Combined Heuristic Evaluation table:

ID#	Heuristic	Description	Severity
JT1	Help & Documentation	<p>Location: Settings> Profile> About</p> <p>How Violated: Users are given terms to utilize in the About description of their accounts but, does not provide much documentation on what some terms mean and how they may relate to your profile. The tag, “🔒 Encrypted” is offered as an option and the casual user on the platform may not be too understanding of what that means in terms of interpersonal communications.</p>	<p>JT:2 JK:1 JS: 1 ST: 1</p> <p>Mean:</p>

		<p>Possible Fix: Adding an information button next to the tags to provide users who may be unfamiliar with the meaning of certain terms.</p>	
JT2	Flexibility and Efficiency of use	<p>Location: Group chat settings> Members > Add Members</p> <p>How Violated: The amount of options Admin/group members are given to add/invite members on the message page of a group chat are far more convenient than the options given in the setting, under the add members tab. Admin/group members are only given the option to add members by name or number which could slow down the process in adding members later in a thread when participants</p> <p>Possible Fix: Providing options for faster and more efficient use of adding new members opposed to having to search for them.</p>	<p>JT:2 JK:2 JS: 2 ST: 2</p> <p>Mean:</p>
JT3 JK5	Flexibility and Efficiency of use	<p>Location: Search> Note to Self</p> <p>How Violated: I was only able to find access to the Note to Self-feature through utilizing the search bar if I were able to see this feature on the home screen though a small badge in the corner of the screen it would be a far more beneficial and faster to reach shortcut especially for people who may not have discovered this feature through the search bar.</p> <p>Possible Fix: Displaying the note to Self-feature on the home screen</p>	<p>JT:2 JK:3 JS: 2 ST: 2</p>
JT4	Consistency & Standards	<p>Location: Video Call Feature</p> <p>How Violated: There is no option to record a group a call for viewers to revisit topics covered during a conversation.</p> <p>Possible Fix: Allowing the admin to have an optional record button that both records video and alerts group members that the call is being recorded. Having this be an optional would cover those who use the platform for privacy reasons and those who casually use the platform.</p>	<p>JT:3 JK:3 ST: 3 JS: 3</p>
JT5	Visibility of system status	<p>Location: Inside of Group chat thread</p> <p>How Violated: Users have the option to forward voice messages from one group chat to another. Once the message has been forwarded there is no sound or action to say that voice message has successfully been forwarded unless you exit the group chat and see if it has been sent to the intended thread.</p>	<p>JT:3 JK:2 ST: 3 JS: 3</p>

		Possible Fix: Providing users with an action completed message, sound, or vibration in the phone to make users aware that the action has been completed. Also potentially notifying other members that a voice message was forwarded.	
JK1	visibility of system status and error prevention	<p>Location: The video chat and calling buttons at the top of a chat</p> <p>How Violated: When a previous user of the app deletes the signal app, you are still able to call them from the app even though they don't get your call, and the call keeps on ringing forever if you left it.</p> <p>Possible Fix: Signal should provide a clear and concise error message to the user. The message could say, "Error: Your contact no longer has the signal app installed so you will be unable to video chat or call them until they redownload the app".</p>	JK: 2 JT: 3 ST: 2 JS: 3
JK2	Consistency and standards	<p>Location: the microphone symbol to the right of the camera button in a chat and the keyboard microphone</p> <p>How Violated: There are two symbols that are the same and mean two different things. The microphone symbol to the right of the camera button is a voice message that records your voice that can be played to the person you sent the message to. The same microphone symbol is in Apple's keyboard, this button takes what you are saying and converts it into text that you can send so you don't have to type out a text.</p> <p>Possible Fix: Change the microphone button next to the camera button in the app to a different symbol, maybe a walkie talkie symbol.</p>	JK: 1 JT: 1 ST: 1 JS: 1
JK3	User control and freedom	<p>Location: the stickers button located on the new message text bubble in a chat.</p> <p>How Violated: When you click on the stickers button, there's no clear "Emergency Exit" back to the normal keyboard. You have to know to click the new message bubble again to get back to a keyboard. An inexperienced person who hasn't used common texting interfaces before might not be able to find out how to get back to the normal keyboard easily.</p> <p>Possible Fix: Put a keyboard symbol on the stickers drop down menu that takes you back to the normal keyboard.</p>	JK: 1 JT: 1 ST: 1 JS: 1
JK4	Flexibility and efficiency of use	<p>Location: Home page that shows all of your different chats</p> <p>How Violated: There is no clear way to delete a chat for inexperienced users. To delete a chat you have to know to swipe right which gives you an option to delete the chat. This will only be known by experienced users and will be hard to find for inexperienced people.</p> <p>Possible Fix: add an edit button next to the settings button that for when you click on it an interface pops up allowing you to select multiple chats and hitting a delete button on the bottom of the page.</p>	JK: 3 JT: 3 ST: 3 JS: 3
JS1	Help and Documentation	Location: This is on the support center page.	JS: 3 JT: 3 JK: 3

		<p>How Violated: When searching a simple question, “How do I call someone?”, the results that came up were not related and were just other “how do I...” questions. There was not an effective answer.</p> <p>Possible Fix: The support needs to be changed so that it brings up answers to the question that the user typed in. More search results should be added to help</p>	ST: 3
JS2	Help users recognize and diagnose errors	<p>Location: The problem is in the message conversation with your contact.</p> <p>How Violated: The text did not go through using SMS to a contact who did not have the app. However, there is a check mark signaling that the text went through.</p> <p>Possible Fix: Make sure the sending by SMS feature works and if it does not, make sure to create a clearer notification that the message was not sent.</p>	JS: 4 JT:4 JK:3 ST: 4
JS3	Flexibility and efficiency of use	<p>Location: The app as a whole.</p> <p>How Violated: There are not really any shortcuts for a more experienced user.</p> <p>Possible Fix: Shortcuts and advanced options could be added to the app.</p>	JS: 1 JT: 1 JK: 1 ST: 1
JS4 ST4	Flexibility and efficiency of use	<p>Location: The microphone within the message conversation.</p> <p>How Violated: For an inexperienced user, the microphone that allows you to talk instead of type was confusing to use. The user has to hold down on the microphone while they speak or “lock” it so they do not have to hold it down. Also, when the user lets go of the microphone, it automatically sends the text instead of letting you listen first.</p> <p>Possible Fix: The microphone option would be easier to use by just clicking on the icon instead of holding it down. Also, it would be important to let the user listen to the message before sending it.</p>	JS:3 JK:3 JT:3 ST:3
JS5	Consistency and Standards	<p>Location: The problem is in the message conversation when clicking on the chat bubble.</p> <p>How Violated: When a user tries to delete a message by holding down on the message, the menu that comes up by the chat bubble only shows the emoji keyboard. The actual delete button is on the bottom of the screen. In other messaging platforms like iMessage, when holding down on the message, the option to delete is connected to the chat bubble.</p> <p>Possible Fix: Move the delete option to the chat bubble menu that pops up when clicking on the message to make it consistent with other platforms.</p>	JS: 2 JK: 2 JT:2 ST:2
ST1	Help and Documentation	<p>Location: Help – Support Center – Getting Started – Group Calling</p>	ST:3 JK:3 JT:3

		<p>How Violated: Only able to use group calling if all members have the latest version of the app, and all members need to all have the same version of the app also. Would be difficult to have all users update their app if the group call is an emergency, users would then need to wait</p> <p>Possible Fix: Allowing all users to group call with any version of the app</p>	JS: 3
ST2	Consistency and standards	<p>Location: Help – Signal Terms & Privacy Policy – About our services</p> <p>How Violated: States that the app is only available to people over the age of 13, although when signing up for the app there is no place where it asks you your age</p> <p>Possible Fix: When registering for the app have a screen where they ask the user their age, and if they are older than 13 allow the user to use the app and if they are under the age of 13 have a page that pops up showing that they are too young to use the app</p>	ST: 2 JT:2 JK:2 JS: 2
ST3	User Control and freedom	<p>Location: Linked Devices</p> <p>How Violated: Only allows the user to add a new device by scanning a QR Code, not allowing Bluetooth to connect devices with one another, little difficult to find QR Codes efficiently</p> <p>Possible Fix: Adding in other features for the user to connect more devices with one another (Bluetooth)</p>	ST: 2 JK:2 JT:2 JS: 2
ST5	Help users recognize, diagnose, and recover from errors	<p>Location: Settings – Account – Registration Lock</p> <p>How Violated: Turning the registration lock on requires phone number and code to re-enter, if not entered correctly the first time when turning off, it will lock you out of your account for the next 7 days, will reoccur if happened again next time the user tries to unlock account</p> <p>Possible Fix: Having an option if the user does not know their passcode, have the app text the users number to reset code</p>	ST: 2 JK:1 JT:2 JS: 2

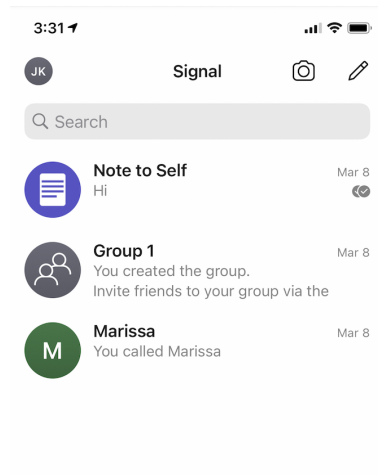
Part 3: Cognitive Walkthrough

Task 1: Use the Signal App, starting from the messages page, to find out how to verify a contacts authenticity

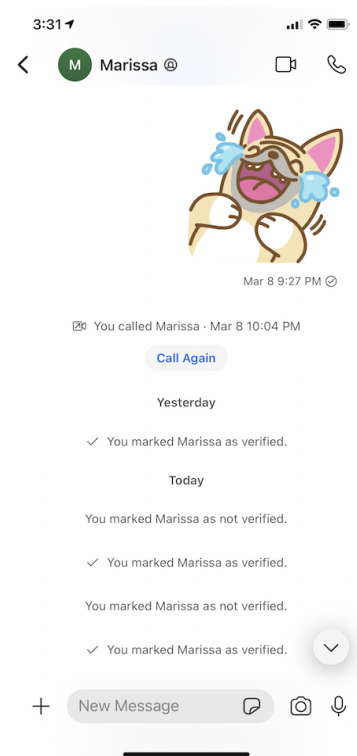
ID#	Task and Step	Success/Failure Story	Severity
JS1 JT1 JK1 ST1	Step 1: Begin navigating the Signal app, looking for information on how to verify authenticity for the contact you are trying to verify.	<ol style="list-style-type: none"> Will the users try to achieve the right effect? Yes, The user will be able to navigate the app if they are trying to use this feature because they will have already had prior experience with the signal app Will the user notice that the correct action is available? Yes, the interface shows the contact you are looking for in your messages area. Will the user associate the correct action with the effect they are trying to achieve? Yes, this method is the only way to gain access to contact/user information. If the correct action is performed, will the user see that progress is being made toward the goal of the task? Yes, the user will see that they are getting closer to finding more information about the contact. 	
JS2 JT2 JK2 ST2	Step 2: Look at the chat with your contact to find more information on verifying the authenticity your contact	<ol style="list-style-type: none"> Will the users try to achieve the right effect? Yes, users that have experience messaging through apps would be able to locate/achieve the right effect. Will the user notice that the correct action is available? Yes, the interface shows your contacts name on the top of the page which you would notice, all the other information on the page refers to different texting or calling features. Will the user associate the correct action with the effect they are trying to achieve? Yes, this will reveal information specific to the contact. If the correct action is performed, will the user see that progress is being made toward the goal of the task? Yes, once the correct action is performed, the next page reveals more information and settings for that contact. 	
JS3 JT3 JK3 ST3	Step 3: Look at the profile page of your contact to find how to verify the authenticity of your contact	<ol style="list-style-type: none"> Will the users try to achieve the right effect? Yes, the user will scroll and look through the options to find what they are looking for. Will the user notice that the correct action is available? Yes, the interface shows the correct option so the user will click through the options until they find the correct one. Will the user associate the correct action with the effect they are trying to achieve? No, the user may not correlate View Safety Number with contact authenticity. If the correct action is performed, will the user see that progress is being made toward the goal of the task? 	1

JS4 JT4 ST4 JK4	Step 4: Looking at the page, use the QR code to verify the authenticity of your contact	<ol style="list-style-type: none"> 1. Will the users try to achieve the right effect? Yes, the user has experience using and scanning QR codes. 2. Will the user notice that the correct action is available? Yes, the interface gives the user directions on the correct action to take with the QR code. 3. Will the user associate the correct action with the effect they are trying to achieve? Yes, the interface explains that by using the QR code to scan their contacts QR code, it verifies the security and authenticity of the contact by telling you if the code matches or not. 4. If the correct action is performed, will the user see that progress is being made toward the goal of the task? Yes, once the QR code is scanned, the app tells you whether or not its code is verified and it gives you the option to mark them as verified. 	
JS5 JT5 ST5 JK5	Step 5: On the same page, once you have confirmed the authenticity of your contact, mark them as verified	<ol style="list-style-type: none"> 1. Will the users try to achieve the right effect? Yes, the system prompts users to verify the contact. 2. Will the user notice that the correct action is available? Yes, users are given the option to verify after the code is scanned. 3. Will the user associate the correct action with the effect they are trying to achieve? Yes, the user will assume that once they click "mark as verified", their contact will be verified. 4. If the correct action is performed, will the user see that progress is being made toward the goal of the task? Yes, the contact will be marked as verified once the action is completed. 	

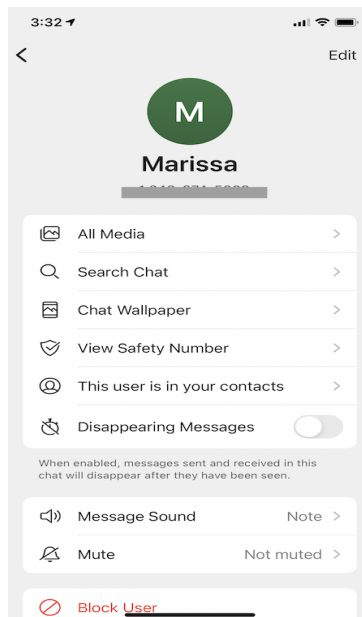
Step 1: Begin navigating the Signal app, looking for information on how to verify authenticity for the contact you are trying to verify.



Step 2: Look at the chat with your contact to find more information on verifying the authenticity of your contact.



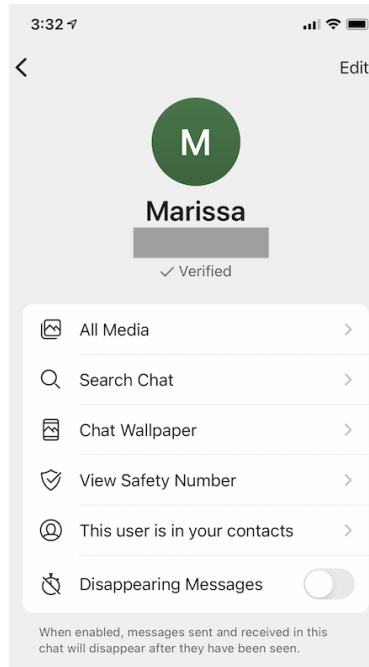
Step 3: Look at the profile page of your contact to find how to verify the authenticity of your contact.



Step 4: Looking at the page, use the QR code to verify the authenticity of your contact.



Step 5: On the same page, once you have confirmed the authenticity of your contact, mark them as verified.



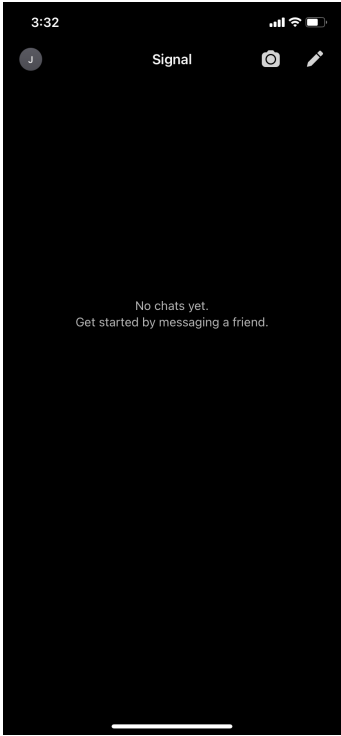
Task 2: Use the Signal App, starting from the messages page, link a new device to your account.

ID#	Task and Step	Success/Failure Story	Severity
JS51 JT1 ST1 JK1	Step 1: Begin navigating the Signal app, looking for information on how to link accounts on devices.	<ol style="list-style-type: none"> Will the users try to achieve the right effect? Yes, the user has experience browsing through messaging apps looking for the settings. Will the user notice that the correct action is available? Yes, the interface shows the settings icon in the top left corner. Will the user associate the correct action with the effect they are trying to achieve? No, the user may not associate the settings icon on Signal with linking a device because the settings icon is not representative of settings. If the correct action is performed, will the user see that progress is being made toward the goal of the task? 	1
JS2 JT2 ST2 JK2	Step 2: Looking at the Settings Page, find information on linking a new device	<ol style="list-style-type: none"> Will the users try to achieve the right effect? Yes, users will be able to find information on linking new devices because the settings show multiple different settings to look through. Also since they are trying to link a new device, the user will have prior knowledge going through the settings in the signal app. Will the user notice that the correct action is available? Yes, the option for linking accounts is shown as soon as users enter the settings 	

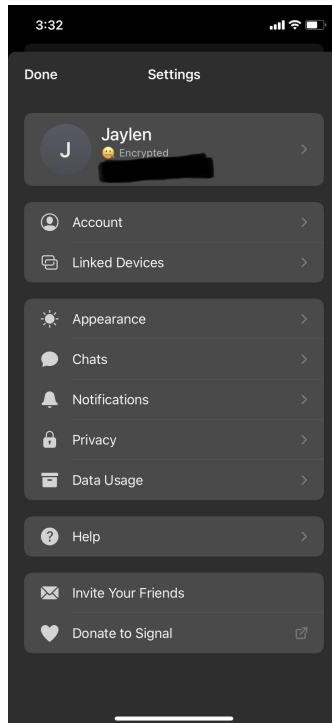
		<p>3. Will the user associate the correct action with the effect they are trying to achieve?</p> <p>Yes, the interface shows a button for linked devices which the user can assume is the right task to get the next step for linking a new device.</p> <p>4. If the correct action is performed, will the user see that progress is being made toward the goal of the task?</p> <p>Yes, once they click on the link devices tab, they are forwarded to the next page which shows your linked devices, along with a link new device tab.</p>	
JS3 JT3 ST3 JK3	Step 3: Looking at the next page, locate options for linking a new device	<p>1. Will the users try to achieve the right effect?</p> <p>Yes, the user will recognize that they are trying to achieve the original task.</p> <p>2. Will the user notice that the correct action is available?</p> <p>Yes, a link new device tab is at the top of the page, which is easily noticeable by the user.</p> <p>3. Will the user associate the correct action with the effect they are trying to achieve?</p> <p>Yes, because the option to link the a new device is presented to users.</p> <p>4. If the correct action is performed, will the user see that progress is being made toward the goal of the task?</p> <p>Yes, users will be taken to the next step scanning a QR code.</p>	
JS4 JT4 ST4 JK4	Step 4: (Assuming downloaded and open on secondary device) Link the devices	<p>1. Will the users try to achieve the right effect?</p> <p>Yes, the system prompts the user to scan the QR code of the secondary device, also the secondary device prompts them to scan the secondary device with the original device for the account.</p> <p>2. Will the user notice that the correct action is available?</p> <p>Yes, the interface directs users to scan a QR code to link devices.</p> <p>3. Will the user associate the correct action with the effect they are trying to achieve?</p> <p>Yes, this is the only action that can be taken from this screen.</p> <p>4. If the correct action is performed, will the user see that progress is being made toward the goal of the task?</p> <p>Yes, after scanning the user will be asked if they want to link the devices or cancel the process.</p>	
JS5 JT5 ST5 JK5	Step 5: On the same page, once you have scanned the new device's QR code, link the device	<p>1. Will the users try to achieve the right effect?</p> <p>Yes, the system tells the user to complete the linking process</p> <p>2. Will the user notice that the correct action is available?</p> <p>The user will notice the prompt at the bottom of the screen to link the devices.</p> <p>3. Will the user associate the correct action with the effect they are trying to achieve?</p> <p>Yes, they will understand this means they are linking a new device to their account.</p> <p>4. If the correct action is performed, will the user see that progress is being made toward the goal of the task?</p> <p>Yes, the user will be prompted on their secondary device to name their new linked account.</p>	

JS6 JT6 ST6 JK6	Step 6: Name the device on your secondary device	<div>1. Will the users try to achieve the right effect? Yes, the system on their secondary device tells them to enter a name for the linked account.</div> <div>2. Will the user notice that the correct action is available? Yes the keyboard on the secondary device was automatically open for me to type the name for the device.</div> <div>3. Will the user associate the correct action with the effect they are trying to achieve? Yes, the user will begin to edit the name of the linked account</div> <div>4. If the correct action is performed, will the user see that progress is being made toward the goal of the task? Yes, the user will have completed the linking process.</div>	
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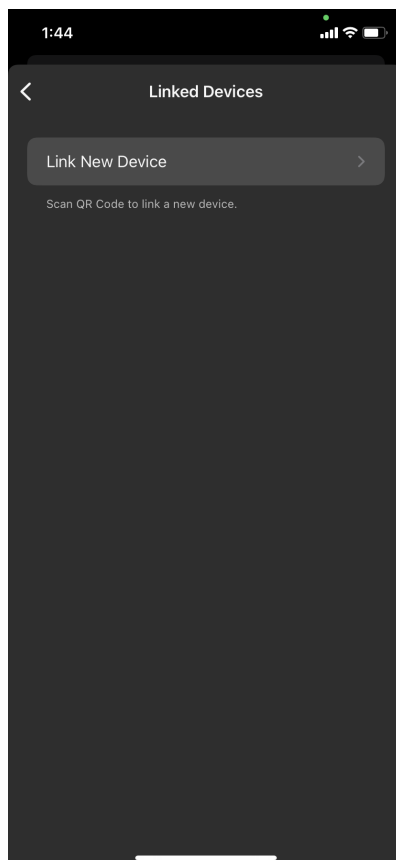
Step 1: Begin navigating the Signal app, looking for information on how to link accounts on devices.



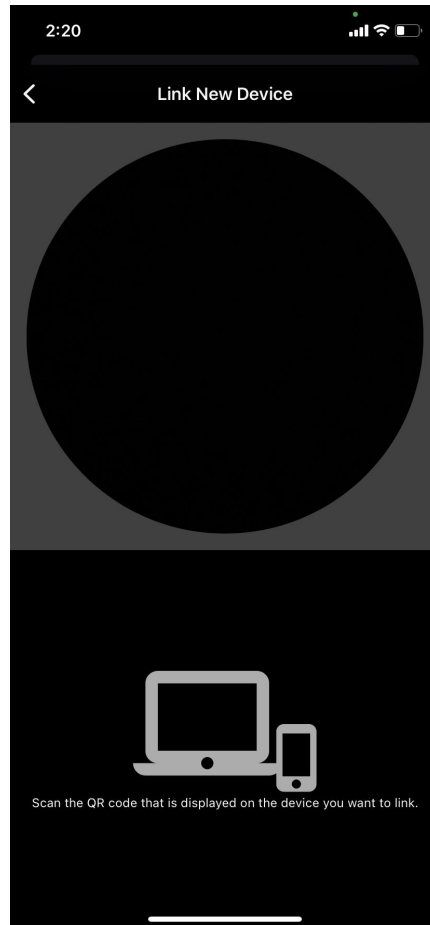
Step 2: Looking at the Settings Page, find information on linking a new device



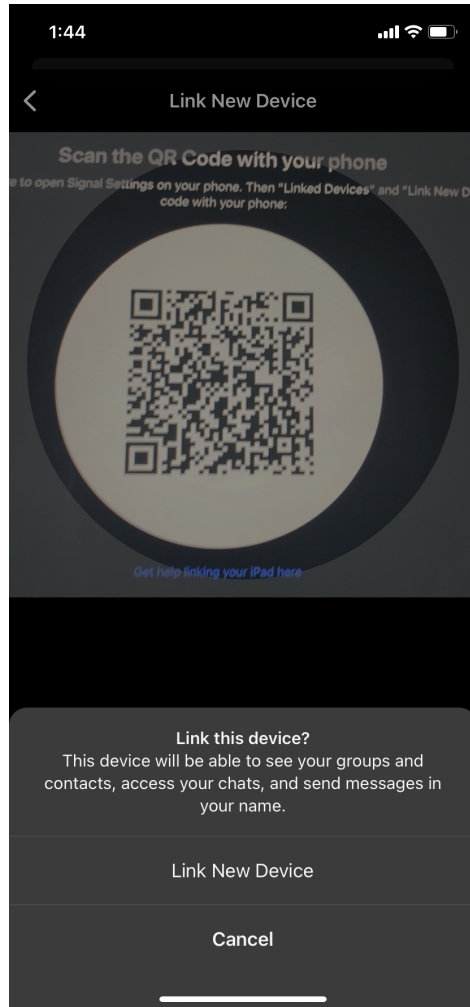
Step 3: Looking at the next page, locate options for linking a new device



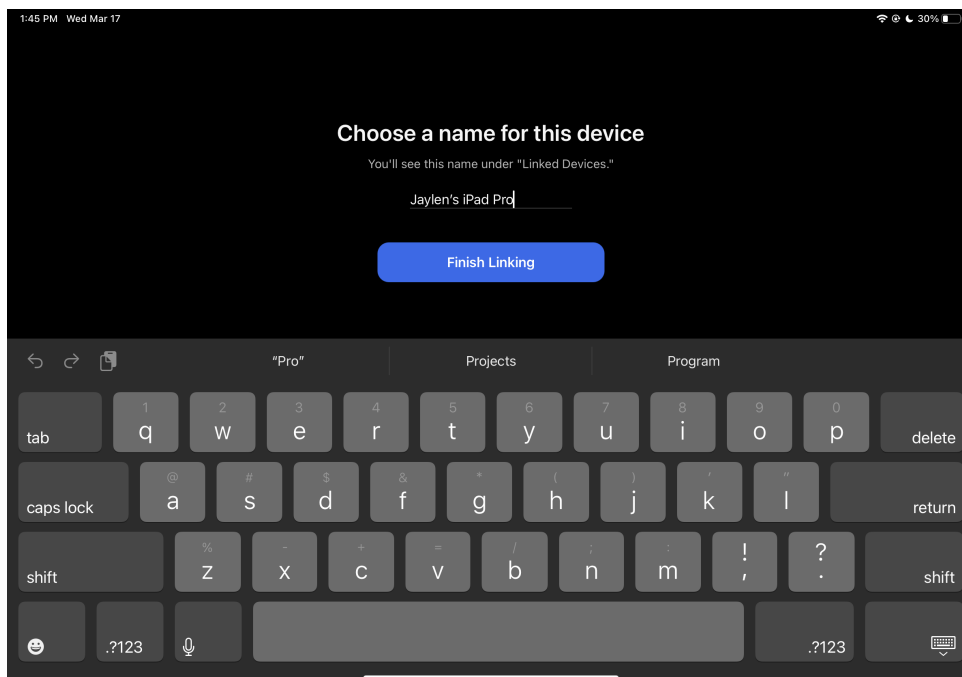
Step 4: (Assuming app is downloaded and open on secondary device) Link the devices



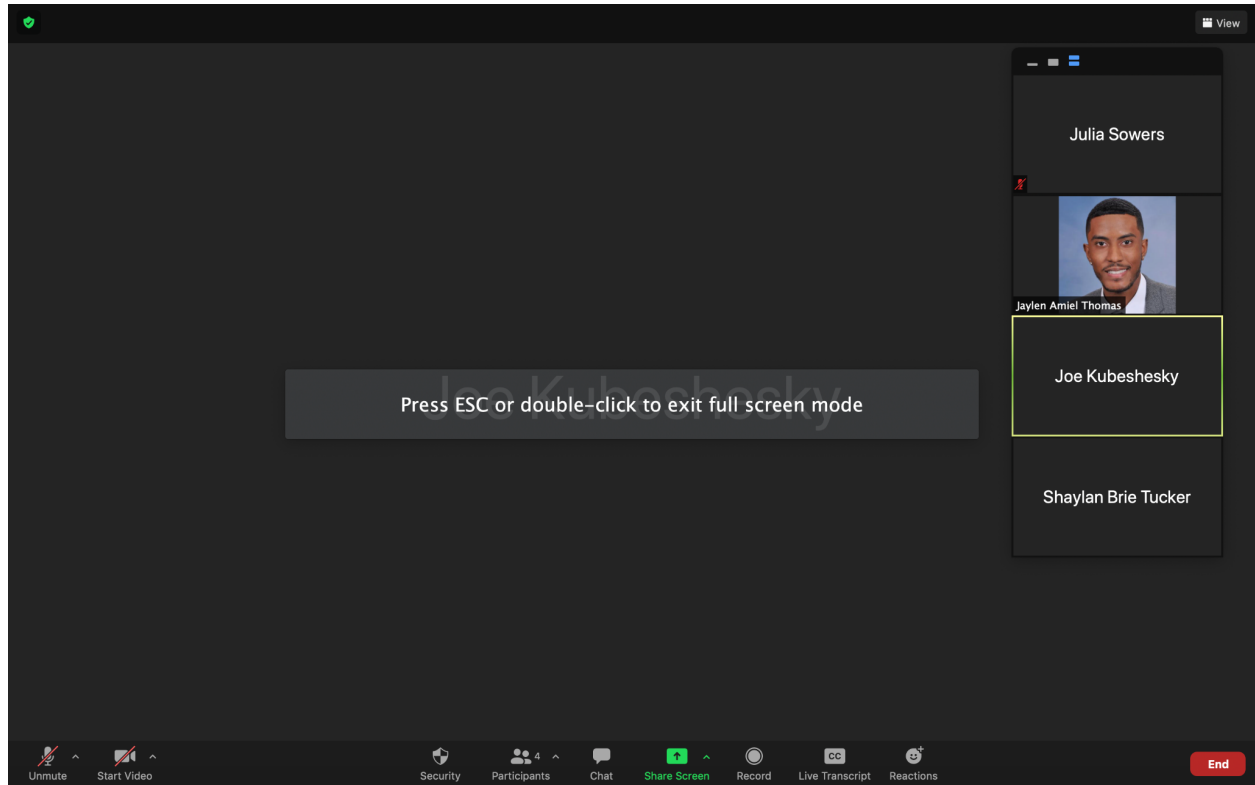
Step 5: On the same page, once you have scanned the new device's QR code, link the device



Step 6: Name the device you're linking on your secondary account



Zoom Meeting:



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- [2] V. McCall, "Business Insider," January 12, 2021. [Online]. Available: <https://businessinsider.com/what-is-signal>. [Accessed March 16 2021].
- [3] J. Aten, "Inc.," [Online]. Available: <https://www.inc.com/jason-aten/how-signal-became-most-popular-app-in-world-overnight-why-it-matters.html>. [Accessed 16 March 2021].