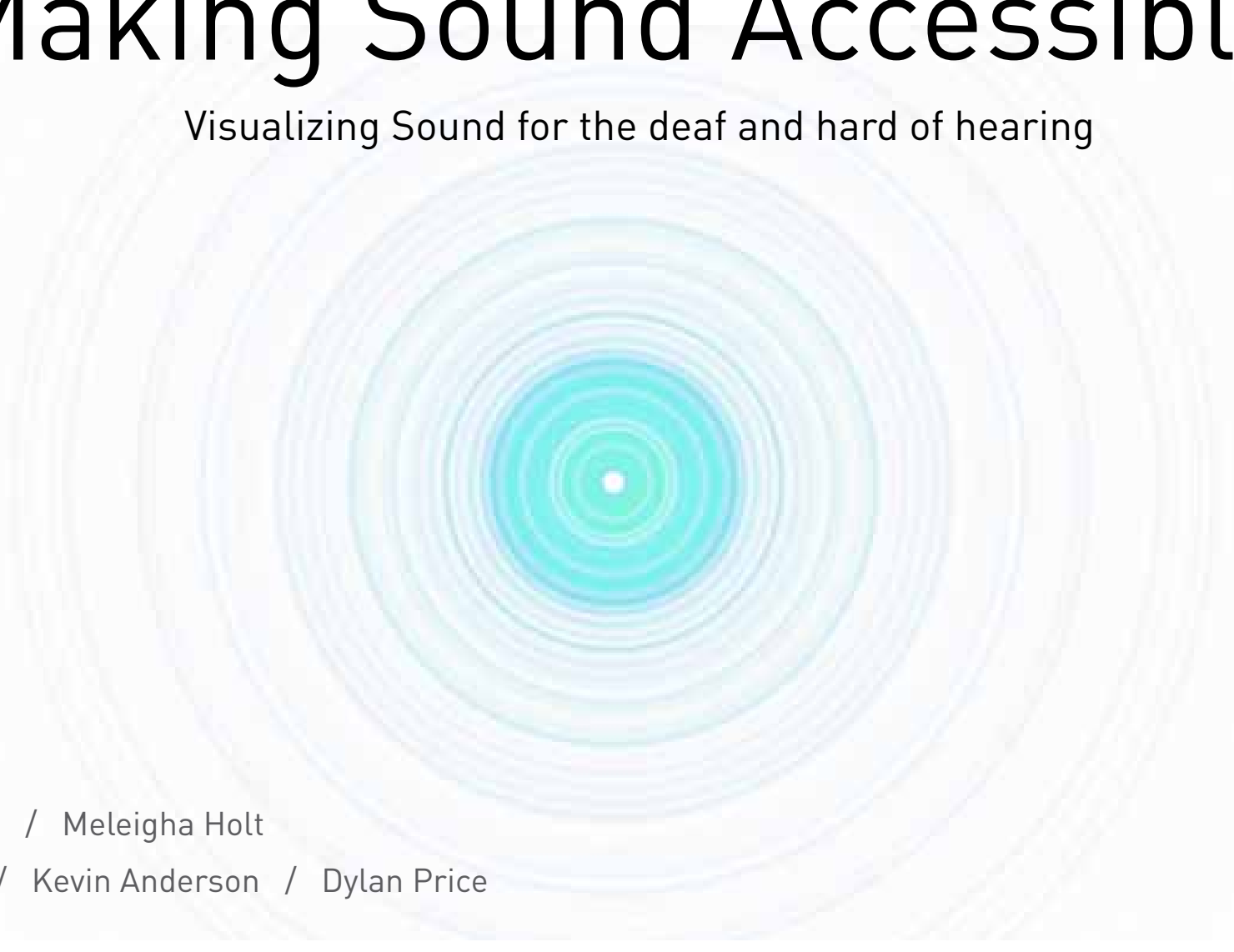# Making Sound Accessible
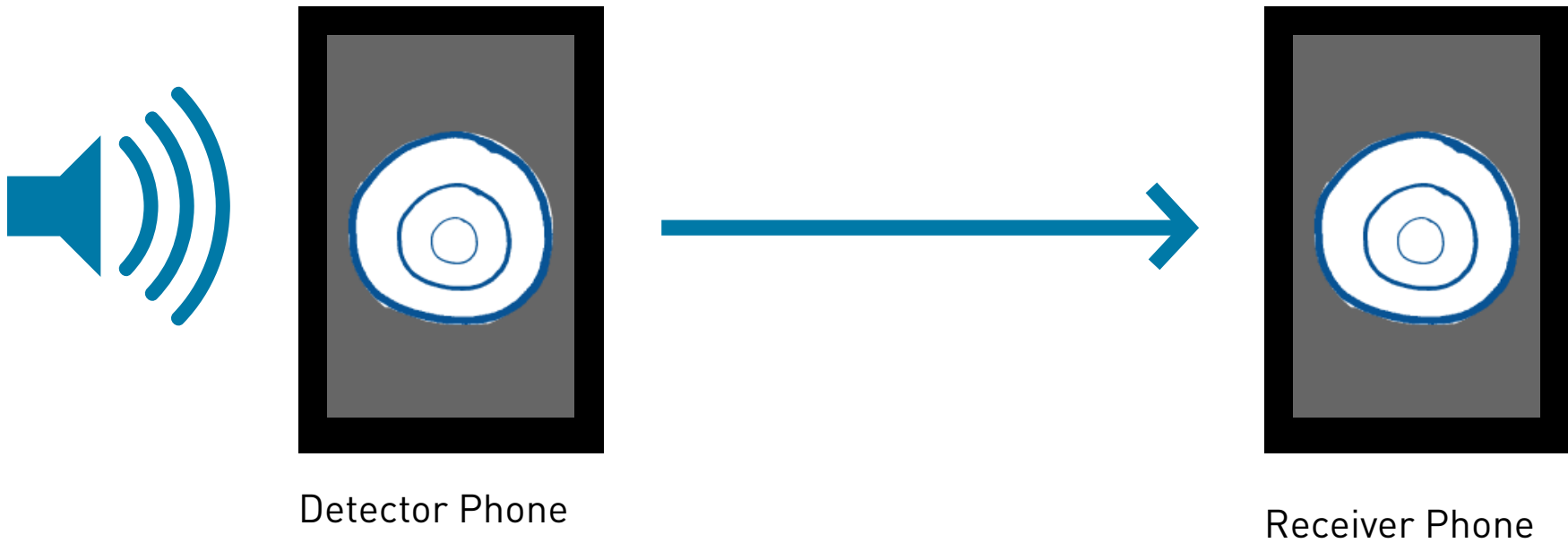
Visualizing Sound for the deaf and hard of hearing

Amy Brumet / Meleigha Holt

Kyle Hipke / Kevin Anderson / Dylan Price
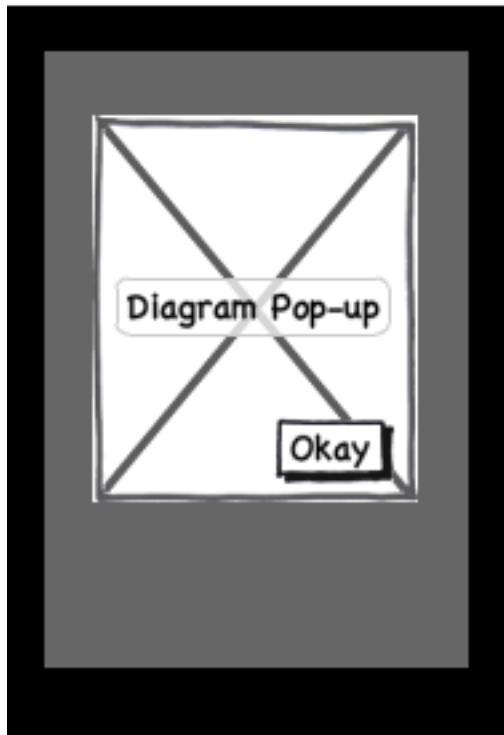
Detector / Reciever

Detector Phone

Receiver Phone

UI | Detector

Set-up

First time they enter the program, there will be a graphic showing the set up of the phone detection system
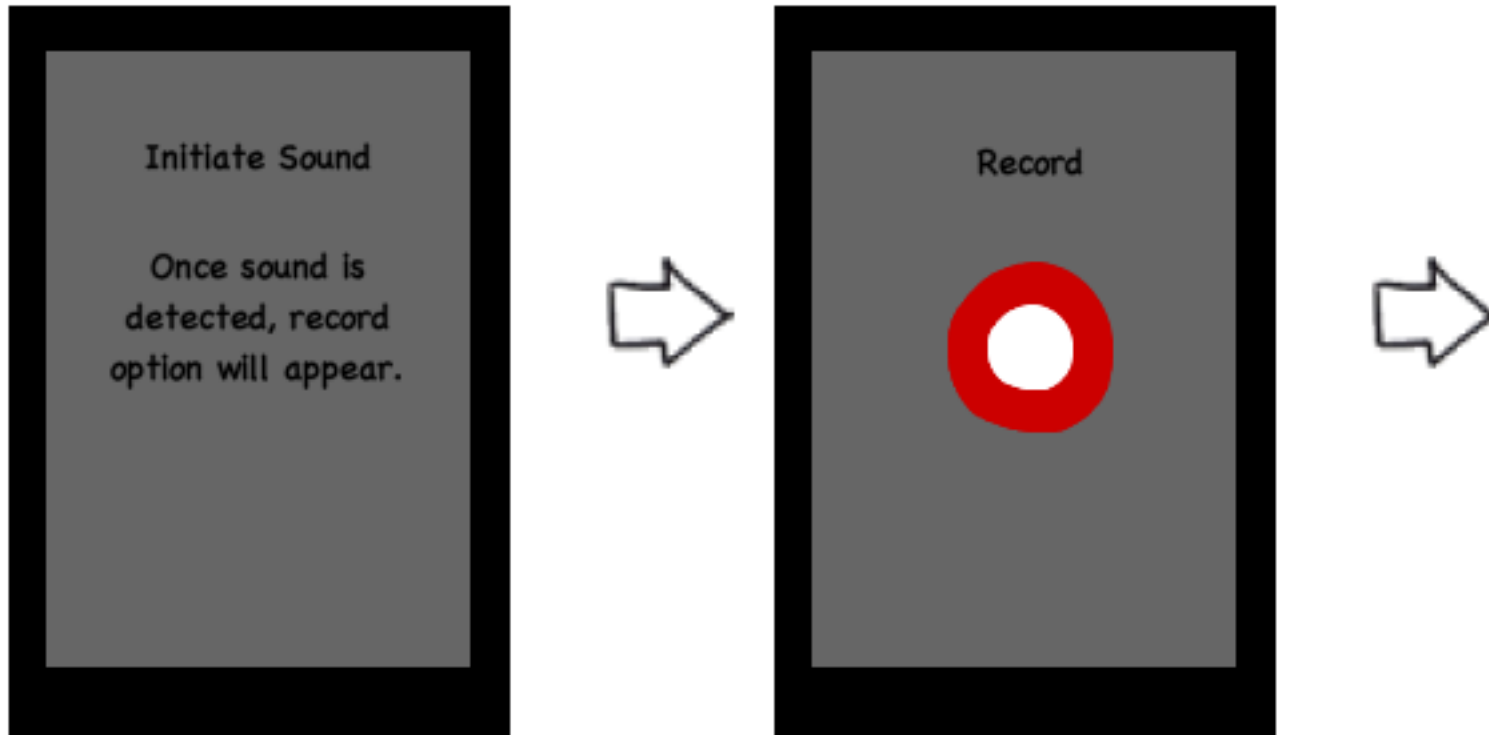
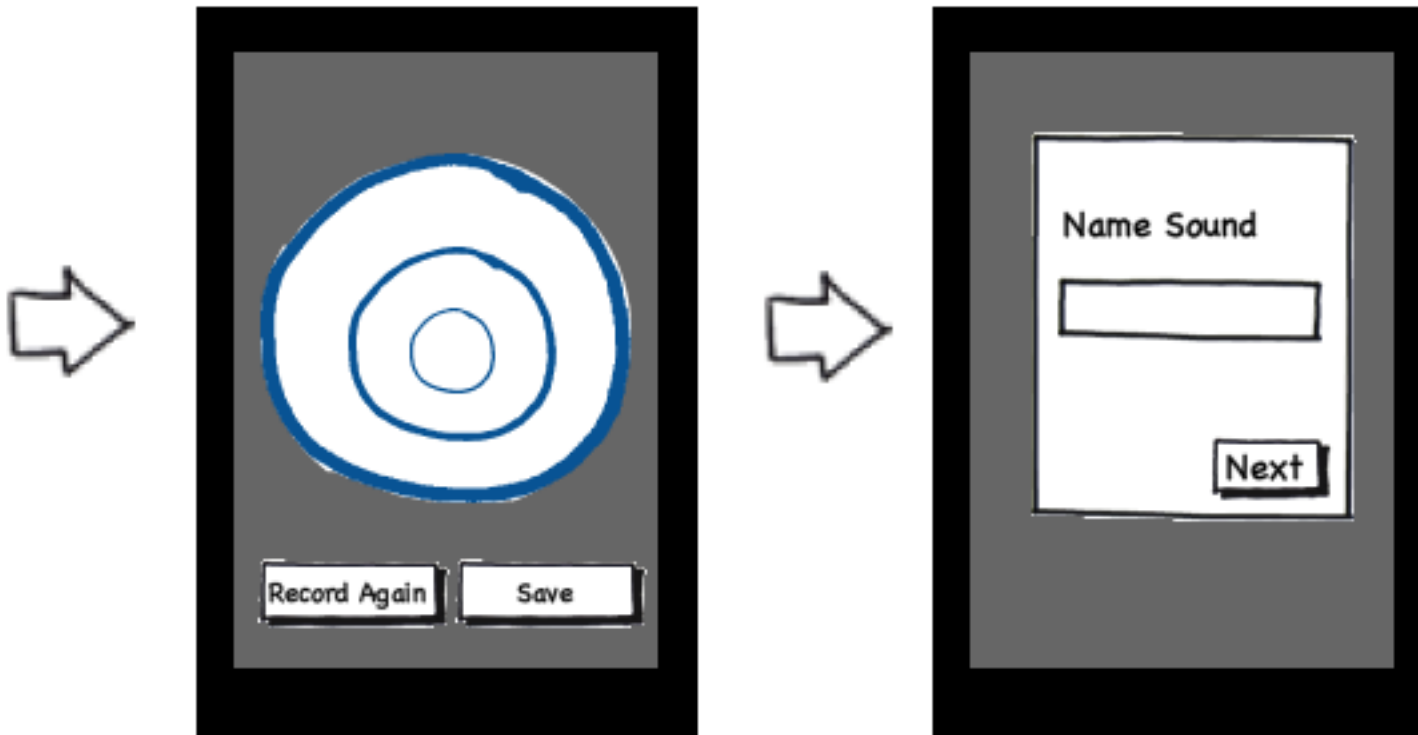Location input box. Overlay.

UI | Detector

Recording Sound

Initiate Sound

Once sound is detected, record option will appear.

Record

Once record button is pressed, visualization begins.

UI | Detector
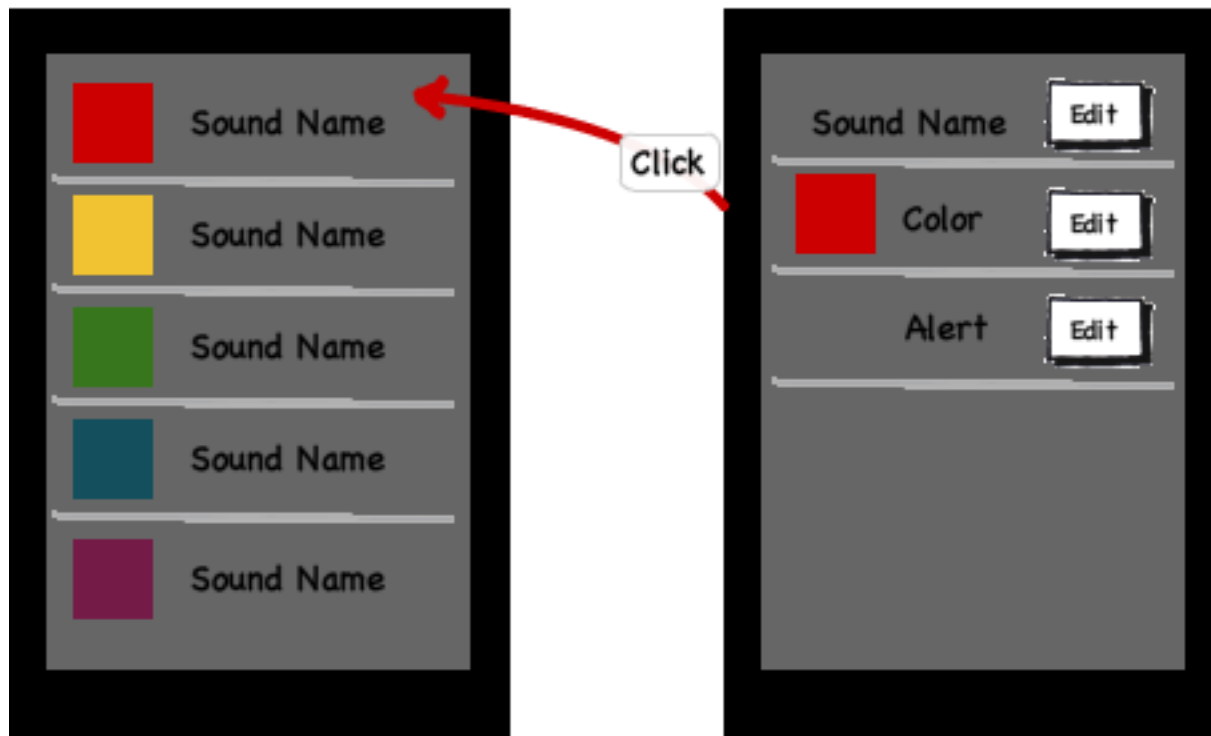
Sound Visualized

Visualization

UI | Detector

Sound Board List

Detector Phone Main Screen

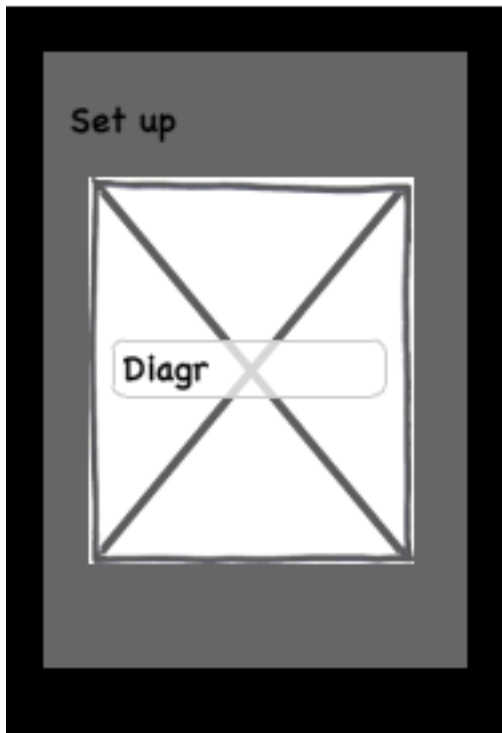**Default Android List**

Edit list however makes sense to you. Add any features you can think of.

UI | Receiver

Set-up

Set up

Diagr

Otherwise...

Location

% Certainty

Location

History   Sound Board

If no detector phone has been set up, the initial screen will have the diagram and prompt to set up detecto

Visualization Screen. Default screen at all times

List options

UI | Receiver
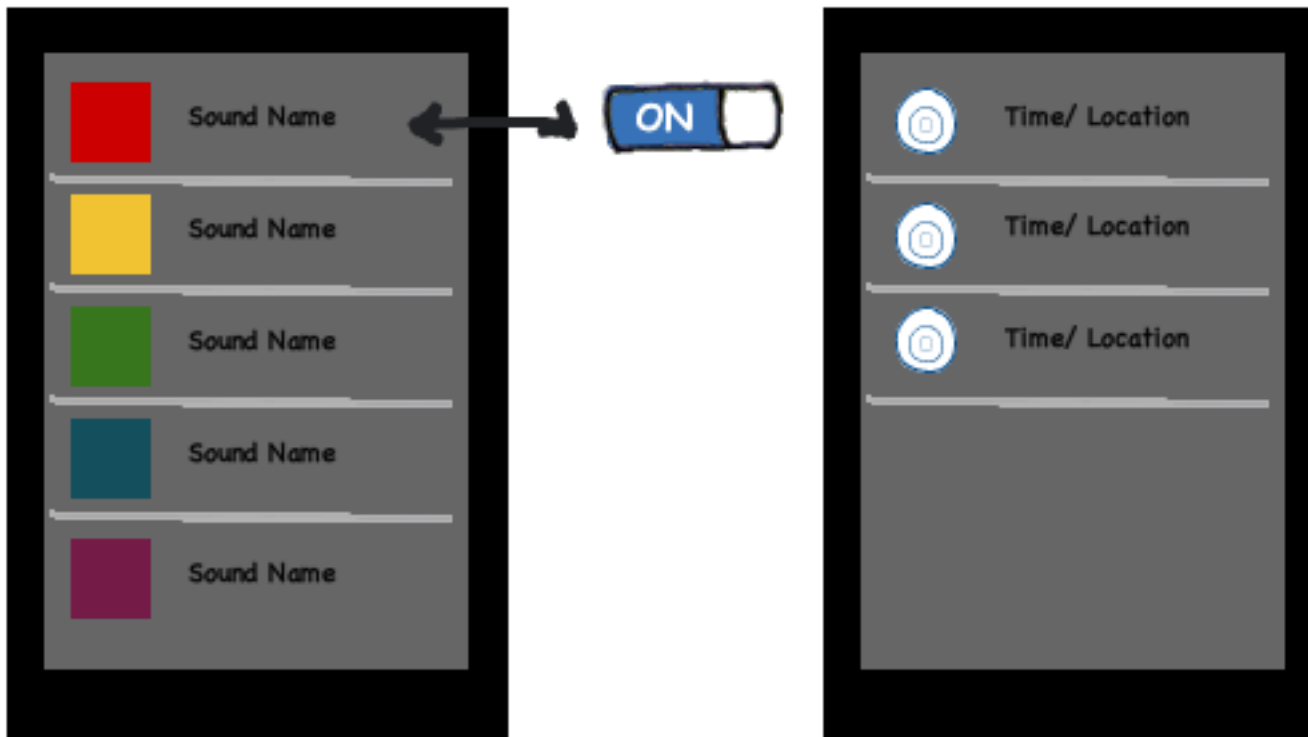
Sound Board

Cant size the on/off slider.
Imagine one of these next to
each sound

History. Click to see full
screen version.

Technology | Server Processing

- jAudio for feature extraction

    - Spectral Centroid

    - Power Spectrum

- Weka for machine learning

    - J48 Tree in Weka (C4.5 decision tree algorithm)

- This is all subject to change!

Technology | Server to Phone Communication

- Detector Phone → Server

    - POST with JSON in body

    - Server based on Java Servlets running in Tomcat

    - Gson for serialization

- Server → Receiver Phone

    - Server sends push notification using Android's Cloud to Device
      Messaging service

    - Receiver Phone Requests data from the Server (same as Detector)

Timeline

- Server can build classifier based on audio recordings
- Detector Phone can detect peak audio events & basic communication
- Receiver Phone has mock up of UI
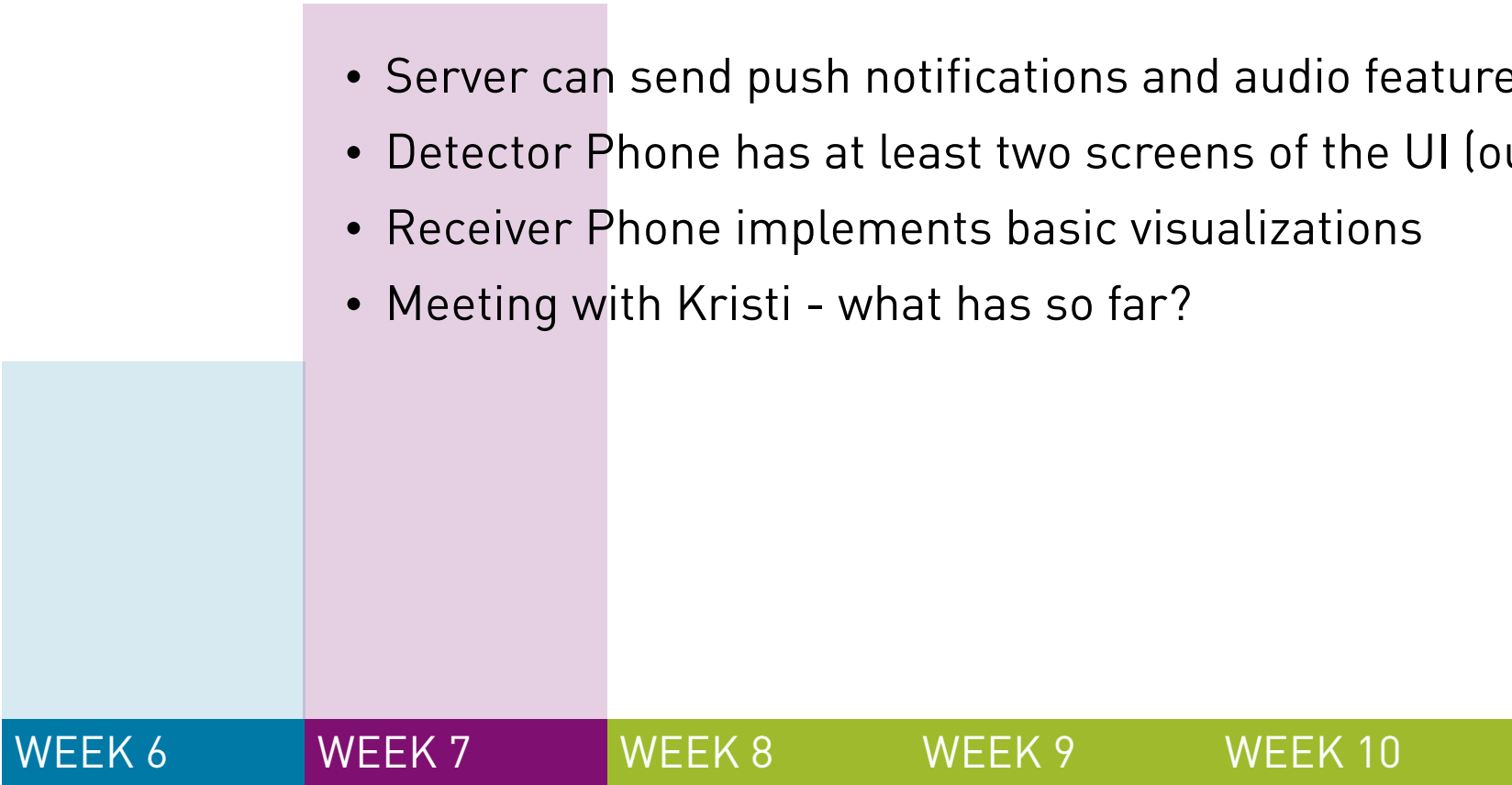- UI mock ups for the whole system

| WEEK 6 | WEEK 7 | WEEK 8 | WEEK 9 | WEEK 10 |

- Server can send push notifications and audio features to Receiver
- Detector Phone has at least two screens of the UI (out of 6)
- Receiver Phone implements basic visualizations
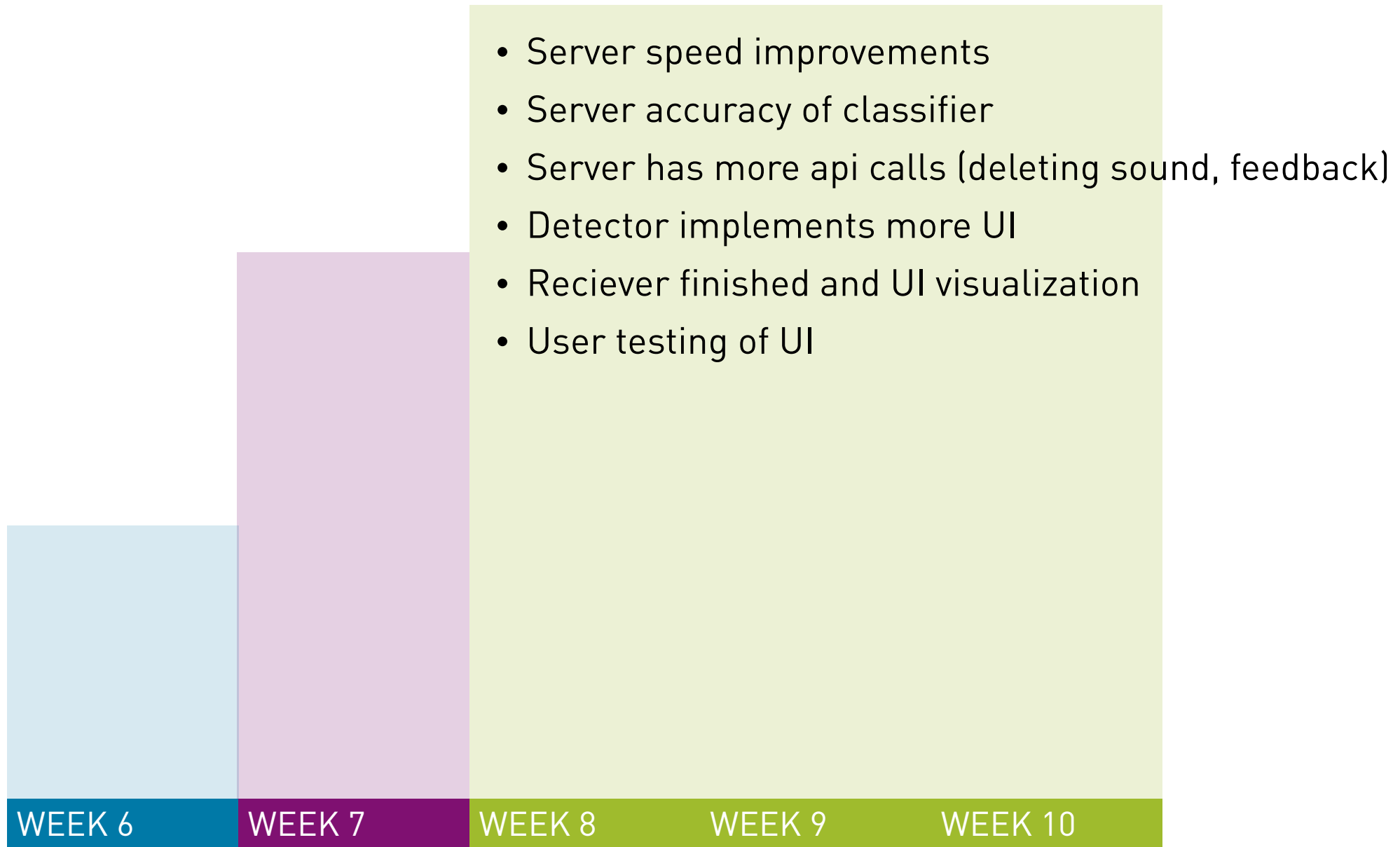- Meeting with Kristi - what has so far?

WEEK 6   WEEK 7   WEEK 8   WEEK 9   WEEK 10

- Server speed improvements
- Server accuracy of classifier
- Server has more api calls (deleting sound, feedback)
- Detector implements more UI
- Reciever finished and UI visualization
- User testing of UI

WEEK 6   WEEK 7   WEEK 8   WEEK 9   WEEK 10

Risks/Obstacles

- Robustness of classifier; recognizing a large enough set of sounds

- Performance of the server

- User ability to understand use system

- Lack of user feedback