CAR INFOTAINMENT

Final Deliverables

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ART-40638

19 March 2019

INTRODUCTION

- We are becoming more and more attached to our smartphones, however, while driving this can be very dangerous. Cars have started to integrate more and more with mobile devices but only with the basic items like Music or SMS messages.

- This proposed system hopes to bridge the gap by providing a way for the car infotainment system to replace the phone with all features we rely on for our phone; so that whether you are a commuter, driving for a living, or parent driving your kids to their events you can get their while staying connected to your smartphone without being distracted.

THE PARTS

- The infotainment system being proposed is in three parts.   These parts work together to create the entire experience for the driver. This includes:
  - Large touchscreen (portrait) interface for interacting with the system.
  - Two small touchscreens on the edge of the wheel for interacting with large screen basic controls without removing hands from wheel.
  - Console phone holder

CONSOLE PHONE HOLDER

- The console phone holder is used to connect your phone to the system. Upon starting driving place your phone in the holder (if wireless) or plug in and then place phone in holder.

- Holder closes and secures phone inside car.

- Phone is not available, but the holder can be forced open (without breaking it)
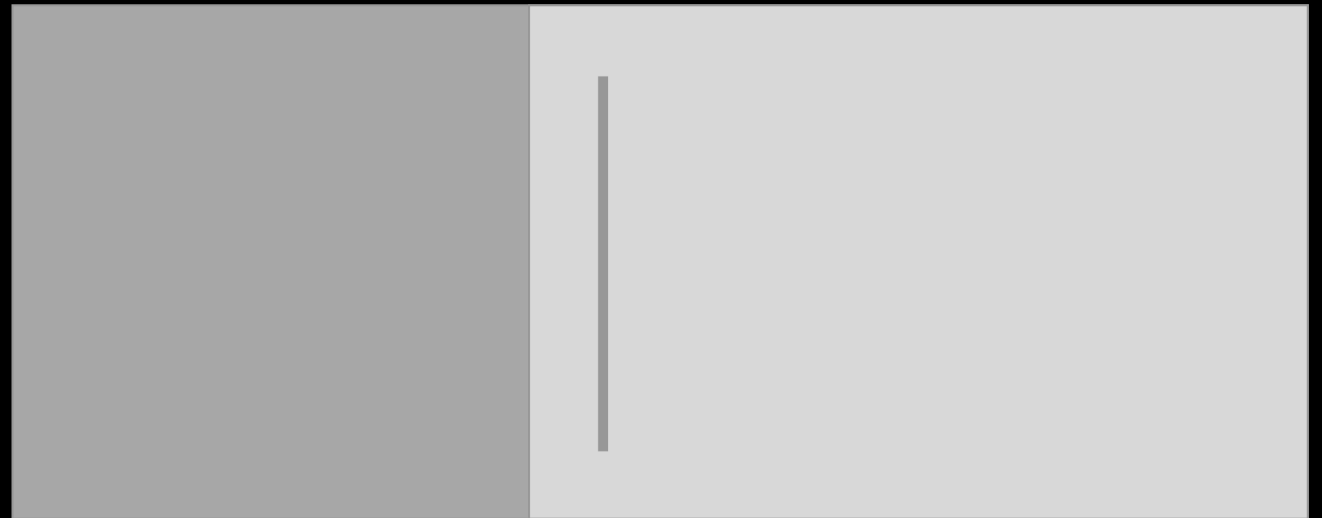
STEERING WHEEL

- The steering wheel has the standard wheel shape (round), can be designed of any material per manufacture offering.

- Center is the manufacture logo and the horn.

- The right and left side are fully customized touchscreens controlled by the current running app and last app (or volume control if no other apps have been loaded)

- Two physical buttons, one for Voice control, other for manufacture decision (like cruise control)

- Wheel colors are controlled by app running.

WHEEL
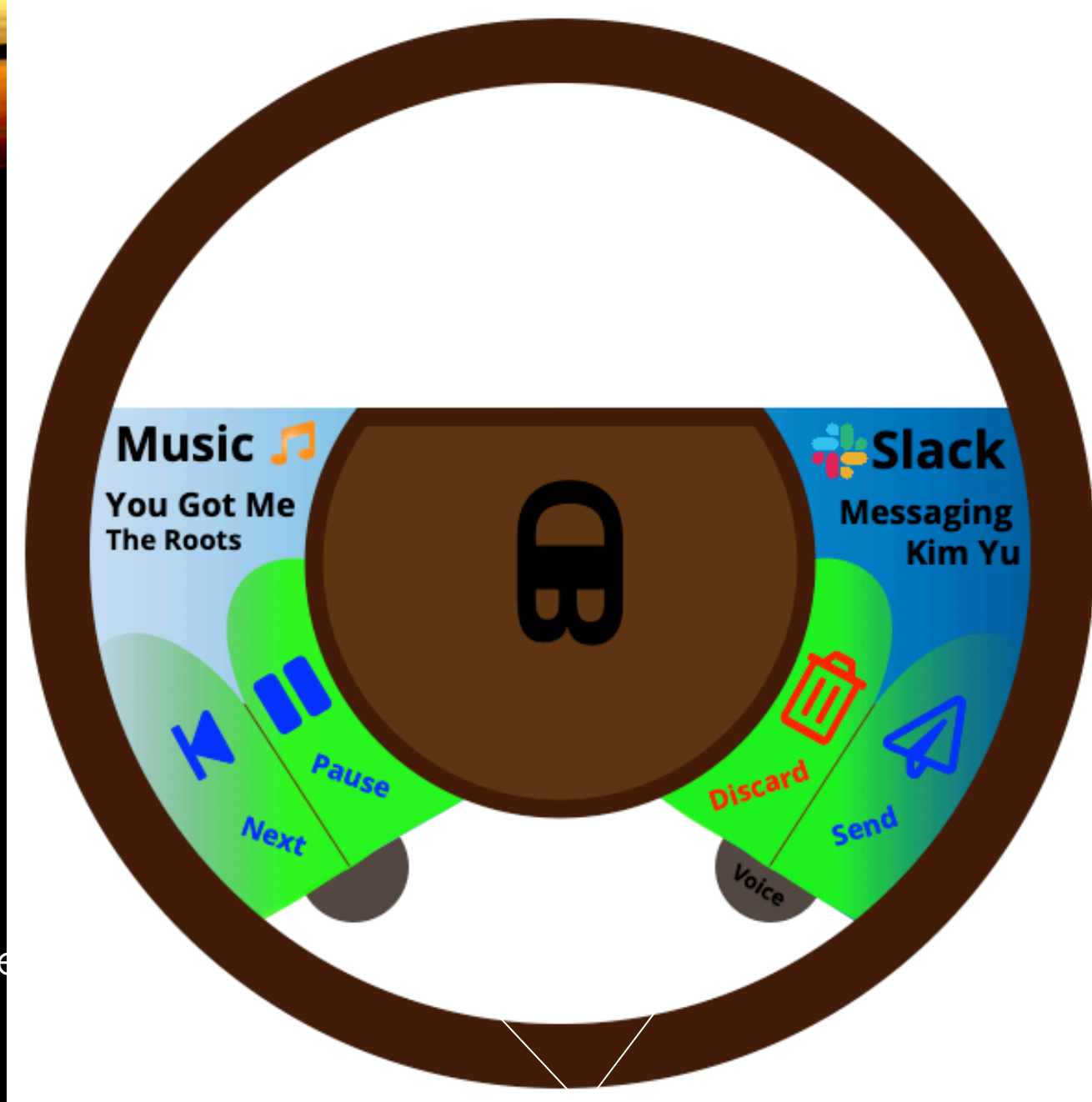
Previous app running Includes:

- App Name/Logo
- Current task
- Two actions
- Blue is usually positive actions

Current app running Includes:

- App Name/Logo
- Current task
- Two actions
- RED is used to indicate destructive
- Blue is usually positive actions

Music ♫
You Got Me
The Roots

Slack
Messaging
Kim Yu

Pause

Next

Discard

Send

Voice

Physical buttons

TOUCHSCREEN

- The main interaction occurs on the large touchscreen placed in the center console of the car (above the Phone Holder).
- This includes app information
  - Changing apps
  - Receiving notifications (app comes into focus)
  - Interacting with current app
- Speed information (current speed and Speed Limit)
- Climate information
  - Tap to alter climate controls for the car
- Navigation

TOUCHSCREEN

Welcome

Insert your phone below to load your profile.

- Upon entering the car and turning it on the Welcome screen is shown.
- This screen prompts the user to enter the phone into the holder
- The arrow is animated to lighten/darken color pushing downward
- If car enters into a gear with no phone this screen is dismissed

TOUCHSCREEN

Welcome Tonya

Profile loaded. Be safe and keep an eye on the road.

- Animated car drives across while loading (color changes same as arrow)
- This can be customized by manufacture
- Phone is recognized instantly, "Welcome {name}" is shown instantly and "Profile loading…" shown until loaded. Upon loading this screen fades out onto the normal screen
- If gear is shifted the car goes straight to main screen and top is not ready until loading finishes
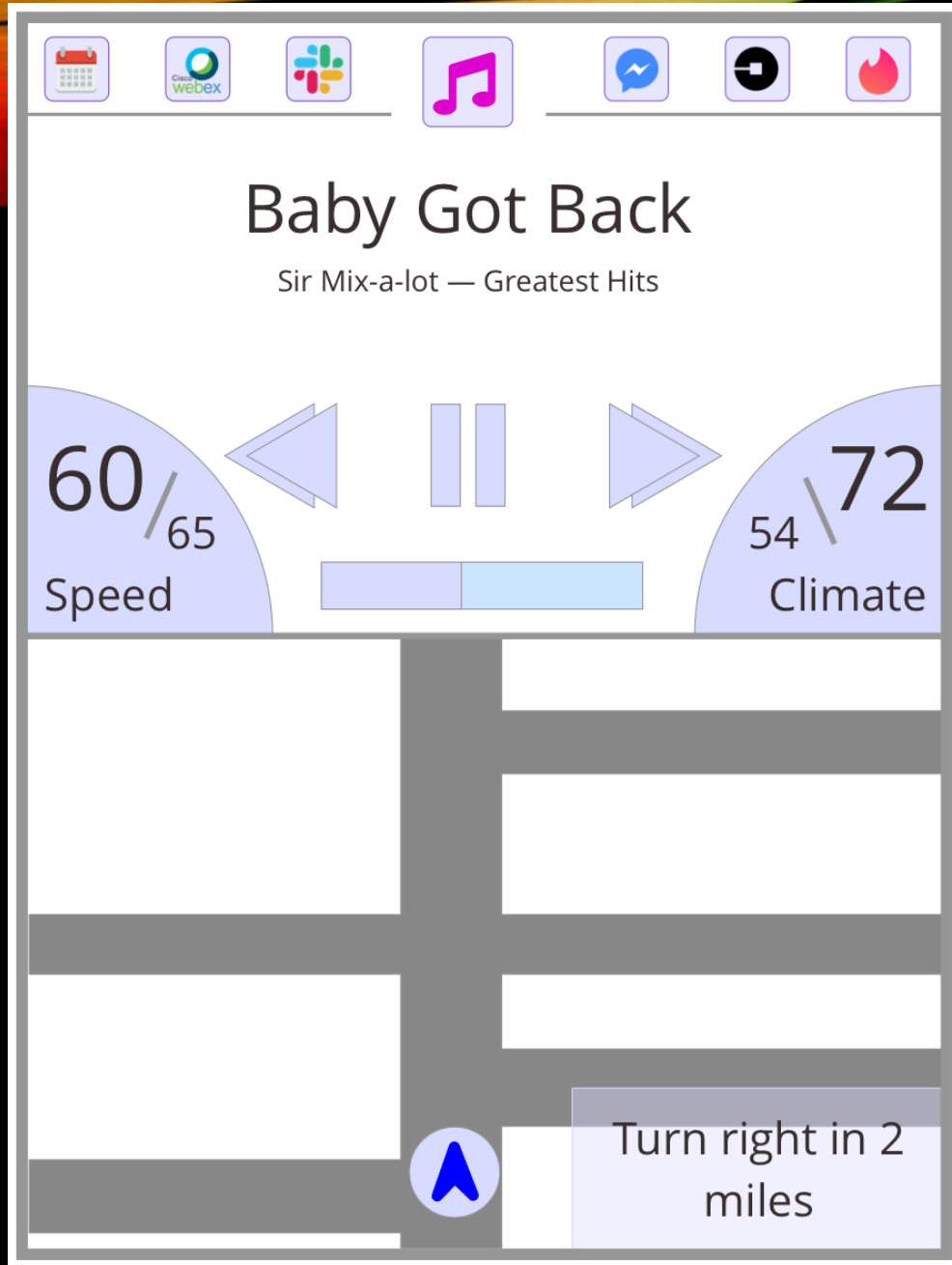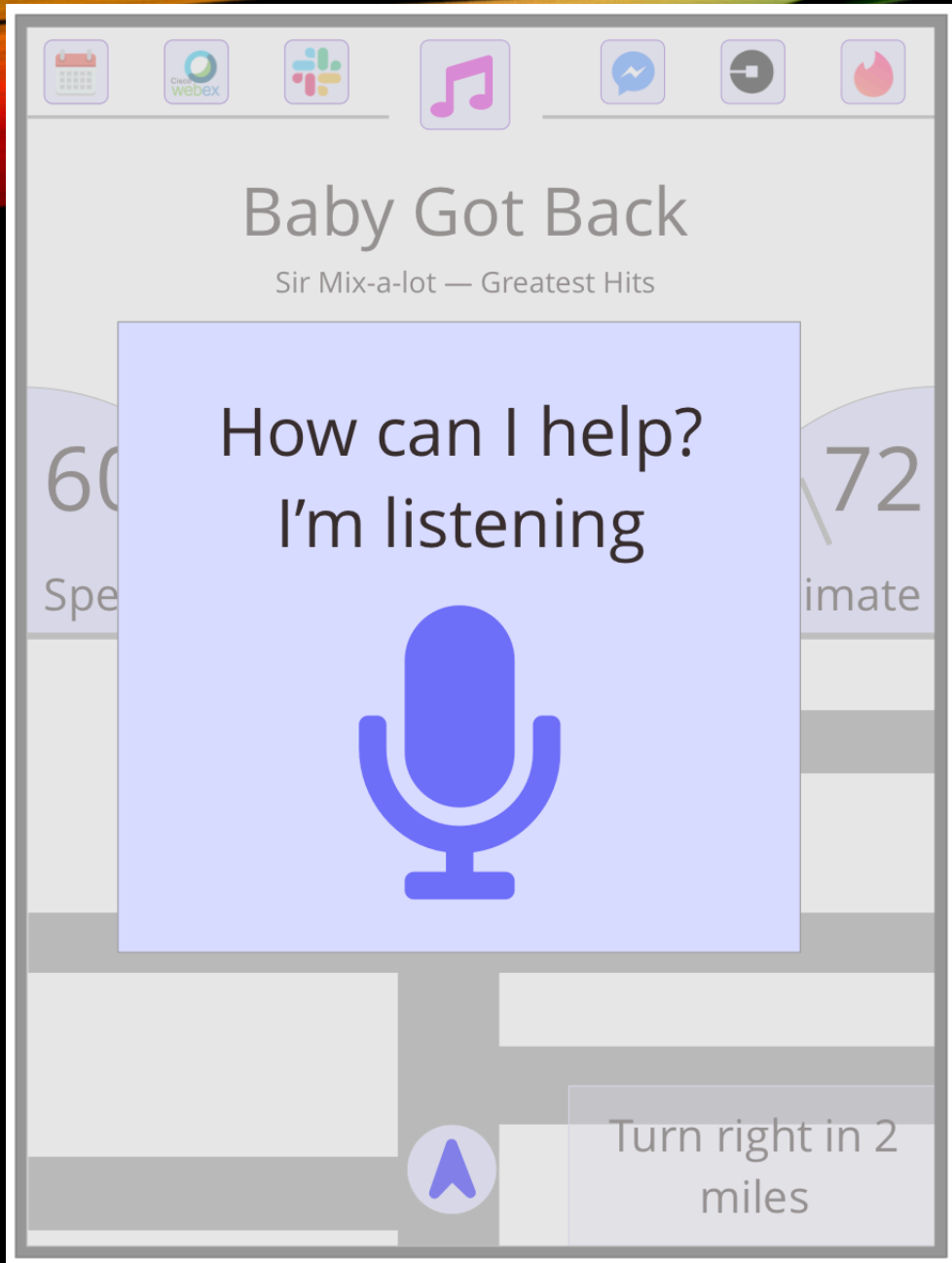
TOUCHSCREEN

- The main screen normally loads into the music app.

- Notifications can change this at any time when they come in

- Tapping on climate opens a modal of climate controls

- Color scheme set by car manufacture

- Navigation colors set by provider of map data
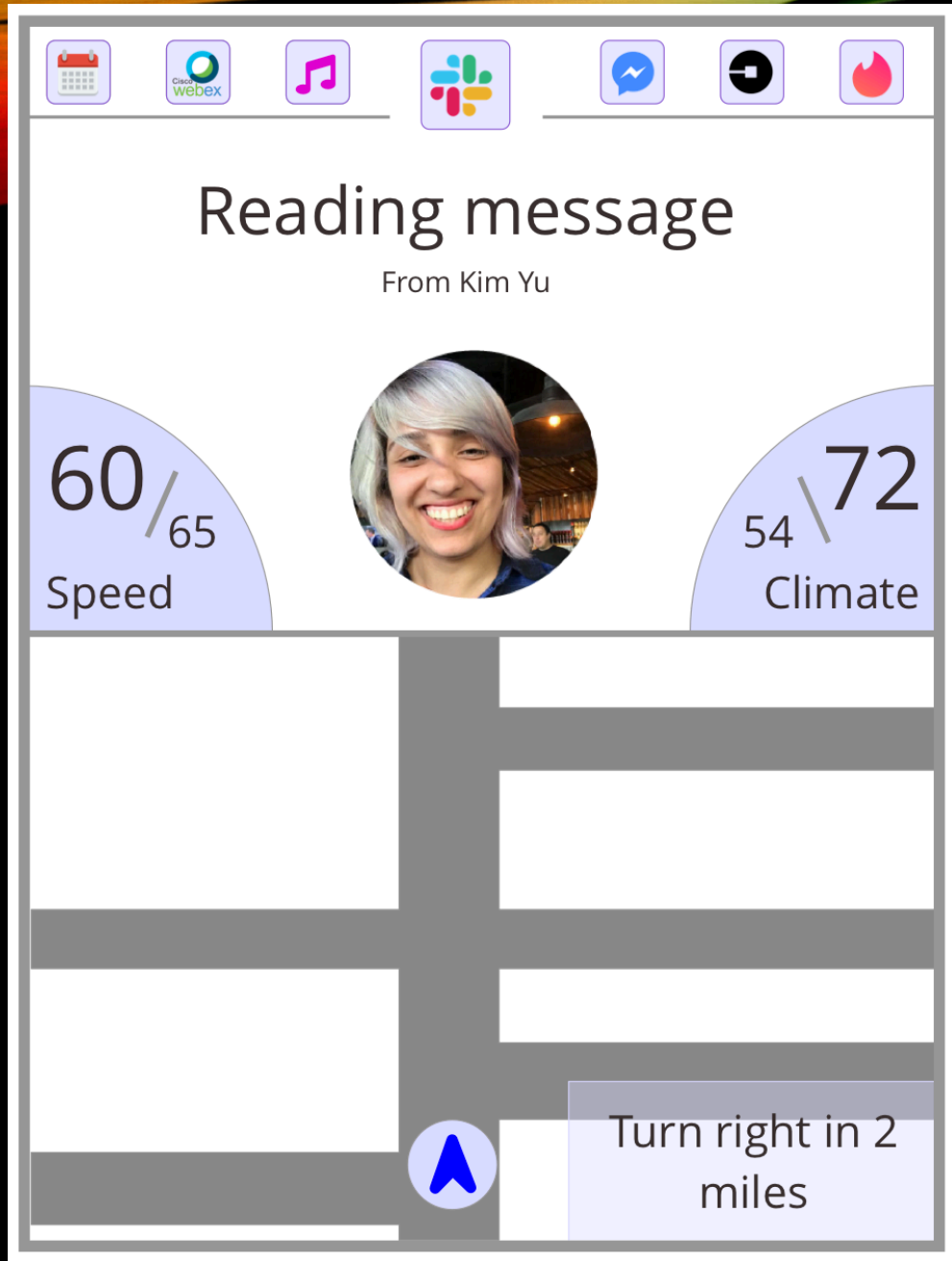
TOUCHSCREEN

- When a notification comes in the app providing the notification comes into focus.

- For messages the car will read them if in a gear. The wheel will change to provide options.

- If no action is taken in 10 seconds after reading ends the notification goes away and returns to previous app
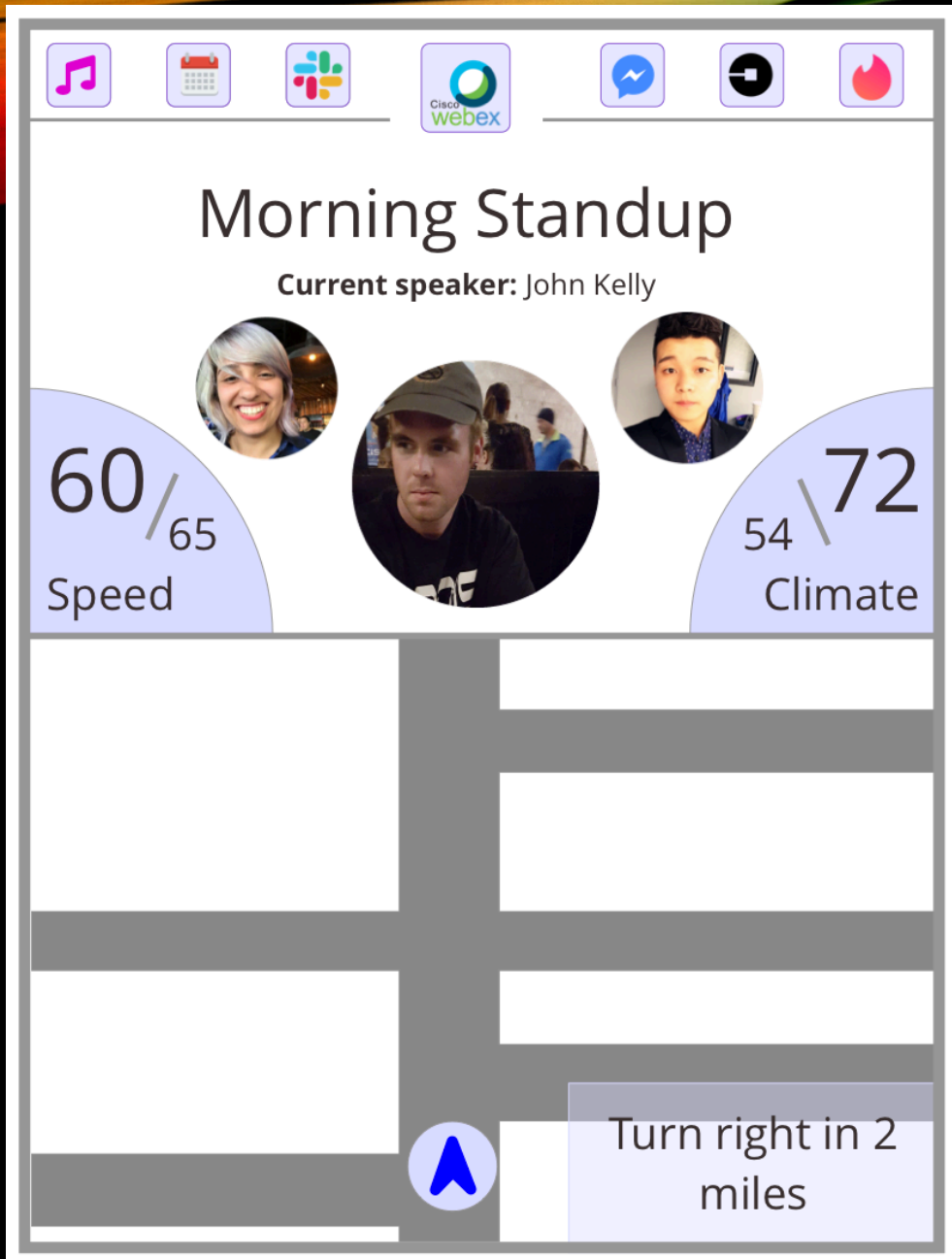
TOUCHSCREEN

- The physical "Voice" button can be used to control the system via your voice.

- This could utilize the assistant provided on your phone OS.

- Upon finishing command the command will be taken. Messages that require confirmation will read back and wheel controls used for confirming.
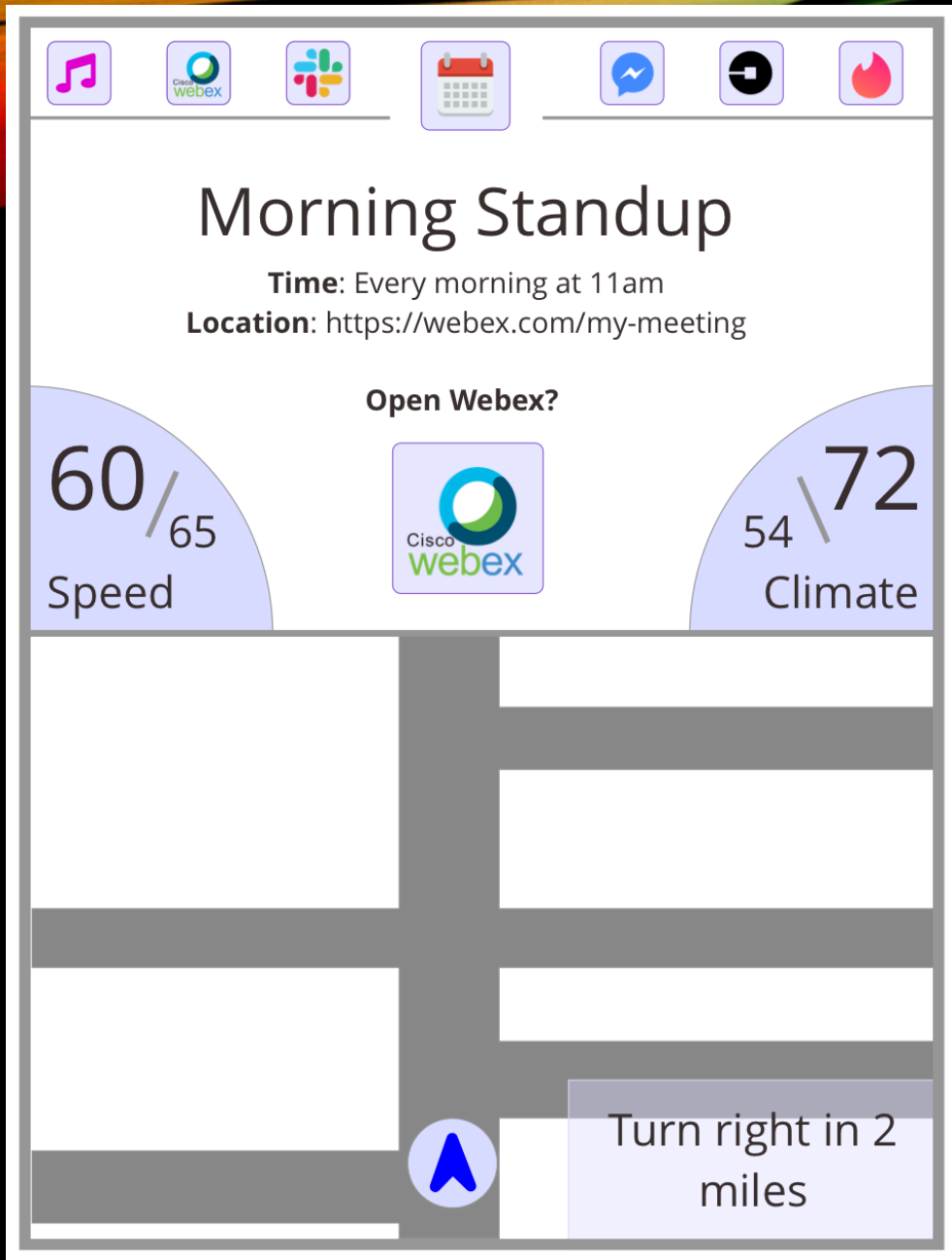
TOUCHSCREEN

- Notifications come in and some notifications can trigger other apps to load. In this case the Calendar has a link to a WebEx meeting that can auto launch the WebEx application into focus.

- The wheel will support launching and the screen can support. Like all notifications no action will dismiss it.

TOUCHSCREEN

- Different aps can provide unique experiences. Smooth animations are used to avoid distraction.

- WebEx can show the participants of a meeting and showcase current speaker.

- The wheel in this case has all controls (mute, leave) for the meeting.

Awesome drive!

You arrived at work in 28 minutes.

Don't forget your phone

TOUCHSCREEN

- Upon finishing driving and turning off car the phone holder opens. A message with a summary and reminder to get your phone happens.

- If phone is not taken the phone holder closes and the car will beep upon locking (same as door open).

ISSUES

- Ensuring that the screens don't distract has been a focal point of this project.
- Existing questions that need to be addressed in further study is whether the Speed info is the best item for the screen. Since it will be also in the normal location (behind wheel). However, it was primarily added to balance the screen with climate control
- This type of implementation will need apps to be offered for the device. This can be an issue as seen with Apple CarPlay.
- One thought was to support development efforts to offer base support for apps through the infotainment system.
- The sliding ability on top bar to pick apps might be complicated while driving. Not sure if should be disabled. Need more study, but voice should be primary.

SUMMARY

- This design has been complicated with the use of physical and external interactions. The Wheel is one of the more advanced features that this system offers. A touchscreen wheel provides full support for anything the user wants to do without confusion.

- The touchscreen should primarily be used for viewing and getting information. However, it still supports basic interaction. The wheel is the primary control for the driver to interact with the infotainment system.

- The phone holder needs to support wiring for older iOS and Android devices and can support wireless easily for newer devices.

- Integration with the console behind the wheel in most cars can be added as well and this design does not account for that.