# AuVi

## Audio to Visual

Our Team

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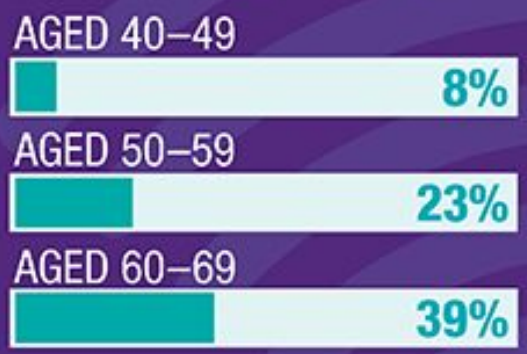
# Who has hearing loss?


14% of adults **aged 20 to 69** in 2011–2012

## Older Age Groups




Prevalence of hearing loss increases with age.

NIH National Institute on Deafness and Other Communication Disorders

**Source:** National Health and Nutrition Examination Survey, 2011–2012. Analysis reported in *JAMA Otolaryngology—Head & Neck Surgery*, December 2016.

# Design Problem


Deaf & Hard of Hearing


Transportation

# User Research

> “I get worried when biking that people think I am being rude when I don’t acknowledge them passing because I can't hear their shout”

> “I wish that there was some way I could be notified of ambulances when I am driving”

# Supported Tasks

Notify when someone is trying to pass them.

Notify when an emergency vehicle is approaching.

https://i1.wp.com/farm2.static.flickr.com/1382/1336243579_1d13f88ffe.jpg?w=620
https://shhdpvm723-flywheel.netdna-ssl.com/wp-content/uploads/2016/04/iStock_000010553686_Medium-1110x739.jpg

# Design Criteria

Portable

Flexible

Nondistracting

https://d30y9cdsu7xlg0.cloudfront.net/png/87201-200.png
https://cdn2.iconfinder.com/data/icons/content-and-edition/24/hide-512.png
https://www.gomirrorlite.com/assets/images/clients/MirrorLite-03-portable-icon.png

# Initial Idea

Interpret auditory signals visually

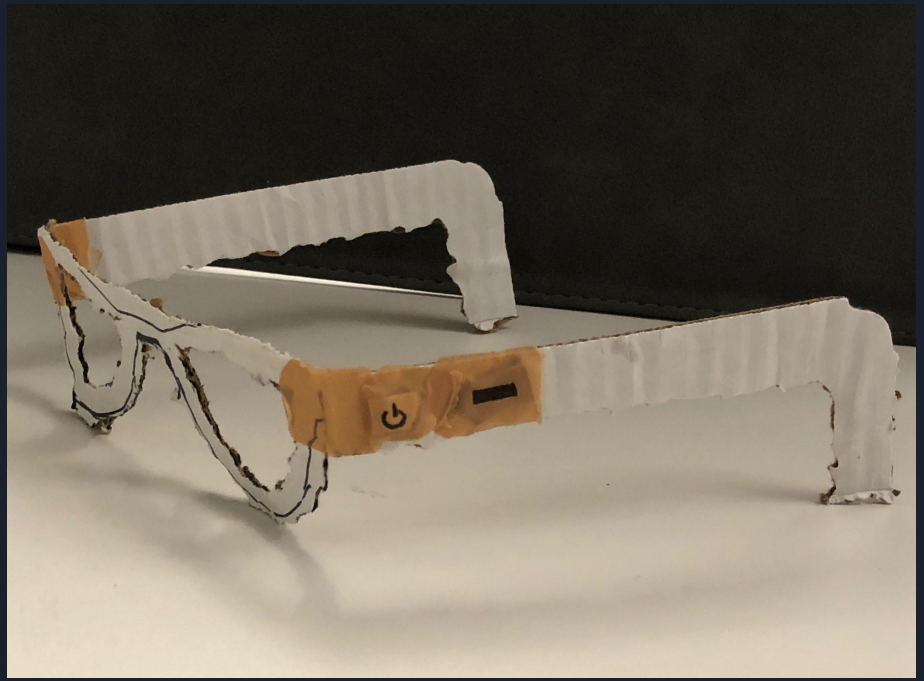
Sensors collect information, glasses display

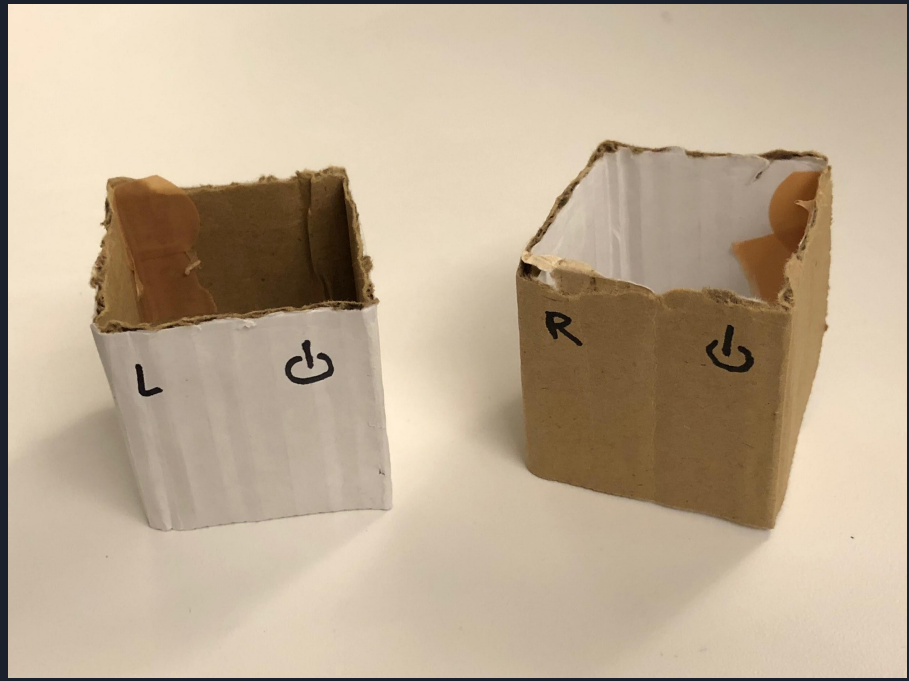
Intuitive display

Information presented stereoscopically

# Paper Prototype

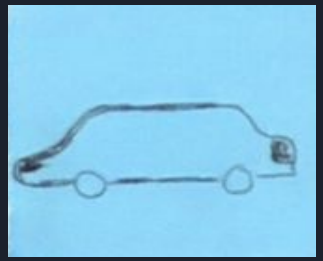
# Paper Prototype



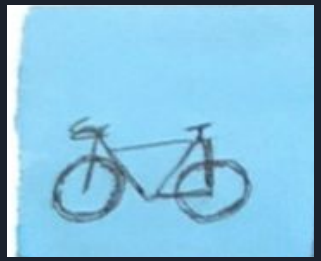


# Initial Icon Design

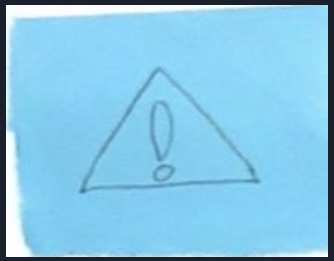
Car



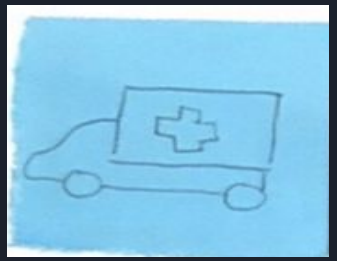
Bike



General Warning



Emergency Vehicle



# User Testing

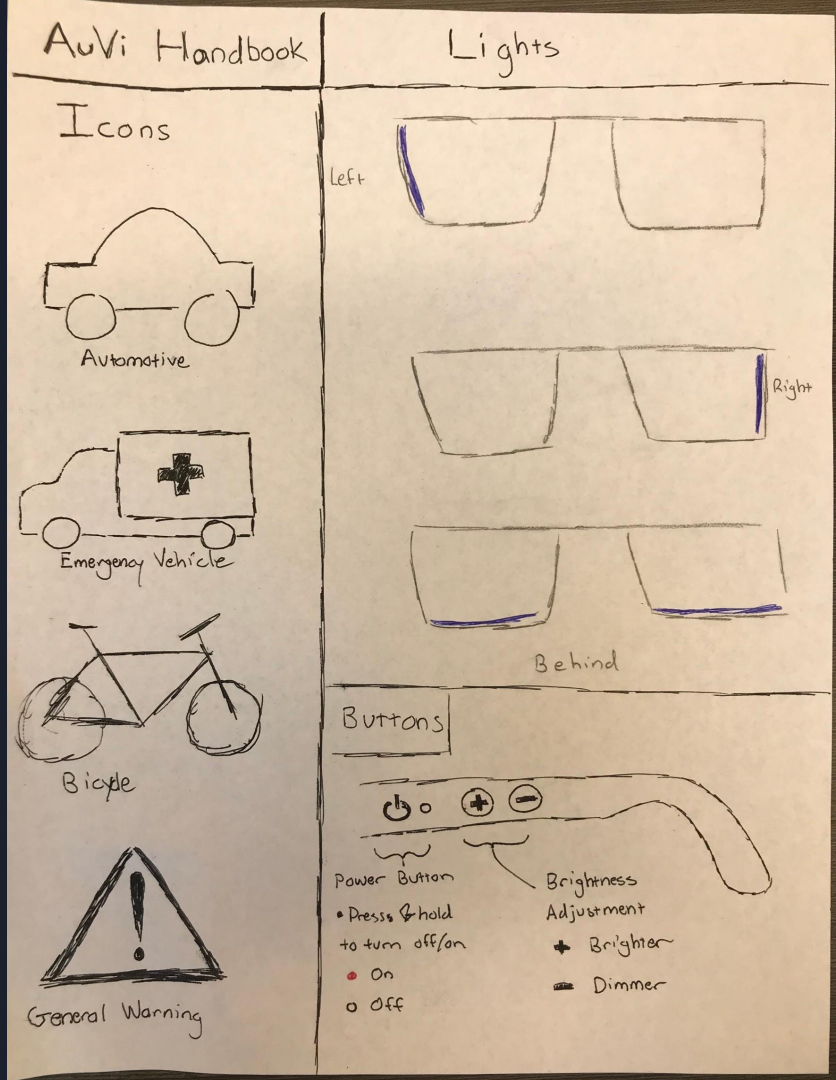
# User Testing

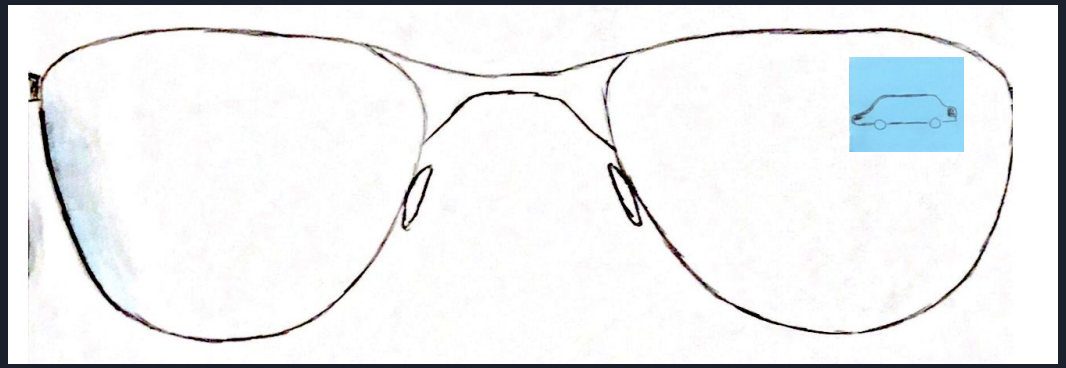
Users given a manual

Given paper scenarios

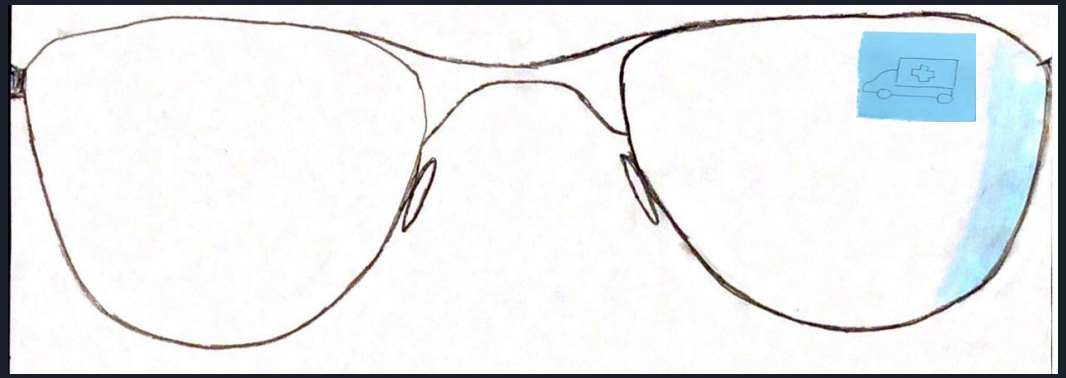
Asked to identify source type & location

Tested for speed and accuracy





“Car honk to the left”

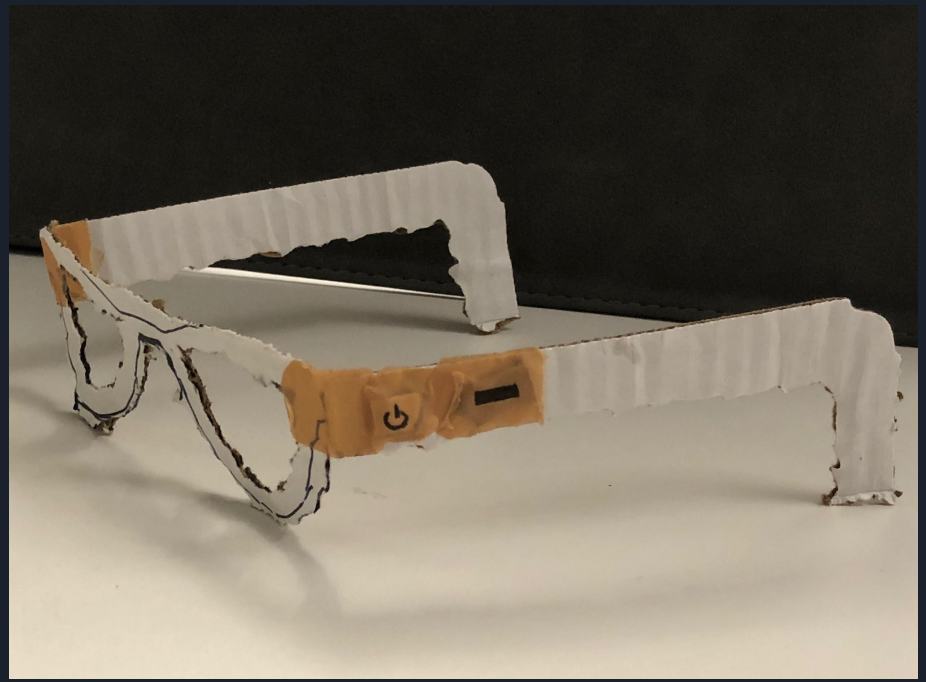


“Ambulance to the right”

# User Testing

# Design Refinement

# Glasses Feedback



“How do I know when the glasses are on and off?”

“Brightness adjustment buttons not descriptive”

“I would prefer to have the controls on the right side”

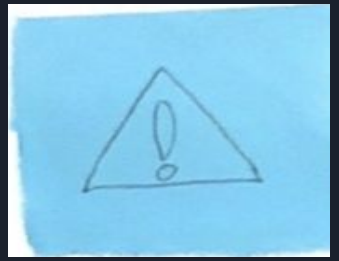
# Icons

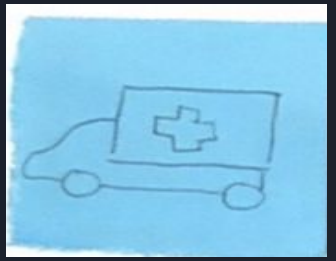
“General warning icon doesn’t make sense”

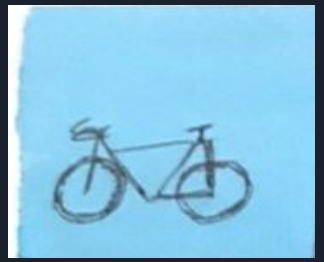
“There are not enough icons

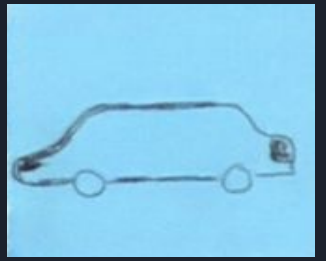
“The icons are too obtrusive”

“Blue doesn’t stand out against the sky









# Icons

Car 

Shout 


General 

Fire Alarm 

Bike 

Emergency Vehicle 

# Final Mockup


# A closer look at the sensors

Front View


Top View


Magnets

Clip

Power

Charging port & battery level indicators

Pairing indicator

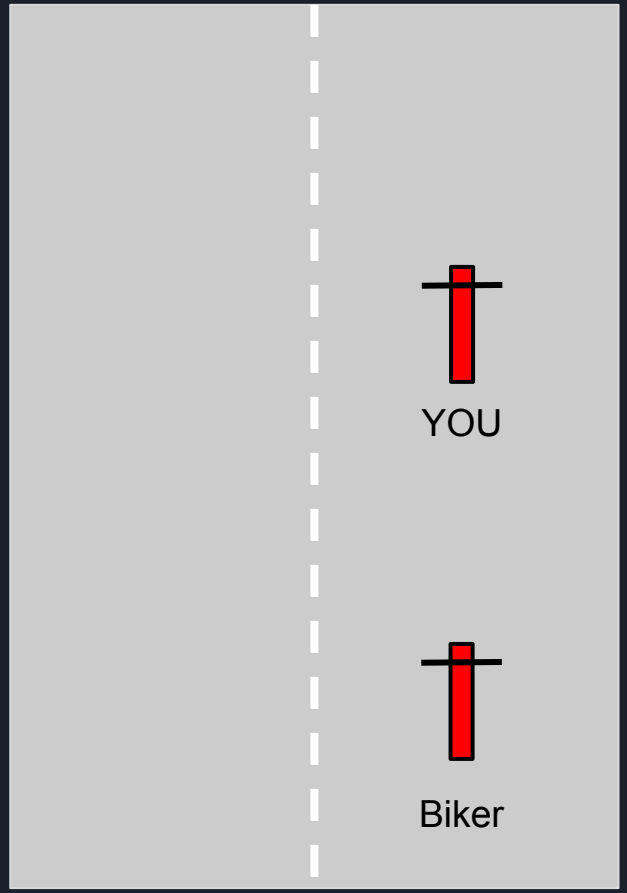
# Attaching Sensors to Cars

# Attaching Sensors to a Bike

# Task 1

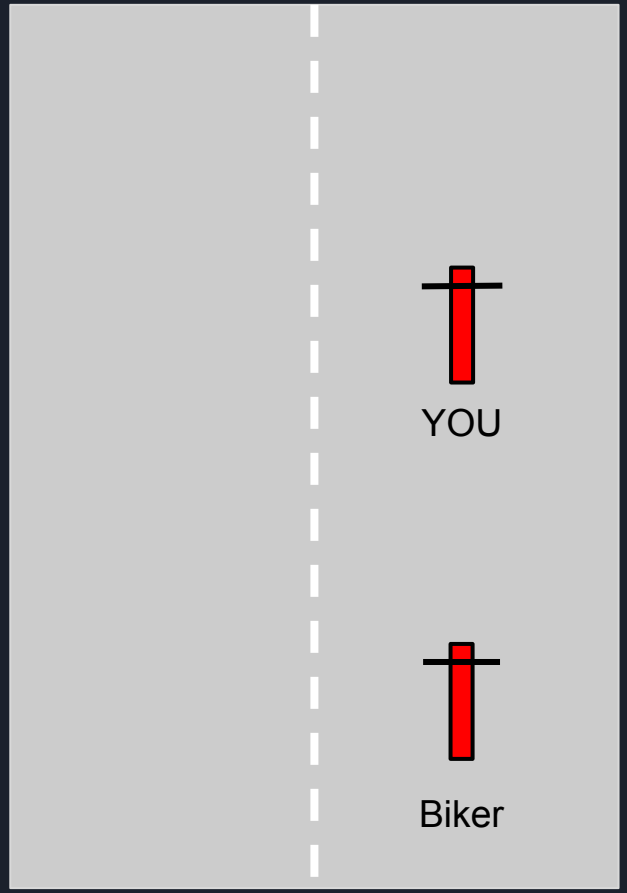
## Notify commuters when someone is trying to pass them

## Situation



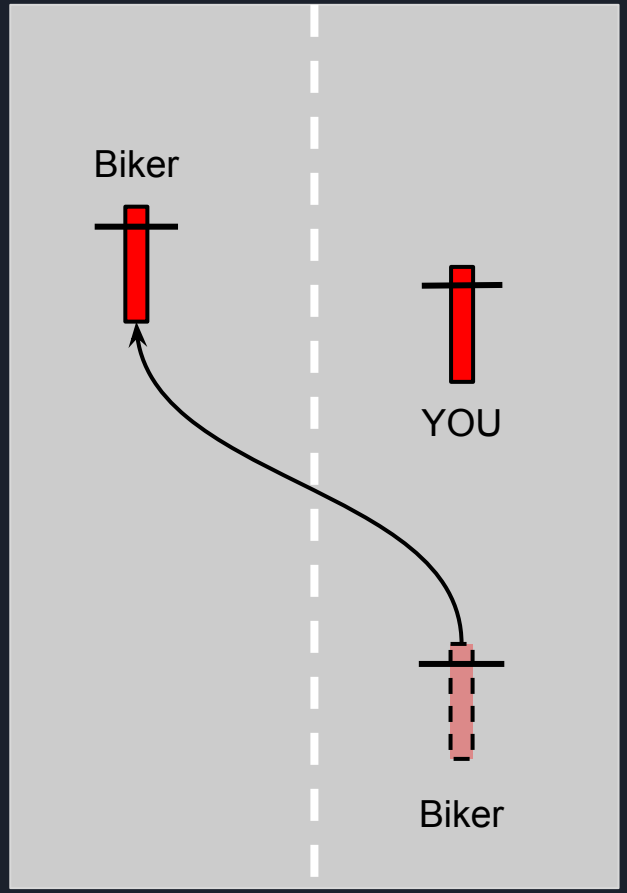

## Notification

## Situation




## Notification

## Situation

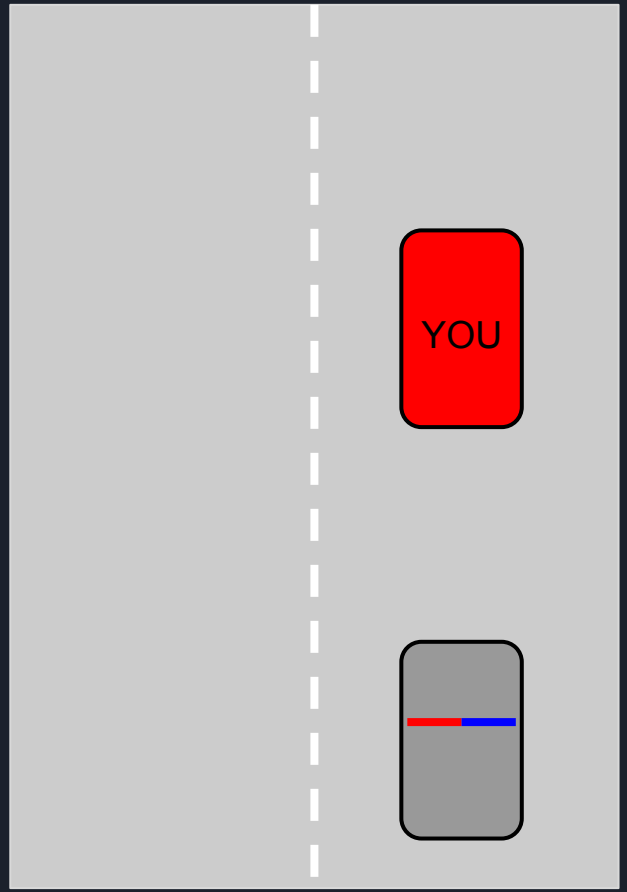



## Notification

# Task 2

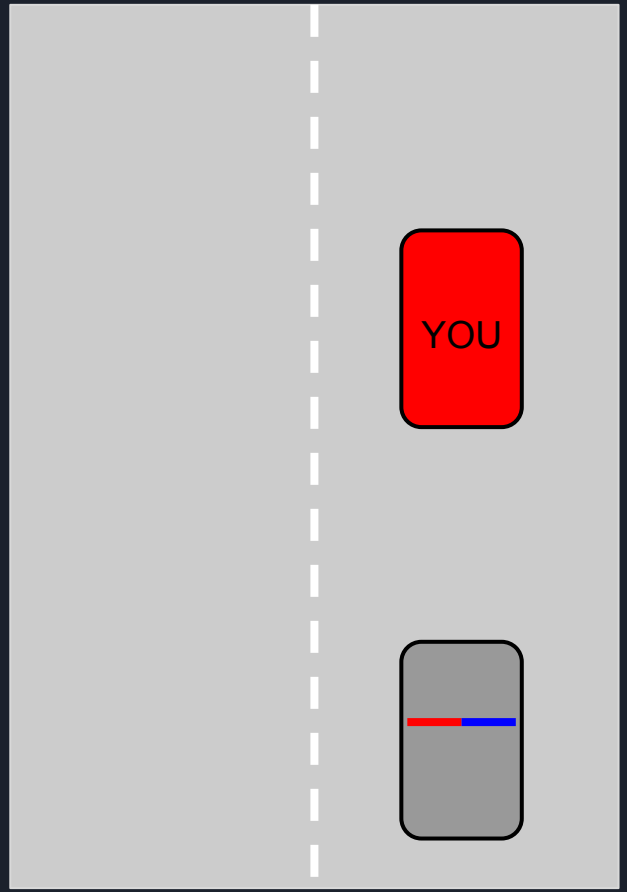
## Notify commuters of emergency vehicles

## Situation



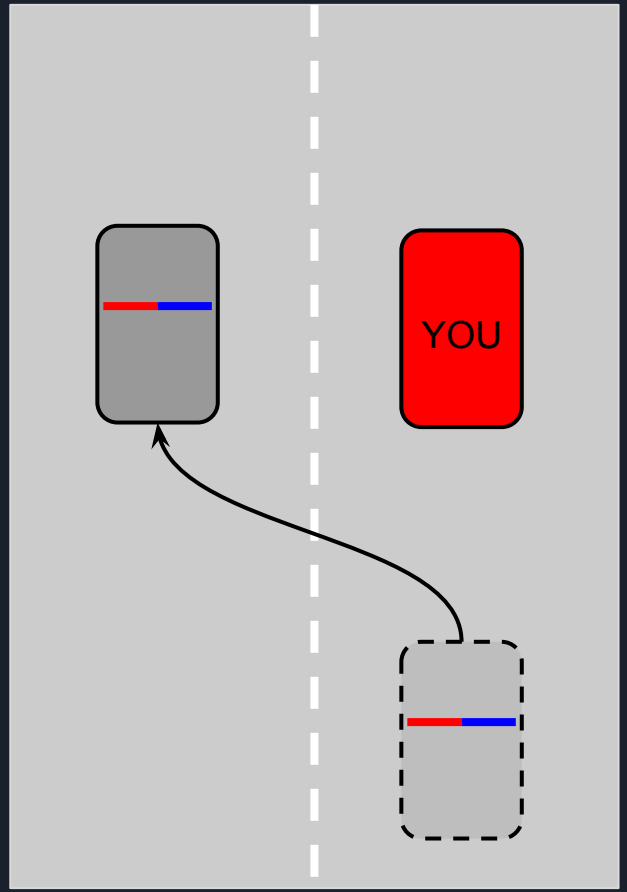

## Notification

## Situation




## Notification

## Situation




## Notification

# Summary

# Things We Learned

Empathy is crucial to good design

You don’t need a lot to design

Nothing beats talking to users

You can do more when you collaborate

# Questions?

# Thank You!