

Two-Way Radio UI

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CIM 795

Product Description

In just the last 10 years we have seen cell phones evolve from a brick-like device with a small screen and number buttons, to slick touch-screen devices. Yet, radios have generally maintained the same look in that time. The goal of this project was to bring radios used by public safety supervisors and government workers into the 21st century.

The application was developed for Android OS following Material Design standards. The 4.7' Touch Screen Display is 720x1280px and 312ppi. The device itself has three physical buttons; a push to talk button, volume control, and the power/lock/wake button.

The functions of the radio include: transmitting and receiving, channels and zones lists, signal strength, scan, emergency alert and secure transmission. The application also includes playback history, settings, contacts and private calls.

Project Description

While developing a touchscreen UI for a radio, it was important to keep users mental models in mind, but find ways to update this legacy technology.

Radios are mission critical for police, firefighters and many other government entities, so the UI needed to be simple and straight-forward. For example, it was important to keep in mind that this user group doesn't have time to go through five screens to perform a simple task.

The process began with concept maps and user flows to understand how the product needed to work. Sketches of different ideas were produced to get as many ideas on paper. Then annotated wireframes were developed to layout pages and explain the behaviors across all screens.

Product Overview

- Objective

Design a walkie talkie app for public safety administrators and knowledge worker government markers

- Target Users

- Police Supervisors and Command Staff
- Government Knowledge Workers (FBI, CIA, etc.)

- Requirements

- Android OS
- 4.7' Touch Screen Display (720x1280px, 312ppi)
- Physical Buttons: PPT Button, Power/Lock/Wake, Volume

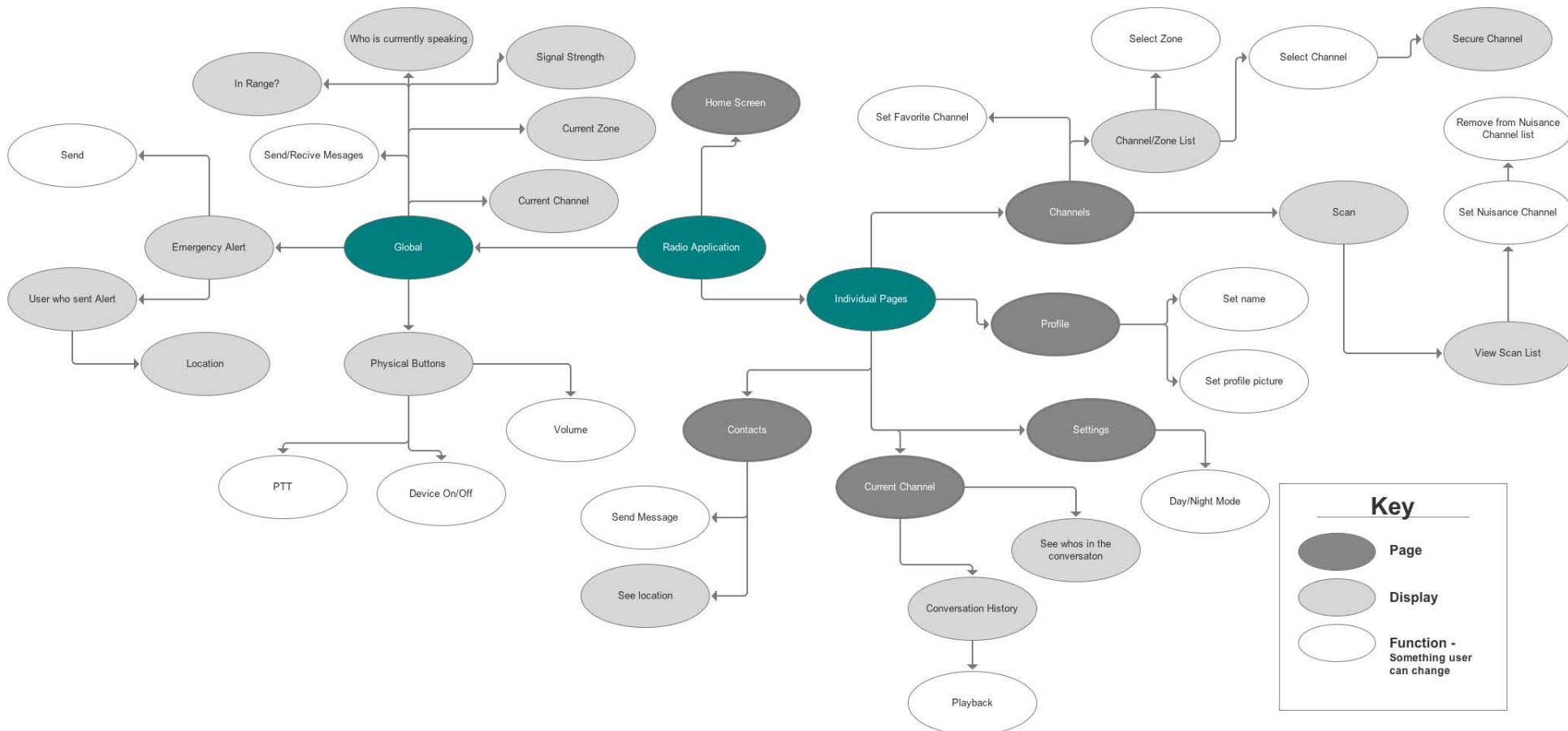
- Functions

- Transmit and Receive TX/RX
- Channels
- Zones
- Signal Strength
- Scan
- Emergency Alert
- Secure TX

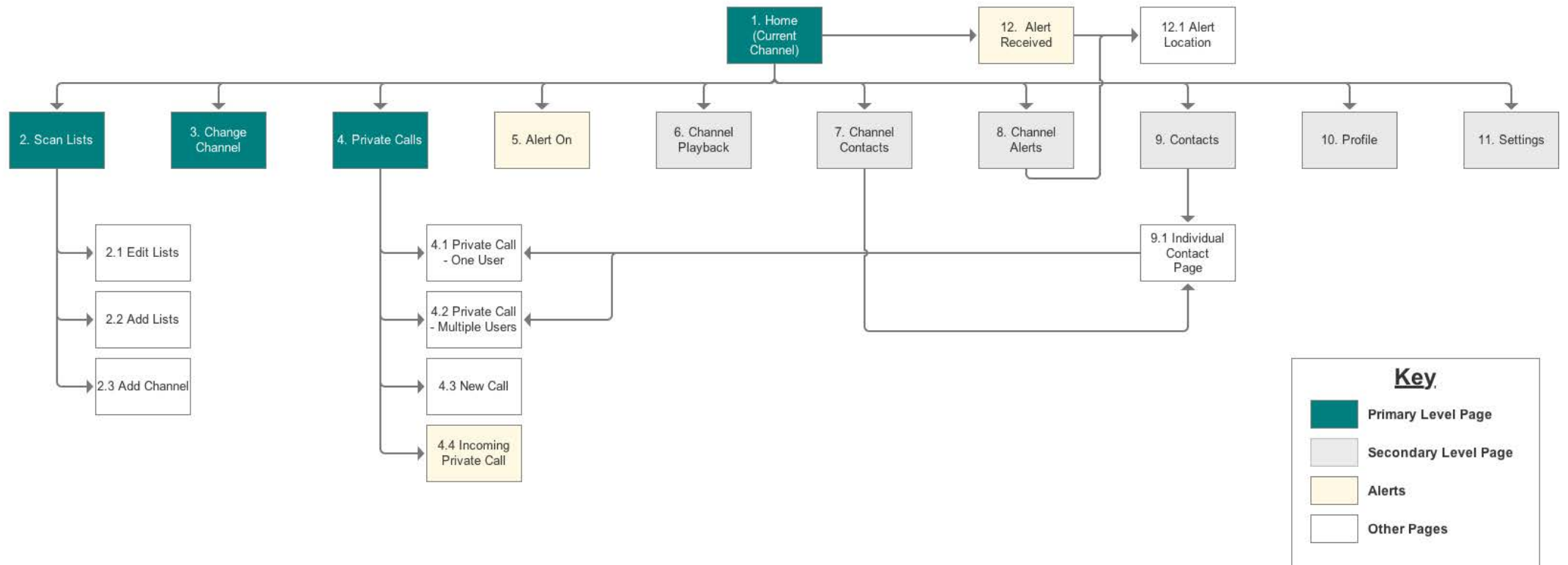
Planning Process (Maps)

Concept Map

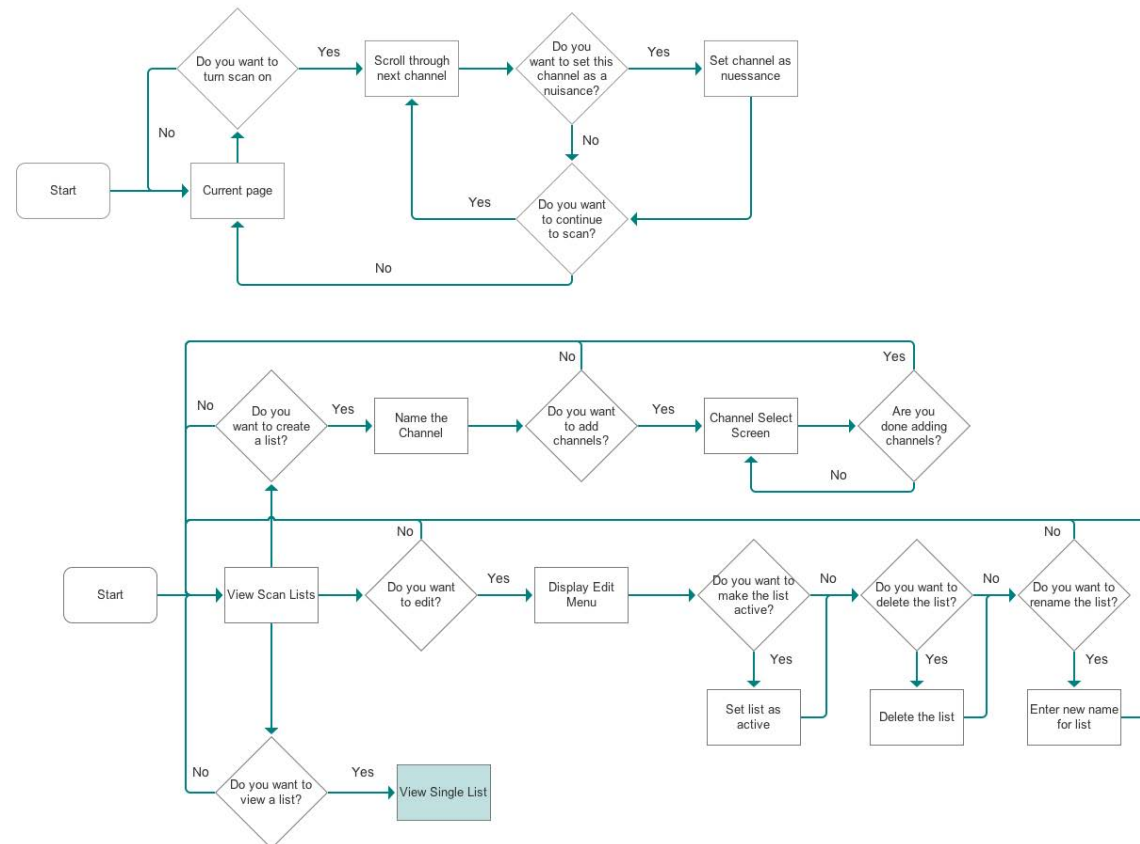
Organizing Functions/Displays into Pages



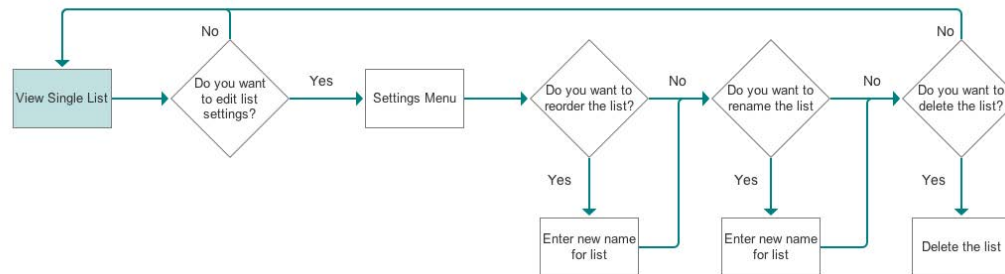
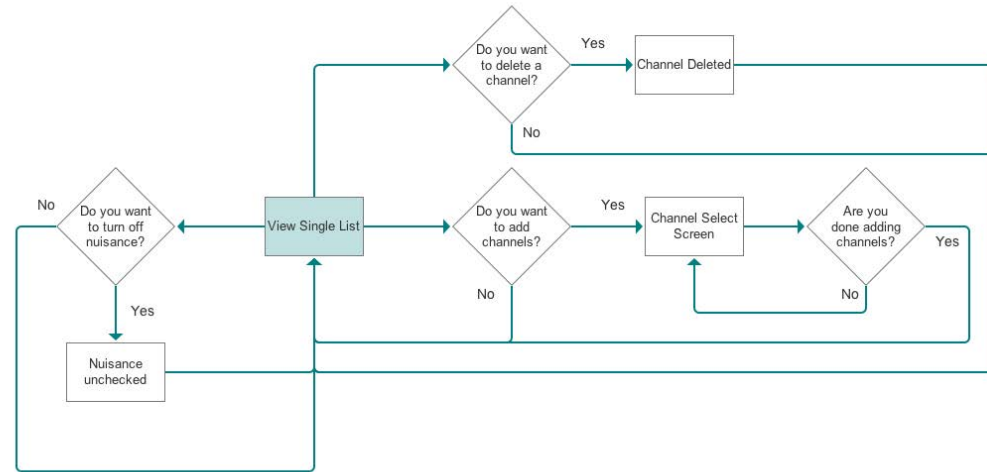
Site Map



Scan Task Flows

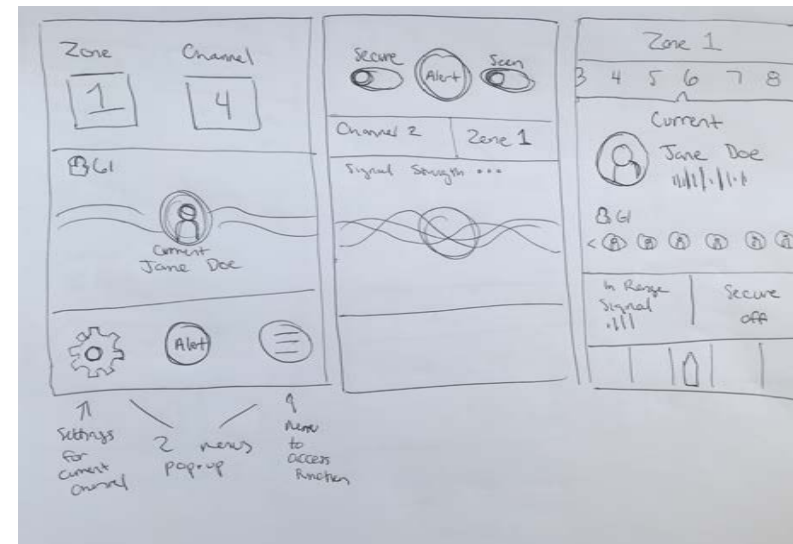
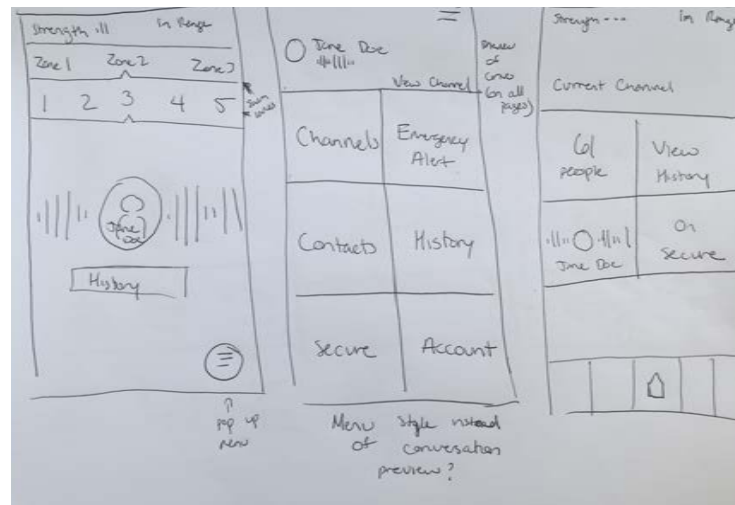
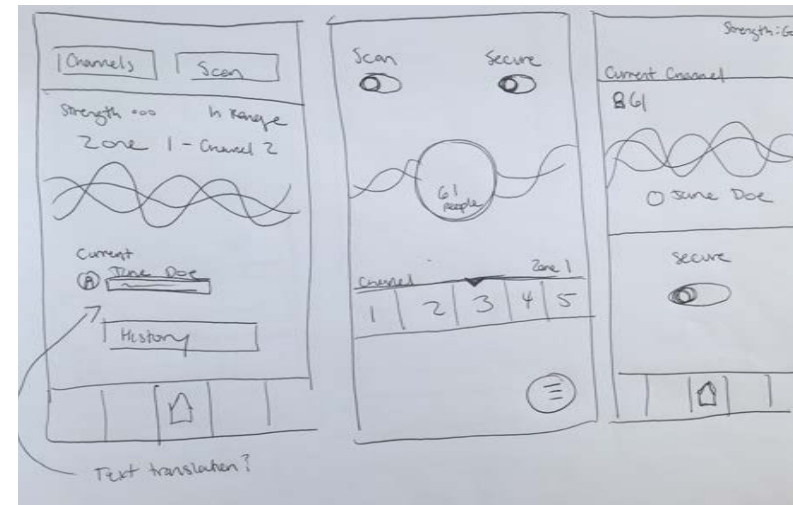


Scan Task Flows, Cont.



Sketches

Initial Sketches – Home page



Annotated Wireframes

1 Home Screen

1. The Top Bar

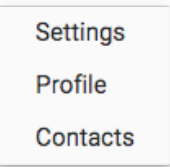
A display allowing the user to see time/battery life, signal strength and whether they are in range.

2. Emergency Alert On/Off

If user taps icon emergency alert toggle will be toggled off or on. See wireframe 5.

3. More

User can access settings, profile, and contacts.



4. Main Functions Tabs

User can quickly get to current station, channels, and scan lists and private calls.

5. Channel Details

User can see zone, secure, and signal strength

6. Next/Prev

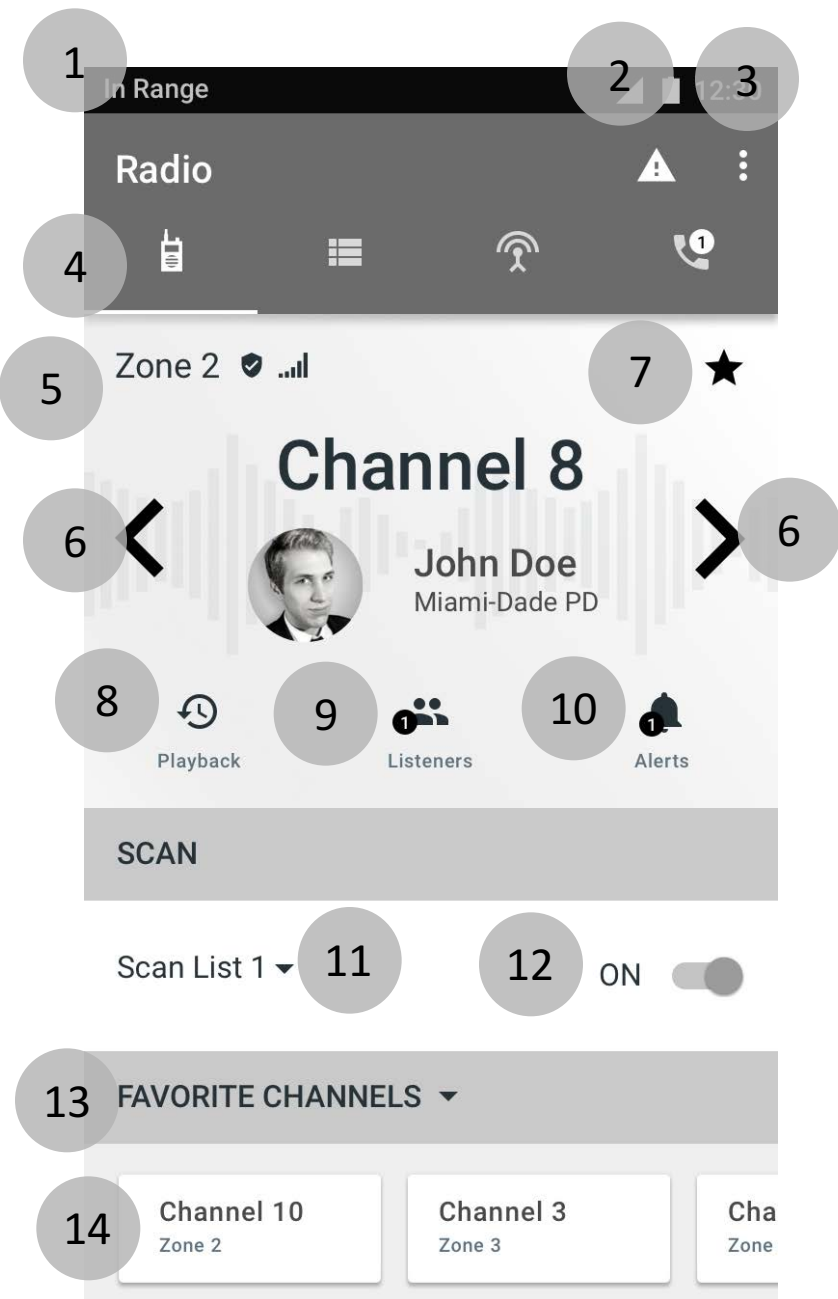
User can navigate through channels in numerical order in current zone.

7. Favorite Channel Designation

This icon is solid when the channel is designated as a favorite. It is an outline if the channel is not. Tapping it toggles the designation off and on.

8. Playback History

User goes to wireframe 6.



9. Channel Listeners

User goes to wireframe 7.

10. Channel Alerts

User goes to wireframe 8.

11. Active Channel Select

User will get a drop down of all their scan lists and can select one.

12. Scan On/Off

If user taps scan toggle scan will be turn on or off. Wireframe 6 shows page when user has scan on.

13. Favorite Channel/Recent Select

User can select if they want to view their favorite channels or recent channels.

14. Channels Swim Lane

This will display a users favorite/most recent so they can quickly scroll through a subset of channels.

1 – Home Screen with Scan On

1. Set Nuisance

If user taps the check box this will designate a nuisance channel and the channel will be skipped as the scanner cycles through the list. To turn it off they will need to go to the scan list.

2. Hold

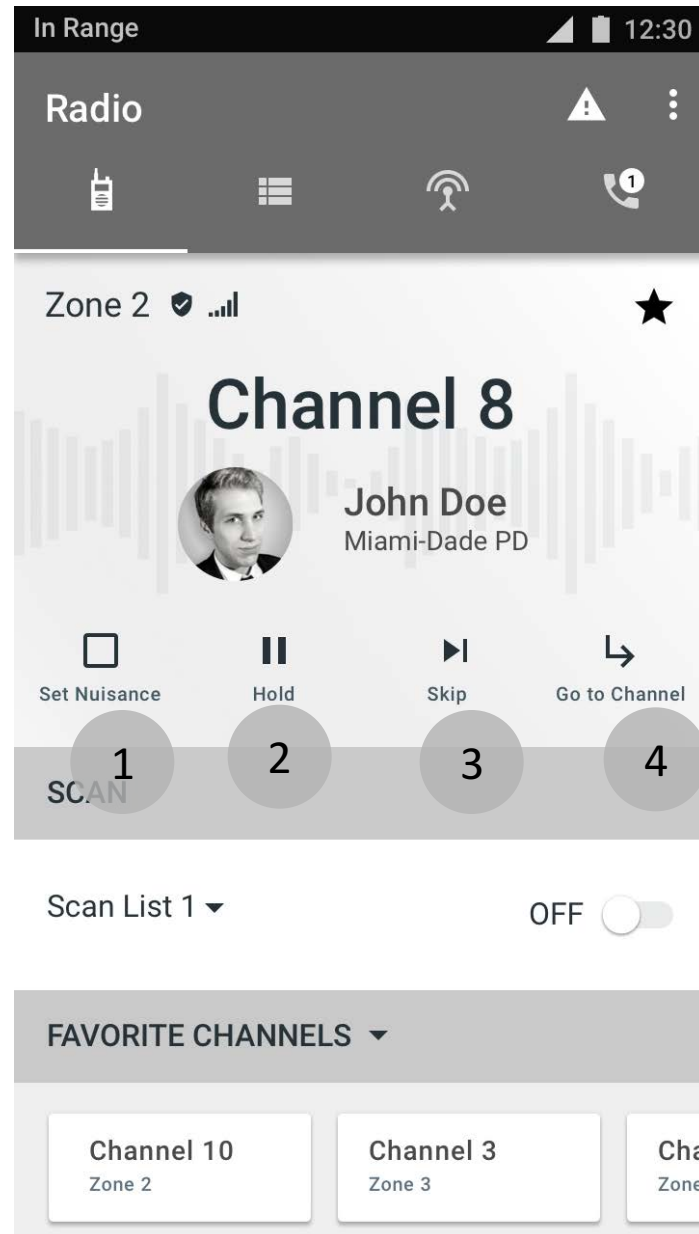
Allows the user to stay on current channel for as long as they want during scan.

3. Skip

User can manually skip channel

4. Go to Channel

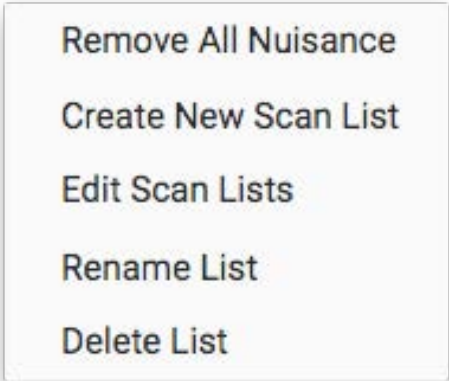
This will stop scan and take the user to the channel they are on



2 Scan Lists

1. Scan List Options

When user presses the icon the menu appears that allows the user to create a new list, edit their lists, etc..



2. Scan List Selector

The user click to get a drop down of their scan lists.

3. Nuisance Channel Checkbox

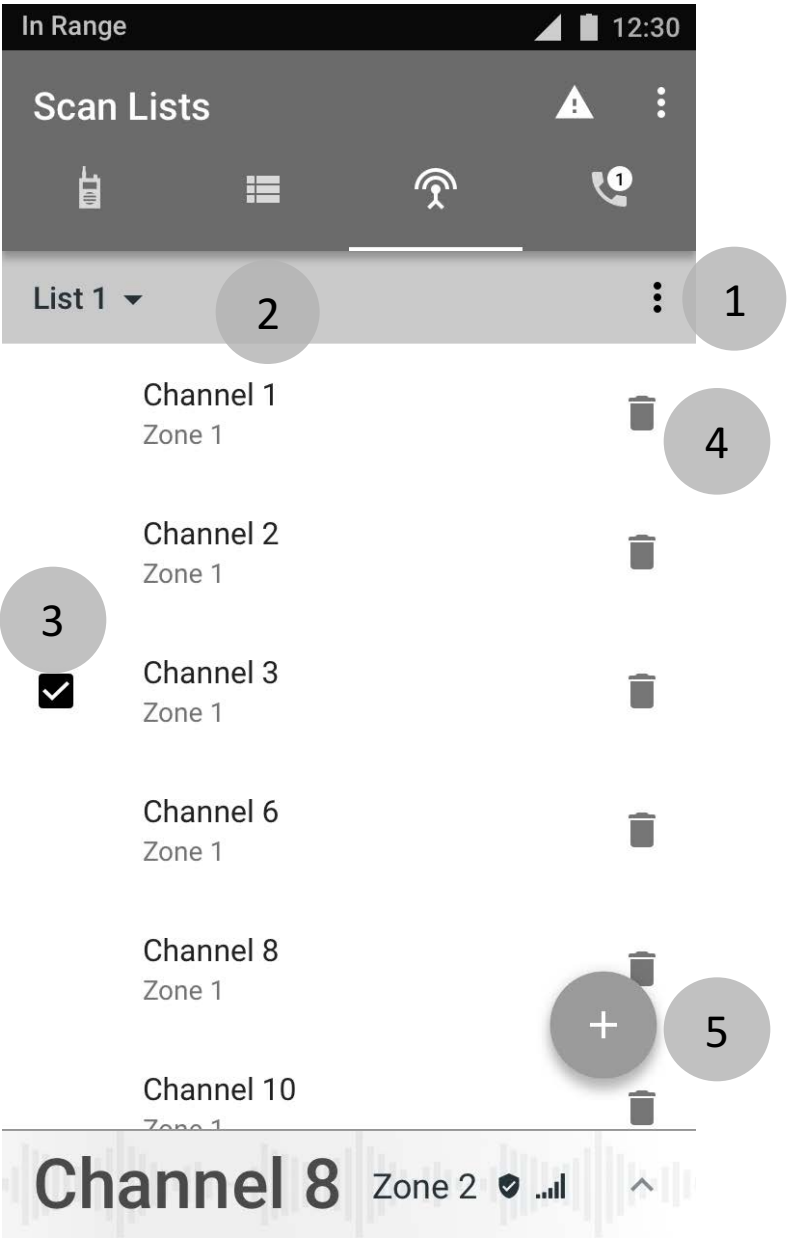
A checkbox that will allow the user to quickly turn a nuisance channel off

4. Delete Channel Button

When user presses trashcan icon a popup will display confirming whether user wants to delete the channel from the list.

5. Add Channel Button

When user selects add channel they will go to wireframe 2.3



2.1 Edit Lists

1. Back Button

Tapping this will take the user back to the scan lists page.

2. Rearrange

If the user taps this icon and holds it down they can rearrange the order the scan lists will appear in drop down menu on the previous screen.

3. Rename List

The user can press this icon to rename their list. They can only rename a list they created.

4. Delete List

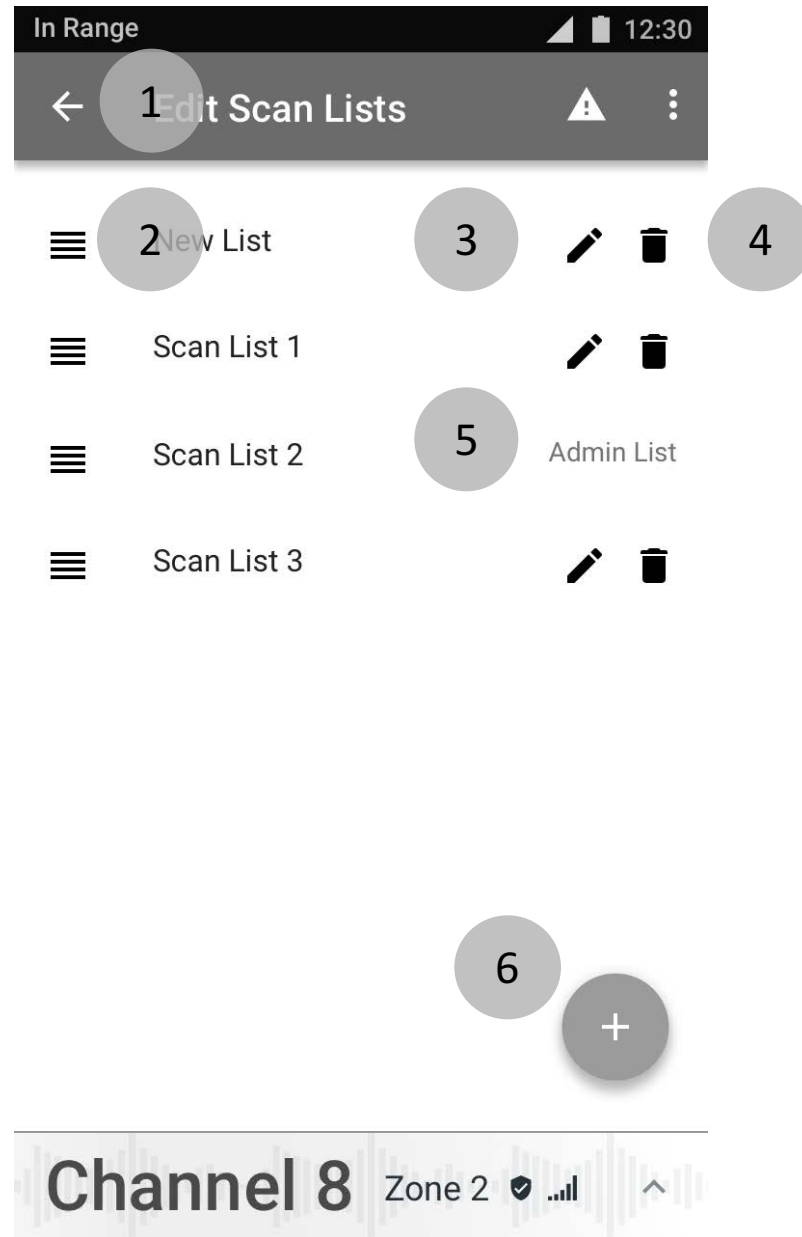
The user can delete a list. They will get a confirmation pop-up.

5. Admin List Designation

This list cannot be deleted or renamed since it was pushed to the users radio by the administration

6. Create New List

User can quickly create a new list



2.2 Add Lists

1. List Name

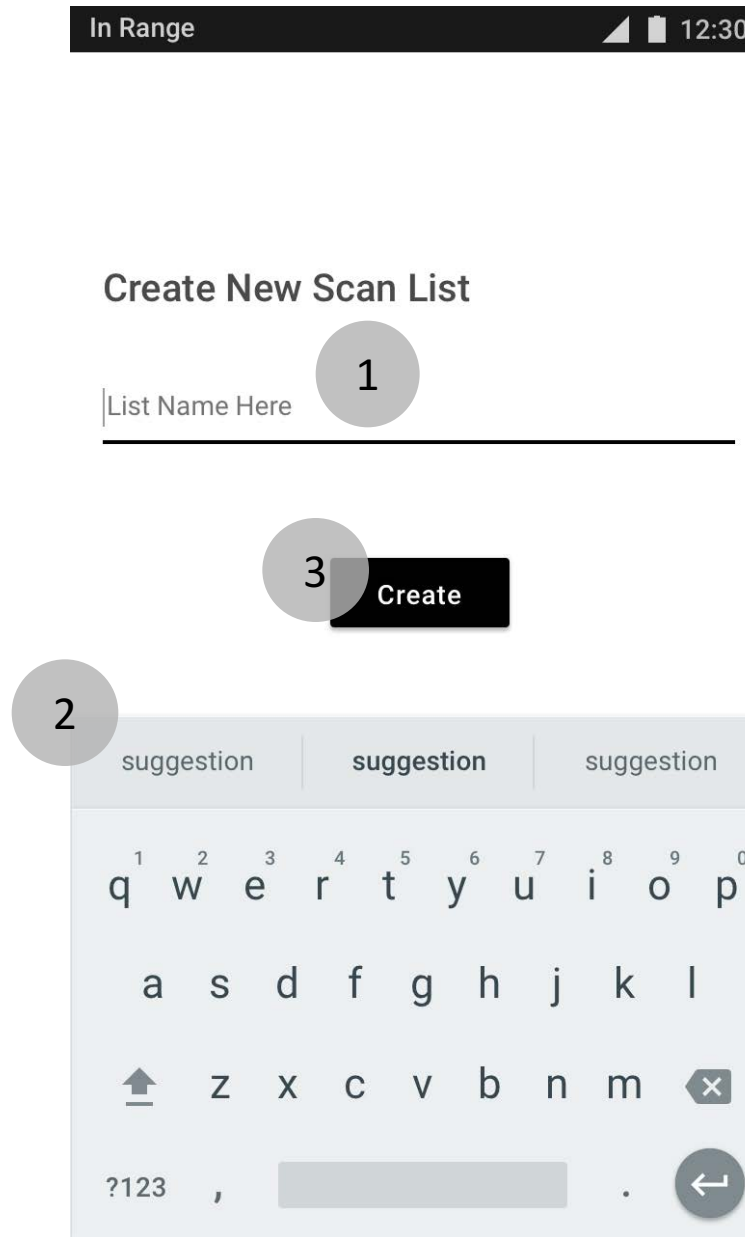
This is where the user can see what they are typing out.

2. Keyboard

The keyboard will appear and allow the user to type a new name.

3. Create Button

Pressing create will add new scan list



2.3 Add Channel

1. Back Button

This will take the user back to the scan list page.

2. Channel Filter

This will allow the user to see channels by zone, favorites, or recent.

3. Add Channel

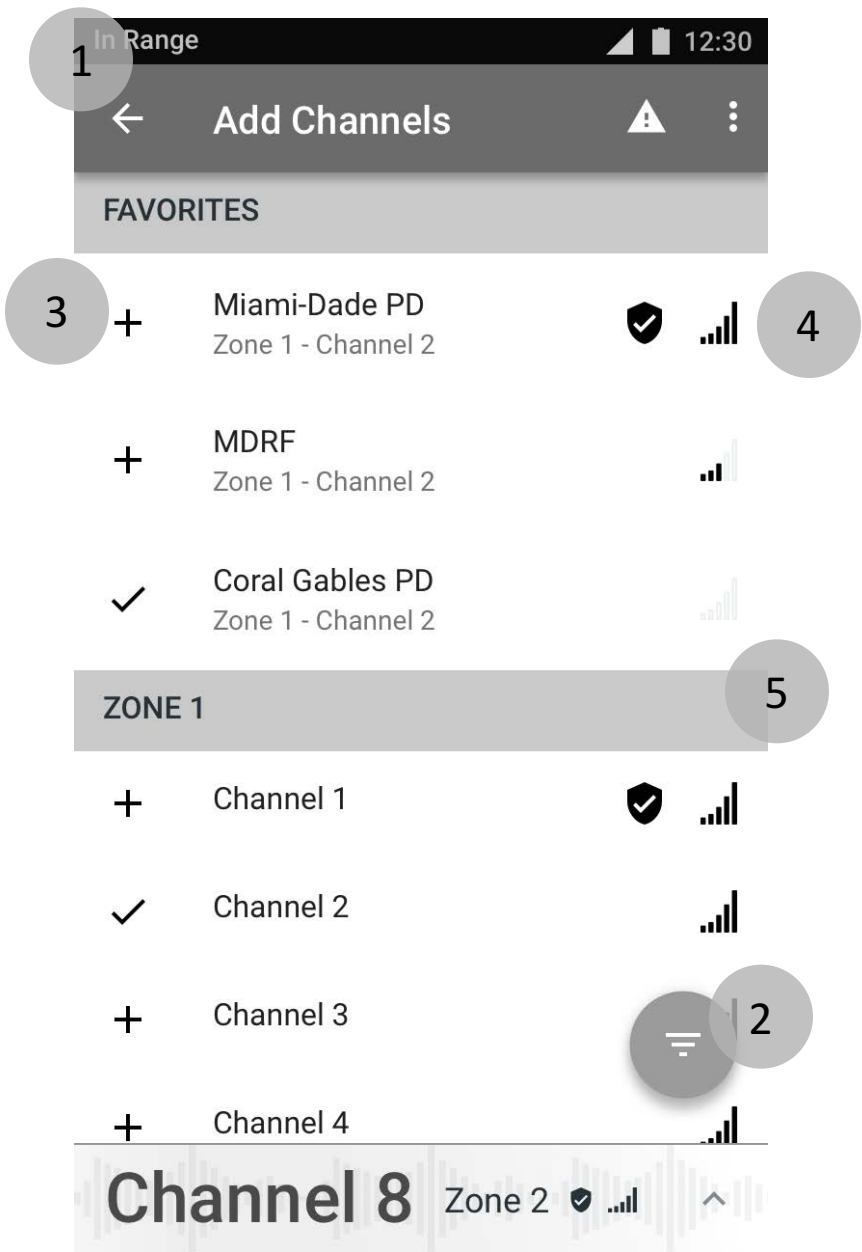
The user can add a channel by pressing the plus button. Once they press the plus button it will become a checkmark. They can uncheck it by pressing the checkmark and the icon will become a plus button.

4. Secure Channel Designation/Range

If the channel is a secure channel the shield icon will appear next to it. The range icon will show the user if they are in range of the channel and able to use it.

5. List Title Bar

As user scrolls to the top of a list that title bar will become sticky so the user can see which list they are scrolling through.



3 Change Channel

1. Section Header

This will stay sticky to the top as the user scrolls down the page so they can see what list they are on.

2. Secure Channel Designation/Range

If the channel is a secure channel the shield icon will appear next to it. The range icon will show the user if they are in range of the channel and able to use it.

3. Set as Favorite

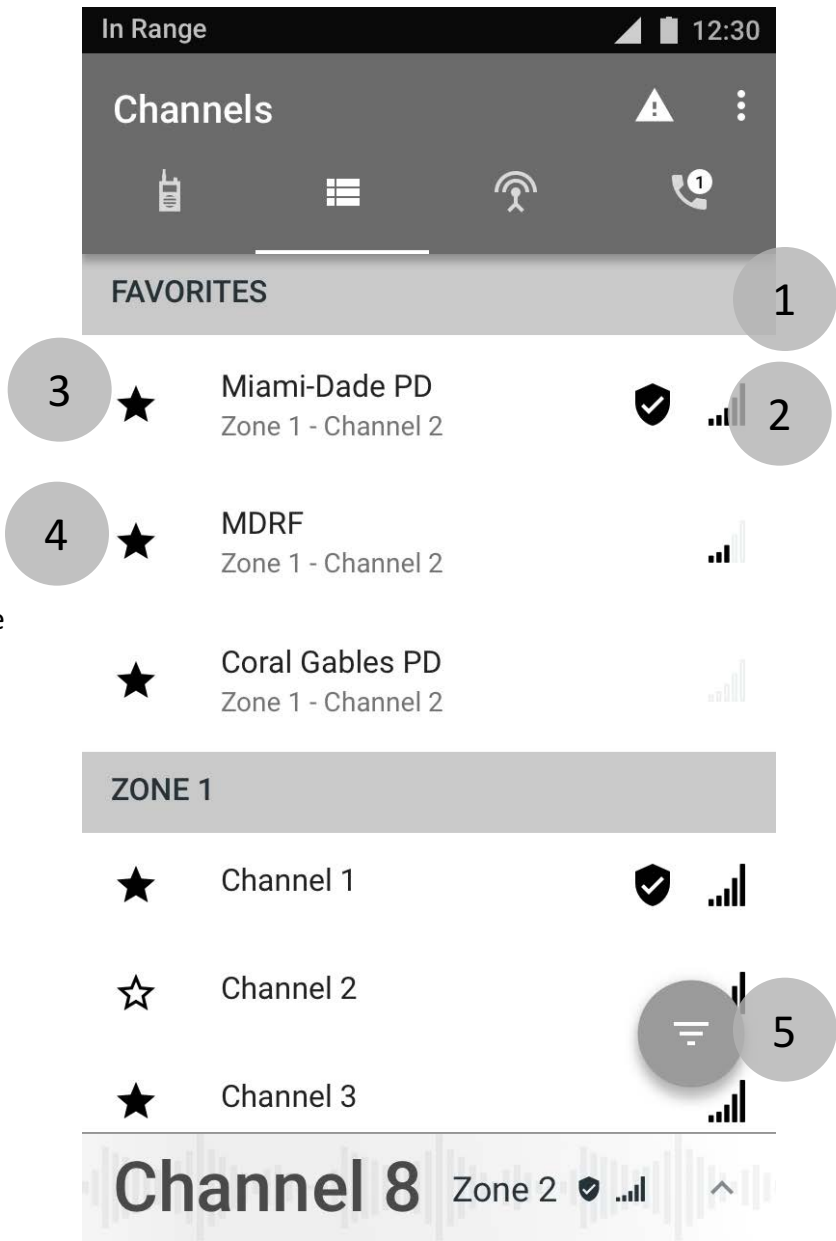
This icon is solid when the channel is designated as a favorite. It is an outline if the channel is not. Tapping it toggles the designation off and on. It will appear on the homepage swim lane.

4. Channel Select

If the user presses on the channel they will change the channel they are currently on which will be reflected in the persistent bottom bar.

5. Channel Filter

This will allow the user to see channels by zone, favorites, or recent.



4 Private Calls

1. Message History List

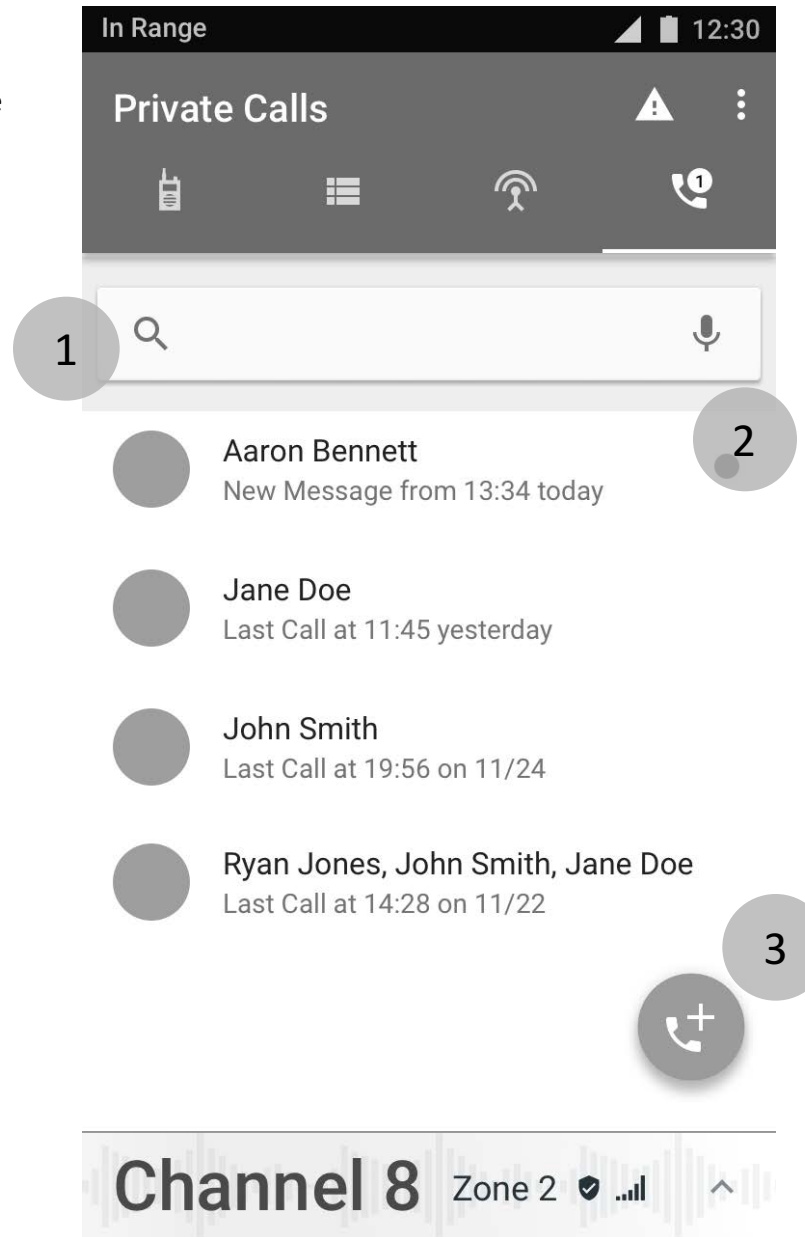
This will show a list of the people who have sent personal radio messages to the user. Pressing on a list item will take the user to wireframe 4.1

2. Unheard Message

The dot will show the user has a message they haven't heard.

3. New Message

User can start new message – will go to wireframe 4.3



4.1 Private Call

1. Back Button

This will take the user back the messages page.

2. Message

This will show the user’s name, profile picture, how long they spoke.

3. Playback

Use can tap on the play button to hear what was said at that point in the conversation.

4. Expand Playback Text

By default the text translation will be collapsed

5. Playback Text

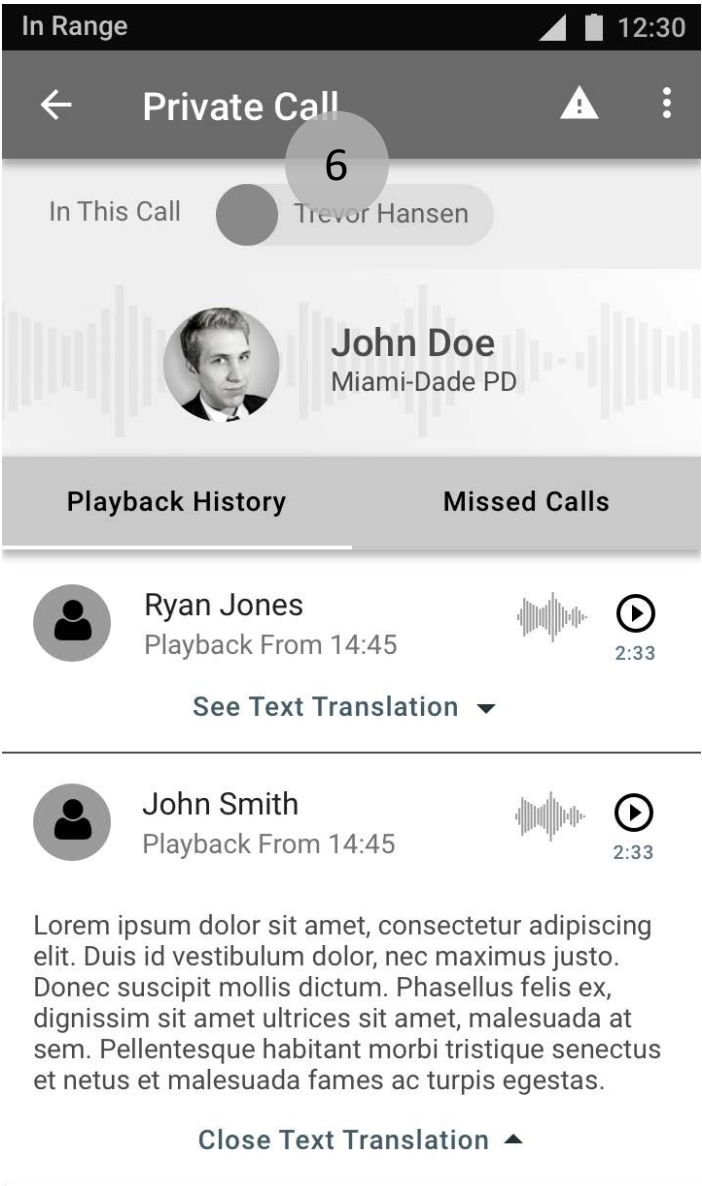
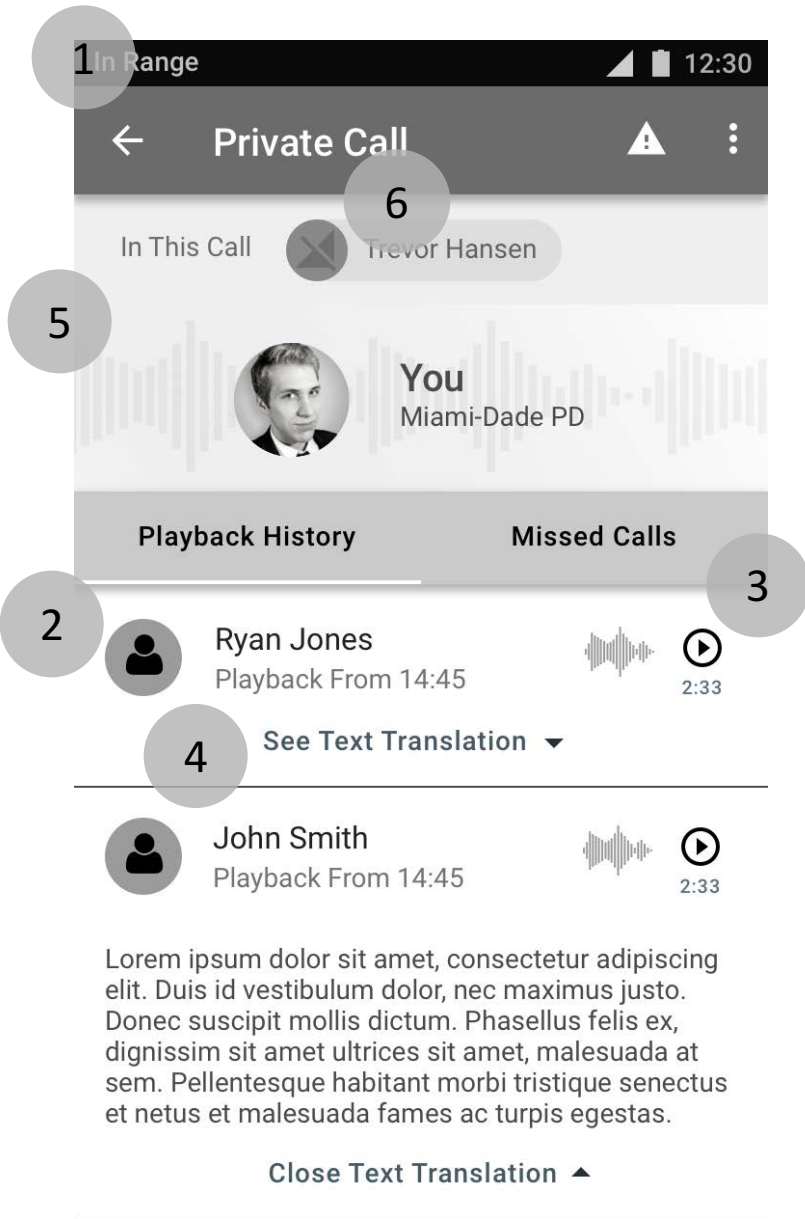
The application will provide transcription of what was said

5. Conversation Information

This will indicate who is part of the conversation, whether they are online and who is currently speaking.

6. User Chip

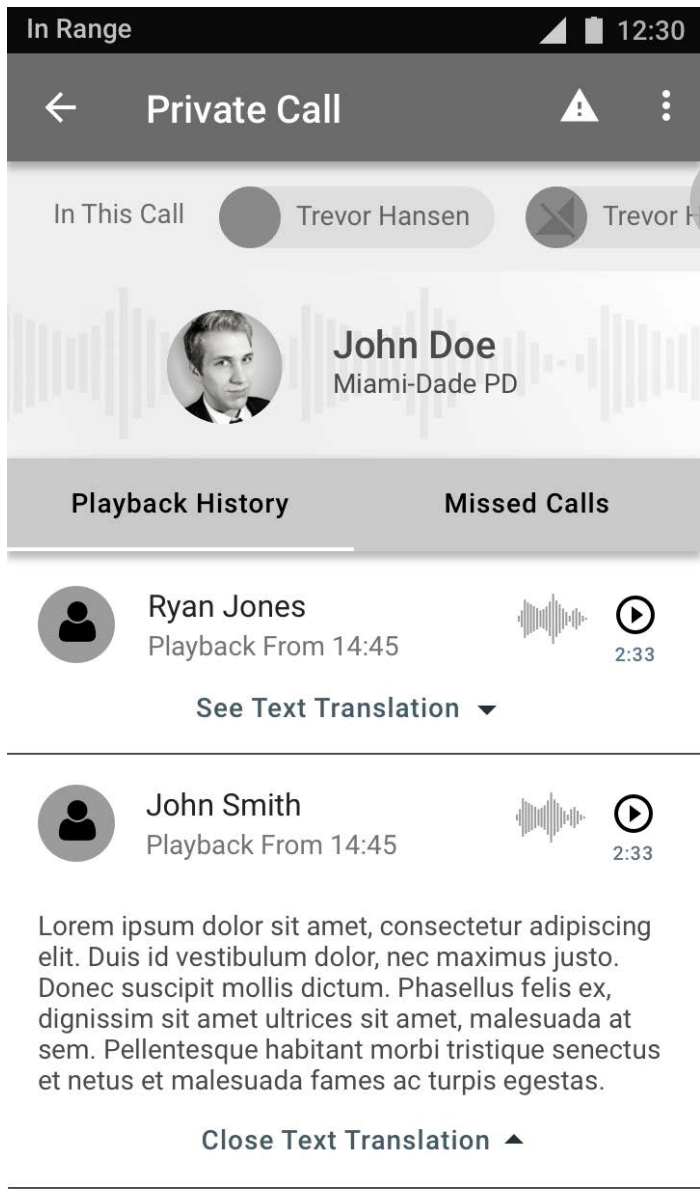
Shows who is in the conversation. If user is not available they will have an icon over their picture to show they are not available.



4.2 Private Call – Multiple Users

1. User Swimlane

This will have a list of all the users currently in the call



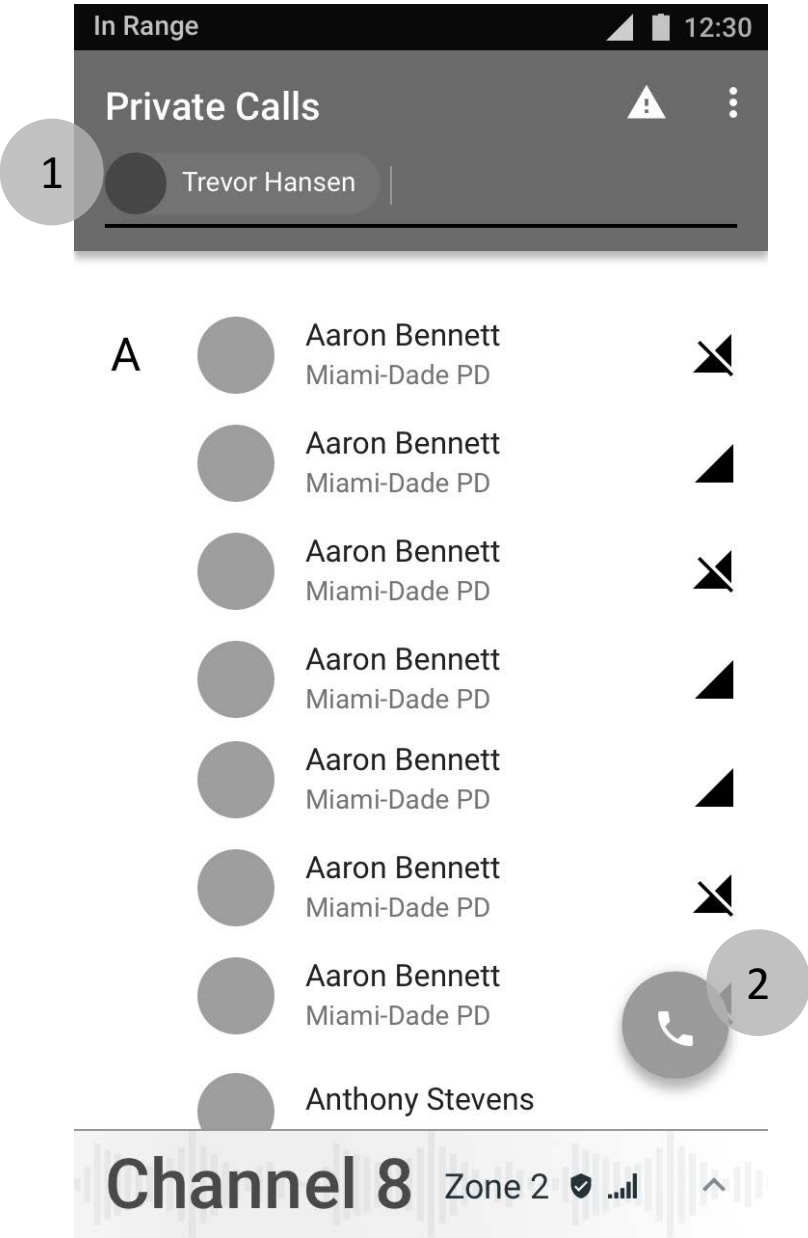
4.3 New Message

1. Select Contacts

The user can select other users they want to send the message to.

2. Send Icon

Once the user has selected at least one they can start the private call.



4.4 Message Alert

1. Message Popup

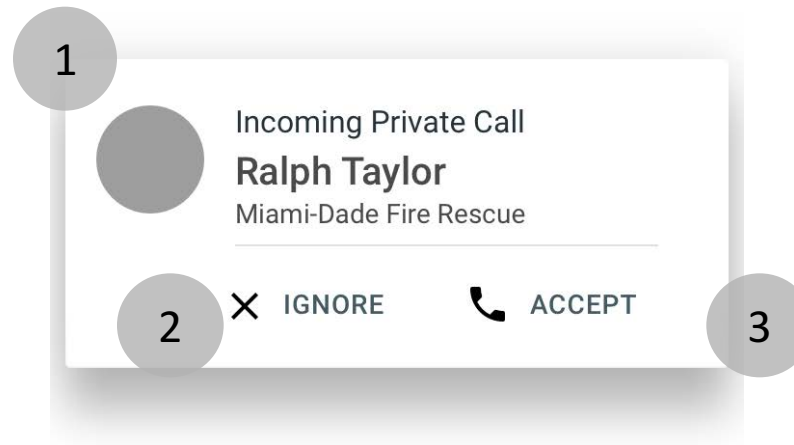
If user is receiving an invitation to a private message this icon will show.

2. Ignore

The user can ignore and the other user will see them as unavailable.

3. Private Call

This will take the user to the private messaging page, wireframe 4.1.



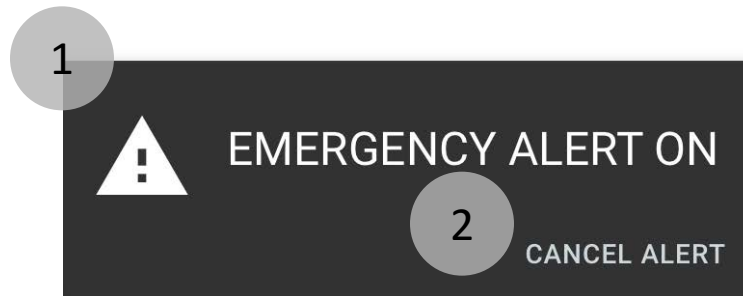
5. Alert On

1. Popup to show emergency alert has been activated

The pop-up will appear to let the user know they have turned emergency alert on.

2. Cancel Alert

To stop broadcasting the emergency alert the user must tap on the turn off link. The pop-up will close and return the user to the page they were on.



6 Playback

1. Back Button

This will take the user back to wireframe 1.

2. Message

This will show the user's name, profile picture, how long they spoke and message transcript.

3. Playback

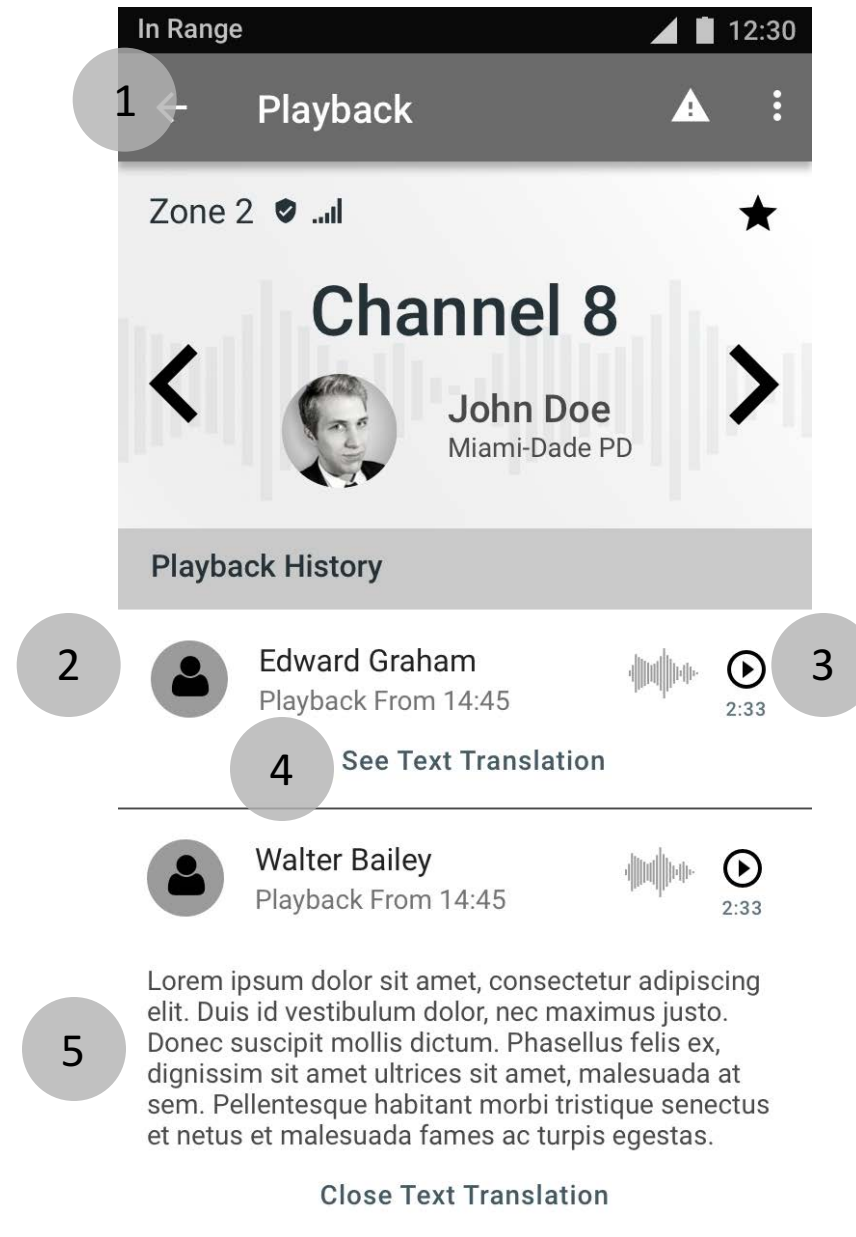
User can tap on the play button to hear what was said at that point in the conversation. Playing this will override current channel noise

4. Expand Playback Text

By default the text translation will be collapsed.

5. Playback Text

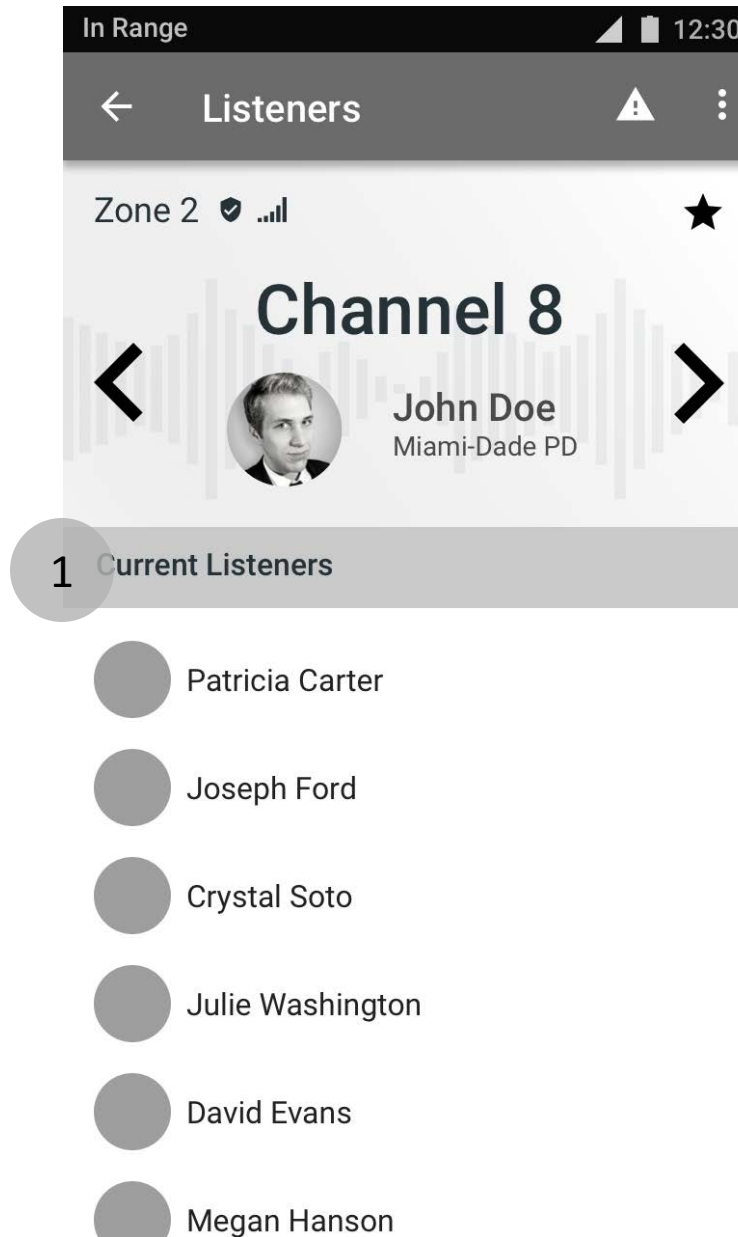
The application will provide transcription of what was said. The user can collapse the text again.



7 Channel Contacts

1. Contacts

User can scroll through all people actively in-range in that channel.



8 Channel Alerts

1. Back Button

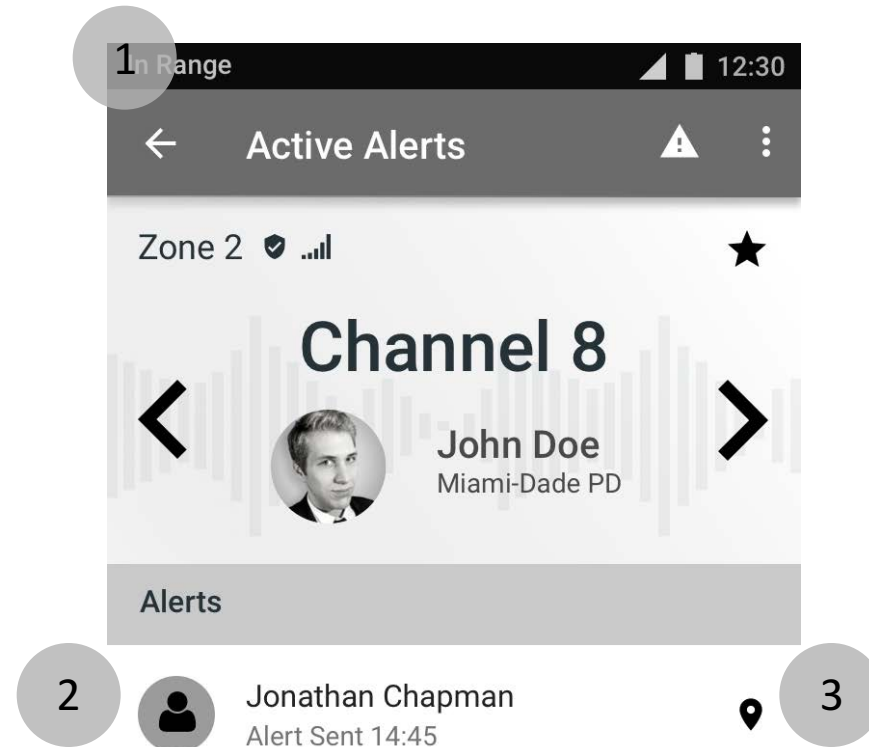
This will take the user back to wireframe 1.

2. Alert Info

This will show when an alert was sent.

3. See location

Can see location of user when they sent the emergency alert. See wireframe 12.1.



9 Contacts

1. Back Button

This will take the user back to the contacts screen.

2. All Contacts/ Favorites Tab

The user can switch between seeing all contacts and just the ones they have set as a favorite.

3. Contact Search

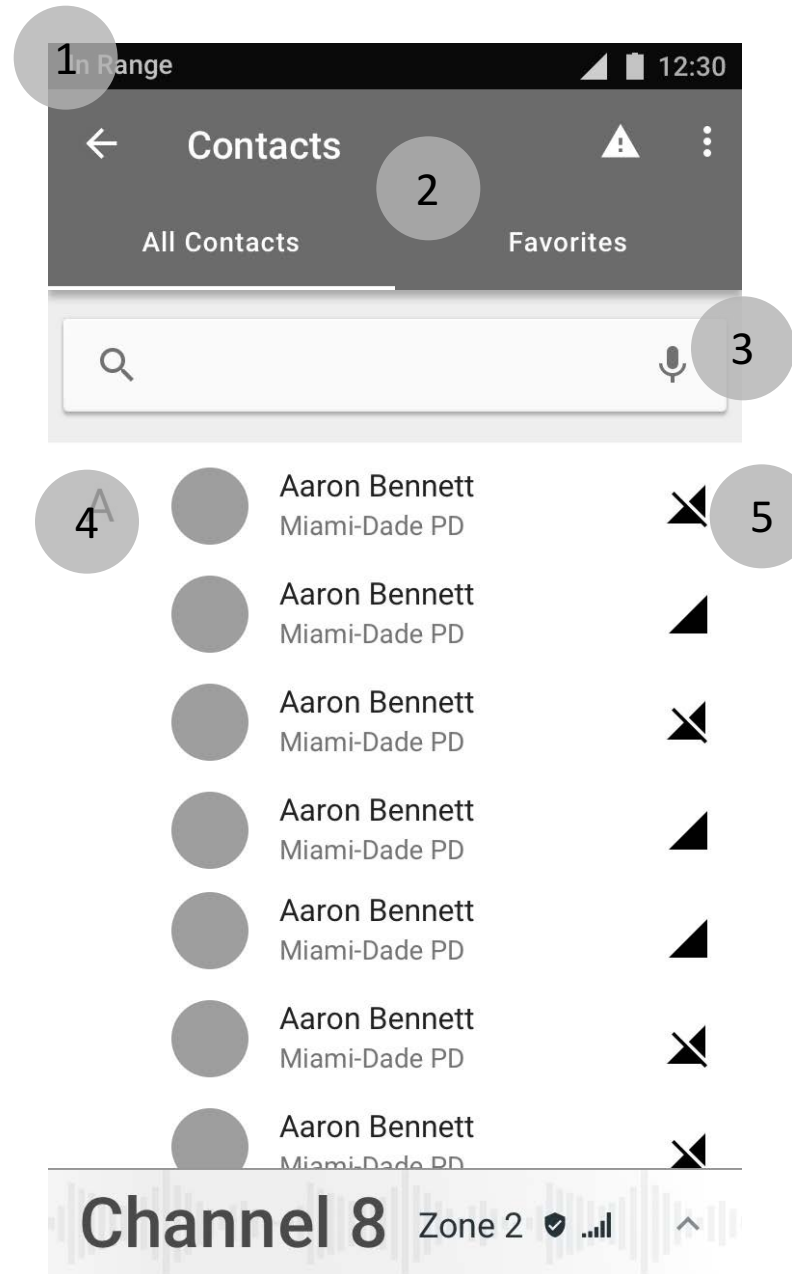
User can search through their contacts. When pressed keyboard appears.

4. Contact

Clicking on an entry will take user to wireframe 9.1.

5. Range/Not in Range

Can see if user is in range or not.



9.1 Individual Contacts

1. Back Button

This will take the user back to the contacts screen.

2. Set as Favorite

This icon is solid when the contact is designated as a favorite. It is an outline if the contact is not. Tapping it toggles the designation off and on.

3. Contact

This shows their picture, name, and whether they are in range.

4. Work Info

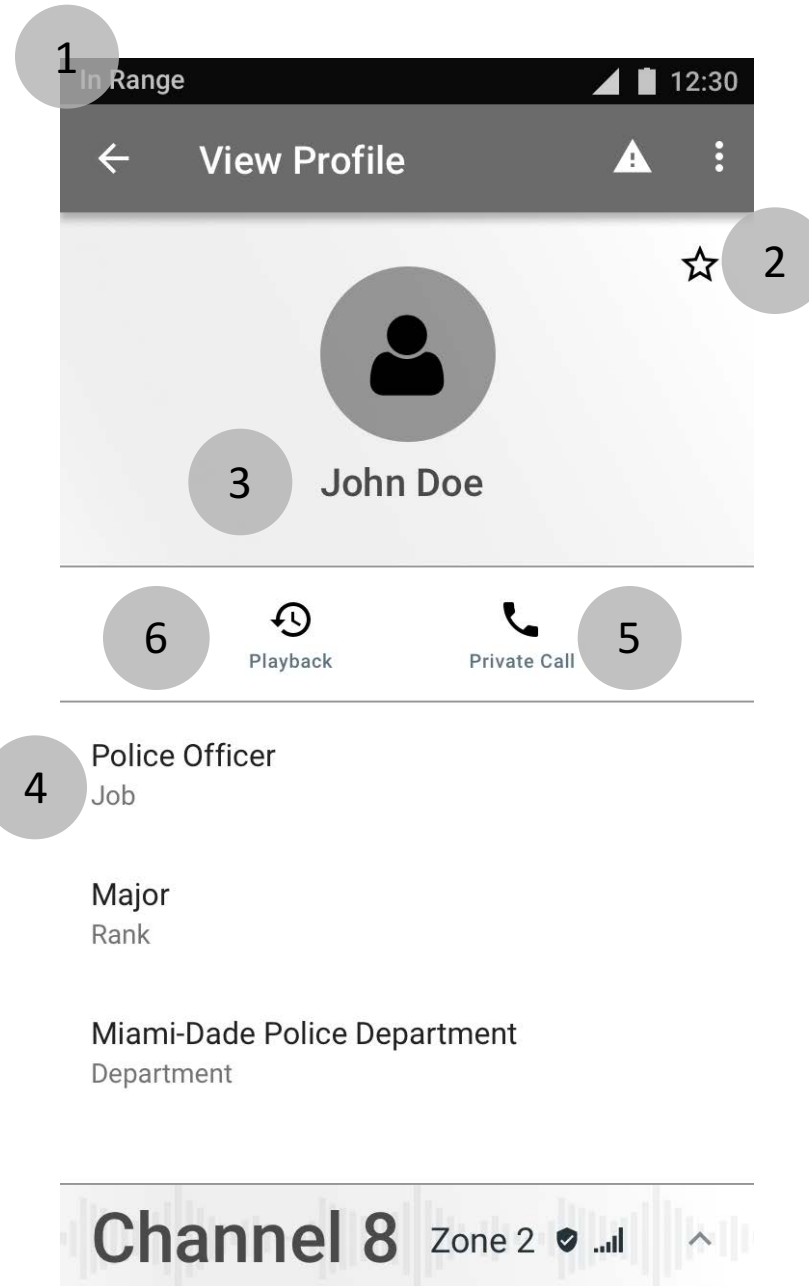
This will show the contact's work information.

5. Private Call Button

If the contact is in range the user can send them a direct radio message. They will go to wireframe 4.1.

5. Private Call Button

This will take the user to a page where they can see all of the radio messages between the contact and themselves.



10 Profile

1. Back Button

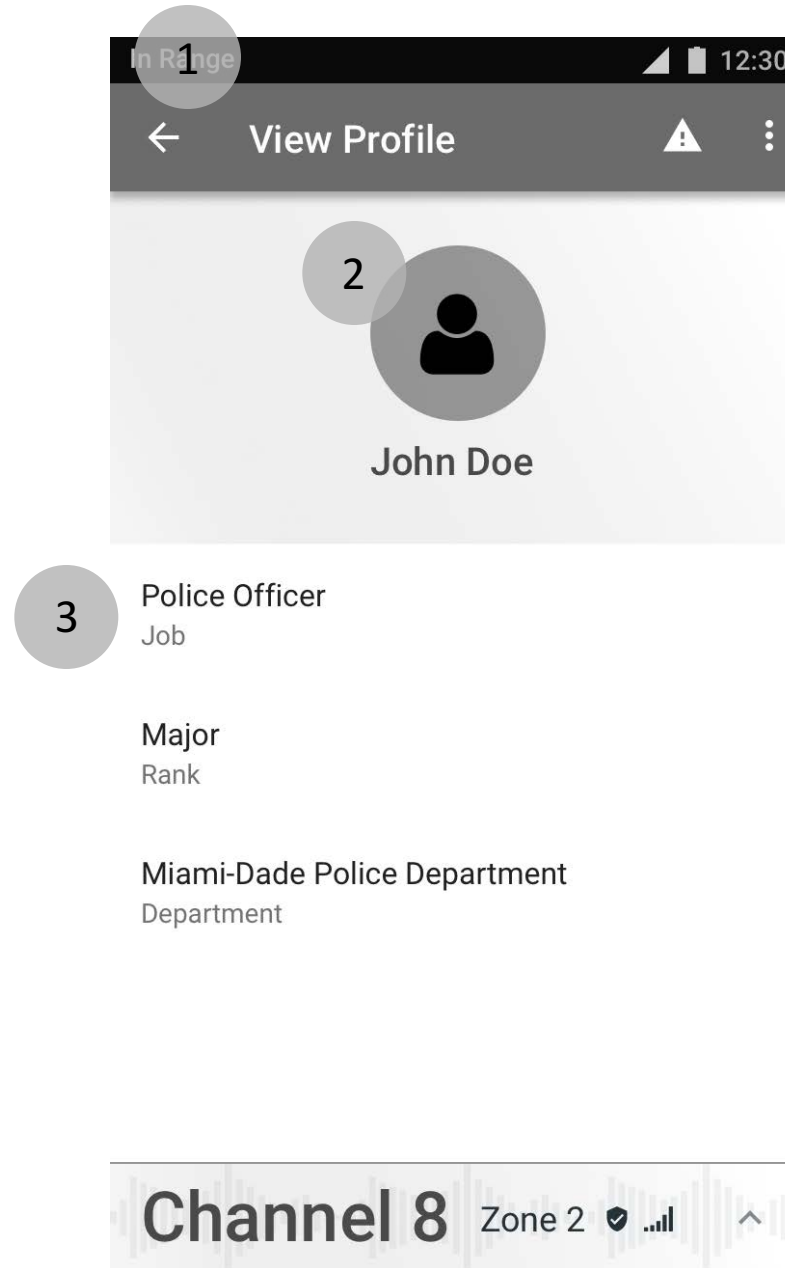
Take the user back to the screen they were on before.

2. Profile Picture

Pressing on the picture will allow the user to change it.

3. Profile Information

This will show the user's work information.



11 Settings

1. Back Button

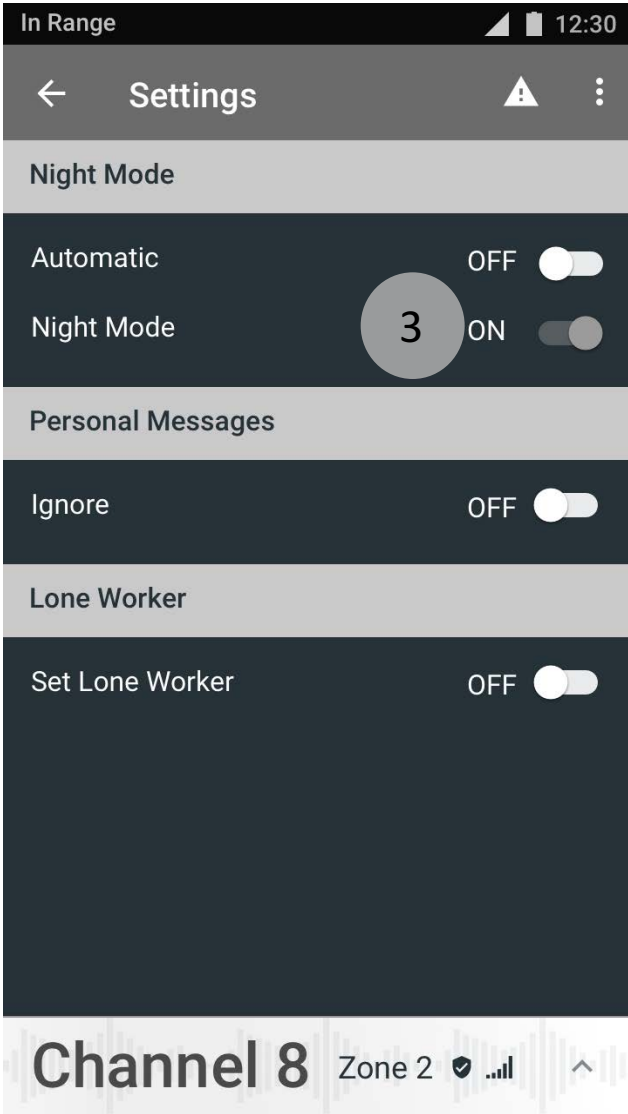
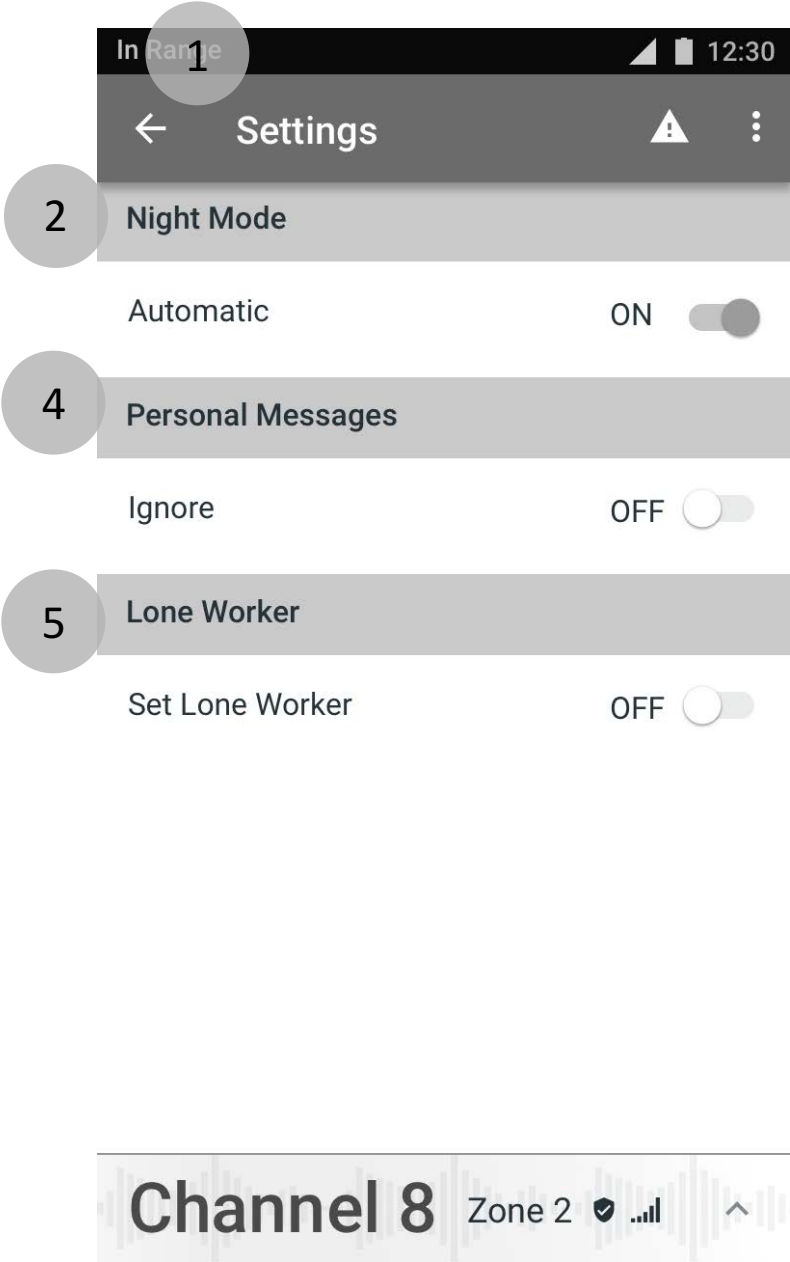
This will take the user back to the screen they were previously on.

2. Night Mode Automatic Toggle

If the user taps this it will toggle on/off the automatic night mode toggle.

3. Night Mode On/Off

If user turns night mode off automatic they can set whether night mode is on.



12 Alert Received

1. Alert Pop-up

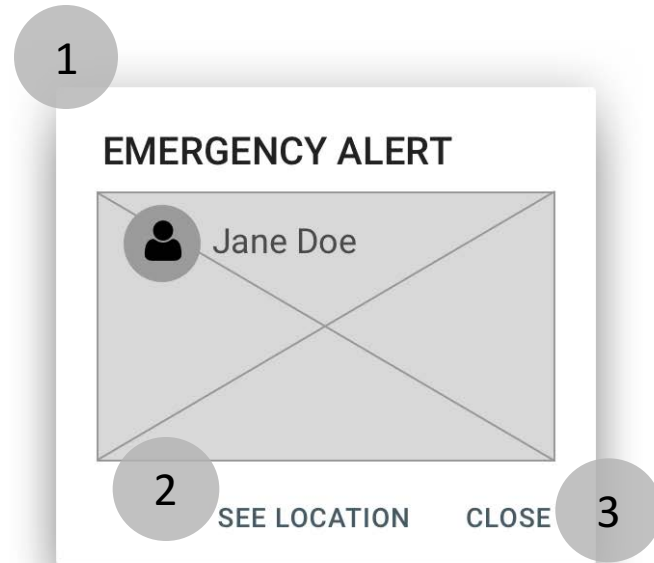
If another user presses the emergency alert button a pop-up will display showing who pressed the alert, their picture and a preview of their location.

2. See Location Link

If user presses this link they go to wireframe 12.1.

3. Ignore Link

Pop-up will close and return the user to the page they were on.



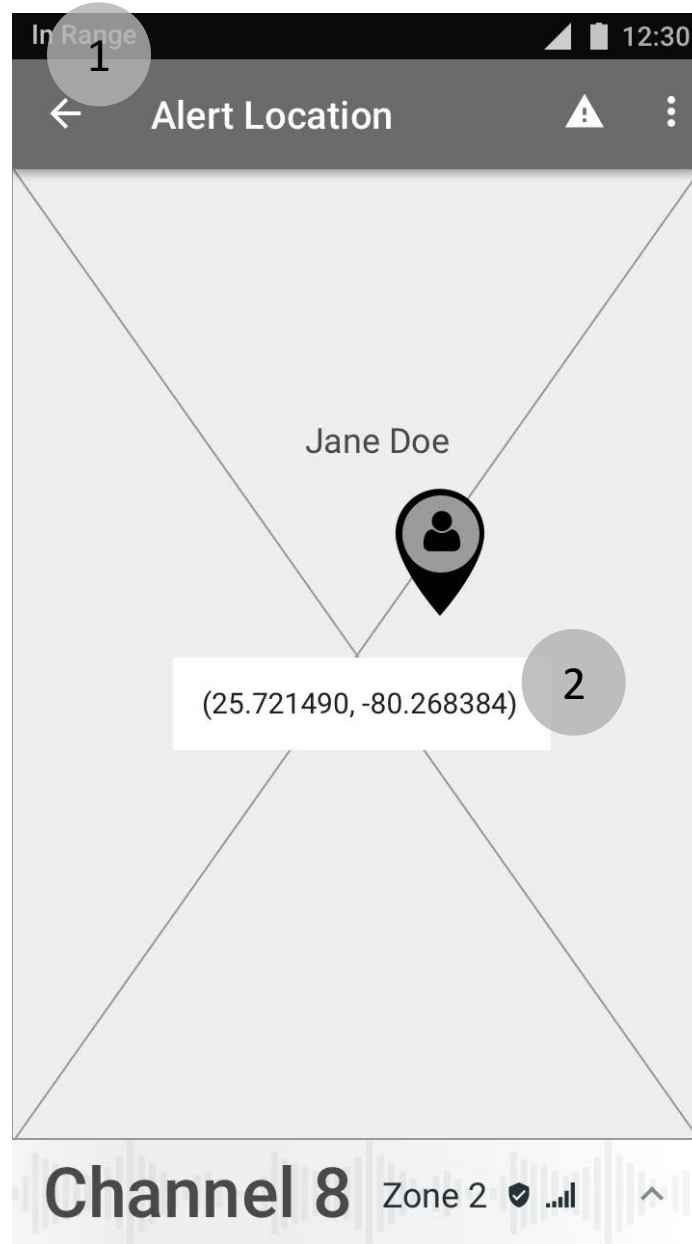
12.1 Alert Location

1. Back Button

Take the user back to the previous page

2. Address

Show where the user who pressed the button is currently at.



13 Sticky Bottom Info

1. Sticky footer

This will appear on all pages the radio functions are not on. It indicates channel, zone, secure, strength and show if a message is being transmitted or received through moving bars.

2. Arrow Up

Pressing on thus will reveal #3.

3. Sticky footer expanded

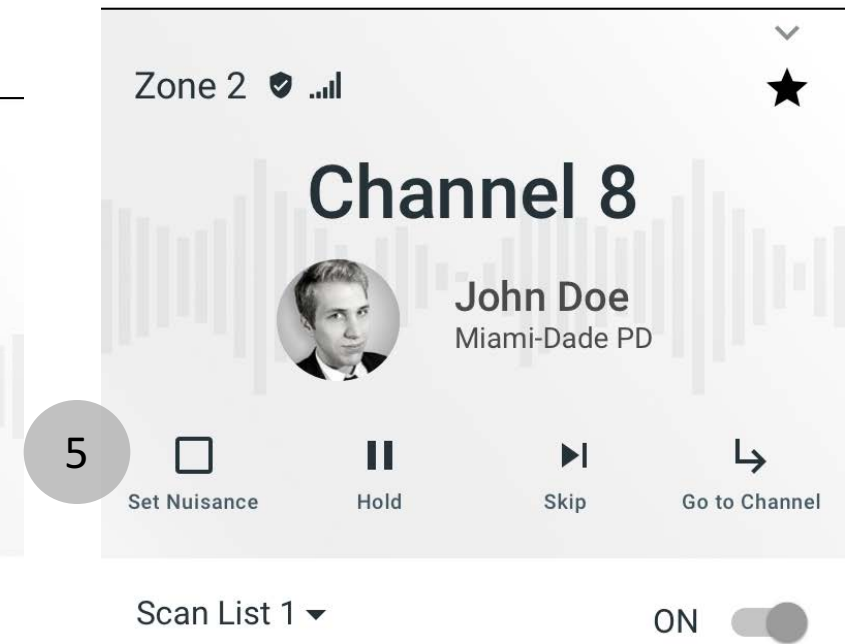
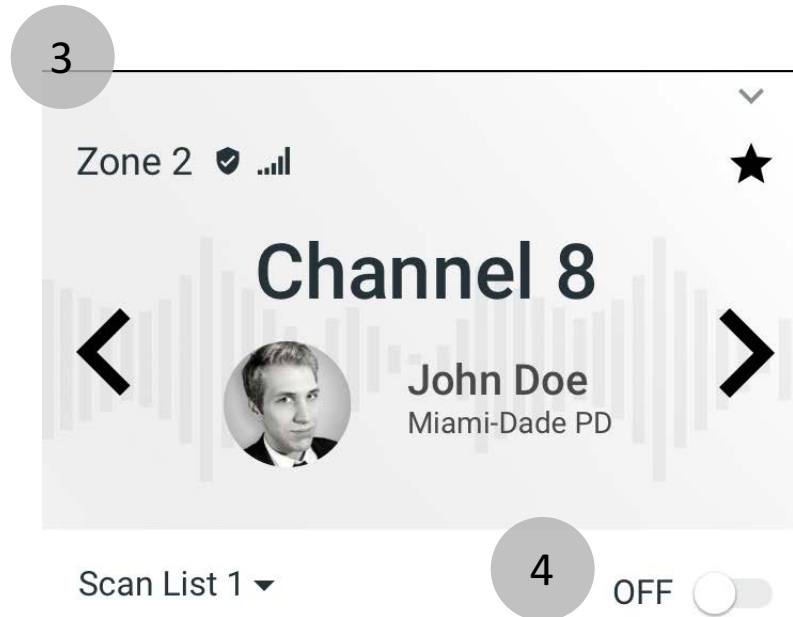
This will show channel information such as zone, secure, strength, range, user can also change channel and set as favorite.

4. Scan

The user just taps the toggle to turn scan off or on and easily go through channels that are currently active. If scan is on, icons in #5 are visible.

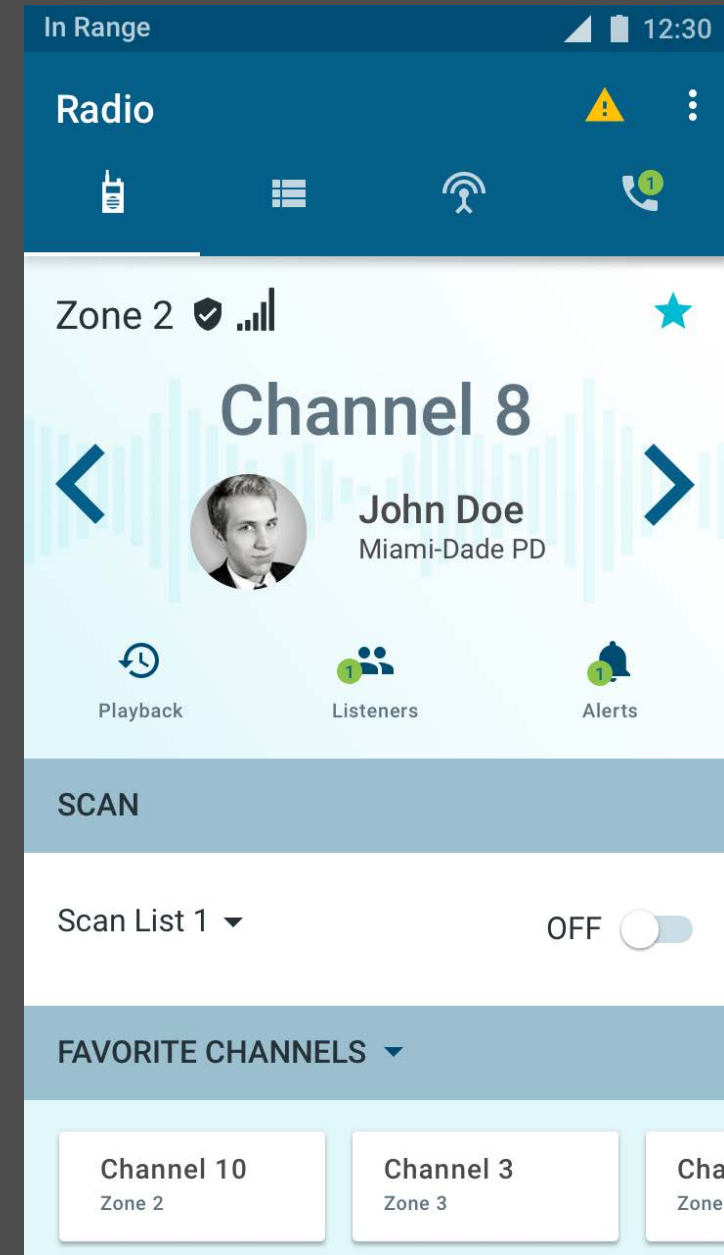
5. Scan Functions

User can access scan functions much like wireframe 6.



Prototype

<http://r23785.axshare.com/#c=2>



Color Palette

Color Palette

Text Colors



Main Text
263238



Secondary Text
5F7380



Link Color
055F89

Header Colors



Primary Header
055F89



Darker Header
004B72

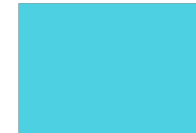


Lighter Header
9BBFCF

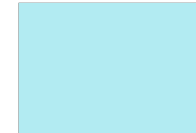
Accent Colors



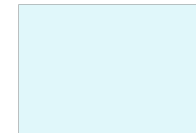
Primary Accent
00BCD4



Light Accent 1
4DD0E1



Light Accent 2
B2EBF2

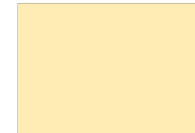


Light Accent 3
E0F7FA

Notification Colors



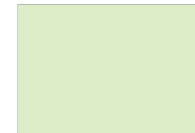
Alert
FFC107



Light Alert
FFECB3



Positive Color
8BC34A



Light Positive Color
DCEDC8

Contrast Ratios For Text

Foreground color: #263238

Background color: #9bbfcf

Contrast Ratio: **6.73:1**

Foreground color: #ffffff

Background color: #5f7380

Contrast Ratio: **4.94:1**

Foreground color: #263238

Background color: #ffffff

Contrast Ratio: **13.16:1**

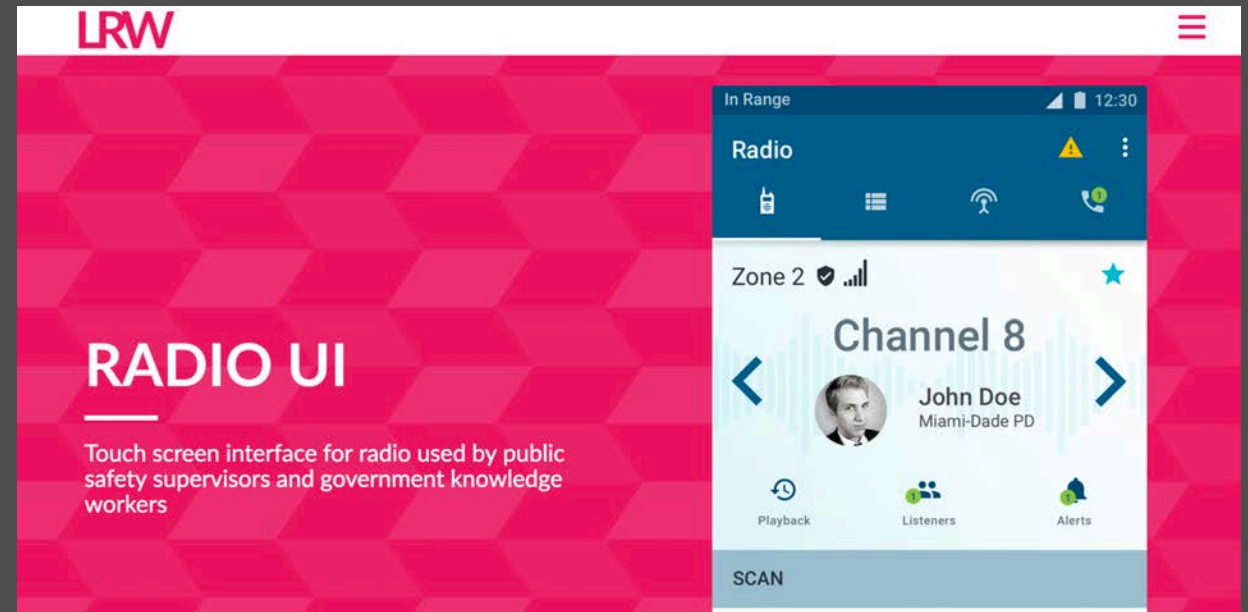
Foreground color: #ffffff

Background color: #055f89

Contrast Ratio: **6.99:1**

<http://webaim.org/resources/contrastchecker/>

Portfolio Page



http://lwhitaker.com/portfolio_code/radio.html