

The Ring

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Potential Usability Test Script

Introduction:

##Introduction

In this study, we will be testing some features of The Ring. To be more detailed, we will be testing different ways you can unlock your phone/computer without typing any password, respond to text messages without using a keyboard, and different ways you can change your phone's/computer's volume using The Ring.

During this study, we will be giving you tasks and asking for feedback on the tasks you will be performing.

Any questions?

###First Application - Change between different inputs

We are going to test the user's ability to navigate around The Ring's interface in order to switch among different smart devices and identify which smart device they are connected to.

Sub Task 1: Please change to the second input device on The Ring by moving the switch located on the side of The Ring.
(can they locate the switch? Yes/no)

Sub Task 2: Perform some gestures with The Ring, are you able to identify which device you are performing the action on?
(can they properly identify the correct device? Yes/no)

End of Change input Exercise

Respond or type messages with The Ring

We are going to test the user's ability to utilize The Ring to view and respond to messages. You will be tested both using the projected keyboard and other built-in methods of responding.

Sub Task 1: Please view your most recent text message.

(Are they able to properly display the most recent text message on their hand? Yes/no)

Sub Task 2: Respond to the most recent text message by writing out the message on the table.

(Are they able to respond and send the message by writing the response on the table? Yes/no)

Sub Task 3: (Optional if the user knows morse code): Respond yes to your most recent text message by utilizing the morse code feature.

(can they properly use the morse code feature to respond to text messages? yes/no)

Use The Ring as an authentication device

We are going to test the user's ability to use The Ring as an authentication device to unlock their phone and/or computer.

Sub Task 1: With the Ring placed on your finger, sync it with your phone.

(Is the user able to sync The Ring with the desired smart device? Yes/No)

Sub Task 2: With The Ring synced with your phone, unlock your phone's screen without using the built-in unlocking methods from your phone, such as typing in the password, facial recognition, and fingerprint recognition.

(Is the user able to use The Ring as an authentication device to unlock their phone? Yes/No)

Sub Task 3: Now, repeat the process, but this time use The Ring to unlock your computer without using the built-in unlocking methods from your computer, such as typing in the password, facial recognition, and fingerprint recognition.

(Can the user perform the authentication feature across multiple devices? Yes/No)

End of Study User Questions:

1. Rate the difficulty of navigating and switching between different smart devices?
(Rate this on a scale of 1-10, 1 being extremely easy, and 10 being extremely difficult)
2. Which was your favorite method of responding to text messages?
3. Rate the accuracy of using gestures (writing) to respond to text messages.
(Utilize the same scale of 1-10, where 1 is very inaccurate, and 10 being very accurate)
4. Does using The Ring as an authentication device actually save you time when unlocking your smart device?
5. Overall, which was your favorite feature of The Ring and why?

Custom Heuristics

Three custom heuristics:

1. Enabling the user to quickly and accurately switch between the connected devices
2. Enabling the user to both view and respond to messages with ease
3. Simplistic method of allowing user to remotely control their smart device (i.e volume change)


Our first heuristic that we customized to our device, The Ring, is “enabling the user to quickly and accurately switch between the connected devices. During our team discussion, we talked about the importance of allowing the user to efficiently switch among the many devices the user might have connected to The Ring. Since our device is a wearable that can access other devices, similar to the Apple Watch, we want the user to be able to accurately and efficiently switch between their smart devices without confusion. It is often that the user will have multiple smart devices connected at once, so it is important that they can switch between them with ease. We will measure this through the amount of time it takes the user to switch between two devices and how accurate one can do so. The accuracy will be measured in the user’s ability to swap between two devices without switching to the wrong one.

Our second heuristic is “enabling the user to both view and respond to messages with ease”. To differentiate our device from other smart devices like the Apple Watch, we wanted the user to be able to reply to messages easily, quickly, and with privacy using The Ring. One of the first functionalities that we came up with was being able to have our device sense what letters the user is drawing using the finger wearing The Ring. This is a discrete way for the user to construct his or her messages because it is difficult for others to read what they are writing. Furthermore, it’s easy for the user because he or she can be drawing on any type of surface or even in the air, as long as he or she is tracing out the shapes of the letters using the finger. There are multiple methods that the user can use to respond to text messages, and it is ultimately up to the user to decide what they prefer. This is important because some users may prefer typing out their message while others may prefer utilizing gestures to write it out. As long as there is a method of allowing all users to comfortably respond to messages, this heuristic will be satisfied .

Our third heuristic is “a simplistic method of allowing the user to remotely control their devices”, such as changing the volume. We want the user to be able to perform gestures that will perform actions on their connected device. Often, users will perform a variety of gestures, and it is important that they translate to something on their smart device. The purpose of The Ring is to make all the other smart gadgets obsolete, so it is crucial that The Ring supports most functionalities that other smart devices allow. An important way of measuring this is by The Ring’s ability to distinguish between these

gestures with accuracy in order to perform the user's desired task. A swipe upwards while connected to a smart TV could mean changing the channel up by one while swiping right on a smartphone could perform a shortcut of closing the current window.

Group UAR


Study Name: The Ring	
Date of Study: 04-24-2020	
Experimenters' Names: Leon Shen, Yvonne Liu, Lucas Gama, Wesley Shen	
No. Heuristic Evaluation #1	Problem/Good Aspect Good Aspect
Name: Visibility of System Status	
Reference:  <p>There is instant feedback when turning on voice assistance. User will be notified immediately if the action worked or did not</p>	
Evidence: Interface aspect: When activating any feature, it is instantly apparent if the feature works or not. For example if you activate voice assistant, the user will know if it is responsive if Siri is activated or not responsive if Siri does not. Also, when the user speaks into the microphone there will be instant feedback into whether or not the microphone works or if it does not. If it does, Siri will recognize the command and perform the action.	
Explanation: This is good because visibility of system status allows users to determine whether a function is working or not. If it is not, it will be easier to recognize and allow more efficient diagnose of the problem.	
Severity or Benefit: This is very beneficial because if there is a problem this will allow it to be resolved quicker. The user will notice the error and be able to report it. If there was bad visibility of system status, the user will not notice the error and realize they have troubles but not be able to diagnose it. This will cause a lot of frustration on the debugging end and the user end.	

Possible solution and/or Trade-offs:

Potential trade offs are the use of the system's resources. With feedback, more applications are opening and depending on the system it might not be able to handle all the applications that open. Trade offs are the systems efficiency and power.

Relationships:

No. HE TA	Problem/Good Aspect
Name: Visibility of system status	
Reference: https://www.figma.com/file/NKQ6e7Cku2MbnfZHiBi3nZ/The-Ring?node-id=42%3A9	
Evidence: Interface aspect: The Ring is a device that can control other smart devices. The intention is to make the user's life easier to control his/her smart devices. Therefore, there is a switch button on The Ring that allows the user to switch between smart devices that were pre-determined.	
Explanation: Since The Ring can connect to multiple smart devices, it have an option to switch between pre-determined devices. However, The Ring lacks on giving a visual feedback to show the syncing progress to the smart device making the user wondering how long it will take for the device to be synced with The Ring.	
Severity or Benefit: Severity level 3. Major usability problem: important to fix, so should be given high priority	
Possible solution and/or Trade-offs: Add a LED progress bar on The Ring to show the syncing progress to a smart device. Or have the smart device show the syncing progress on its screen.	
Relationships:	

No.	Heuristic Evaluation	Problem/Good Aspect
Name:		
Nielson's Heuristic #5: Error Prevention		
Reference:		
		
Evidence:		
Interface aspect:		
<p>Here, we have the feature where the user can change the volume of their connected devices such as their tablet, phone, or laptop. This screenshot shows that the user can use The Ring to increase the volume of their phone.</p>		
Explanation:		
<p>Although we cannot see it here, but one of the heuristics that we have not perfected is error prevention, where we have not thought of a way to prevent the user from accidentally switching to a device they connected that they did not want to switch to. For example, the user thought that they were changing the volume on their phone because they thought they had just switched to their phone; however, they were connected to their laptop and thus was changing the volume on their laptop instead.</p>		
Severity or Benefit:		
<p>3- Major usability problem: important to fix, so should be given high priority</p>		
Possible solution and/or Trade-offs:		
<p>A possible solution is to allow the user to check what device they are currently connected to. A way to do this is when they have their Bluetooth earphones (which would also be connected to The Ring), they could hear a message from the device saying, "currently connected to (insert device)". This way, they would know which device they are controlling.</p>		

No.	HE	Problem/Good Aspect
Name:		
Enabling the user to both view and respond to messages with ease		
Reference:		
https://www.figma.com/file/NKQ6e7Cku2MbnfZHiBi3nZ/The-Ring?node-id=56%3A23		
Evidence:		
Interface aspect:		
There is no option of how to display text messages via projection (without the user pulling out		
their phone).		
Explanation:		
It misses the point of allowing the user to be discrete by using gestures to reply to text messages		
if the user must pull out their phone to view text messages before they reply.		
Severity or Benefit:		
3 or 4		
Possible solution and/or Trade-offs:		
Adding a functionality/button on The Ring that triggers message projection once a text is		
received.		
Relationships:		
N/A		

List of Bugs

1. Visibility of system status failure:
 - a. Since The Ring can connect to multiple smart devices, it has an option to switch between pre-determined devices. However, The Ring lacks on giving visual feedback to show the syncing progress to the smart device making the user wondering how long it will take for the device to be synced with The Ring. (On 04/26/2020 by Lucas Gama)
2. No option for text projection - Wesley S
 - a. There is no option of how to display text messages via projection (without the user pulling out their phone).
3. Lack of help and documentation - Wesley S
 - a. There is no help or documentation for the user to look for help.

Executive Summary & Potential Fixes

During our group heuristic evaluation, we realized that there were some issues regarding the visibility of system features and lack of help and documentation, which should be fixed such that the user can have a better experience using The Ring.

One of the main problems with using The Ring is its lack of visual feedback indicating to which device it is connected. This issue will cause confusion like whether you are changing the volume for your laptop or Smart TV. After discussing with the group, we came up with a potential solution of a small vibration or soft sound that will be output from the device The Ring is connected to. For example, if The Ring just connected to the TV, the TV will play a soft beep, indicating that it has been connected to The Ring. If the user switches to connect to a phone, The Ring will cause the smartphone to either produce a low vibration or a soft beep, indicating that The Ring has been connected to the phone. All of these settings will be available for the user to adjust based on their liking. They can have no sound either if they choose to, but there will be a warning message stating that there could be confusion on which device The Ring is connected to.

Another bug that our group discovered with The Ring is the lack of option to turn on text projection. Since there is no option or indicator of how to display the text message, the user will not know how to use this feature and will have to pull out their phone and respond that way. This defeats the purpose of having The Ring in the first place for responding to text messages. In order to fix this problem, our group decided that we will have a small button on the side of The Ring, where the user will be able to press it to display any text messages that they have received via a projection onto the user's palm.

There does not exist documentation on how to use all of The Ring's many features. In the case that the user does not know a gesture or accidentally performs a wrong gesture, there is no instructions on how the user may fix the problem. This will cause a lot of problems in learning how to use The Ring. The solution our group came up with to solve this problem is to create a settings page for The Ring which shows step by step tutorial videos on how to perform certain gestures and the command they correlate to. For example, a sample video could include a user who is rotating their hand clockwise about the wrist when connected to a laptop indicating increasing volume. On the settings page, there will be a tab for each of the compatible devices and all possible gestures for each device under the corresponding tab.