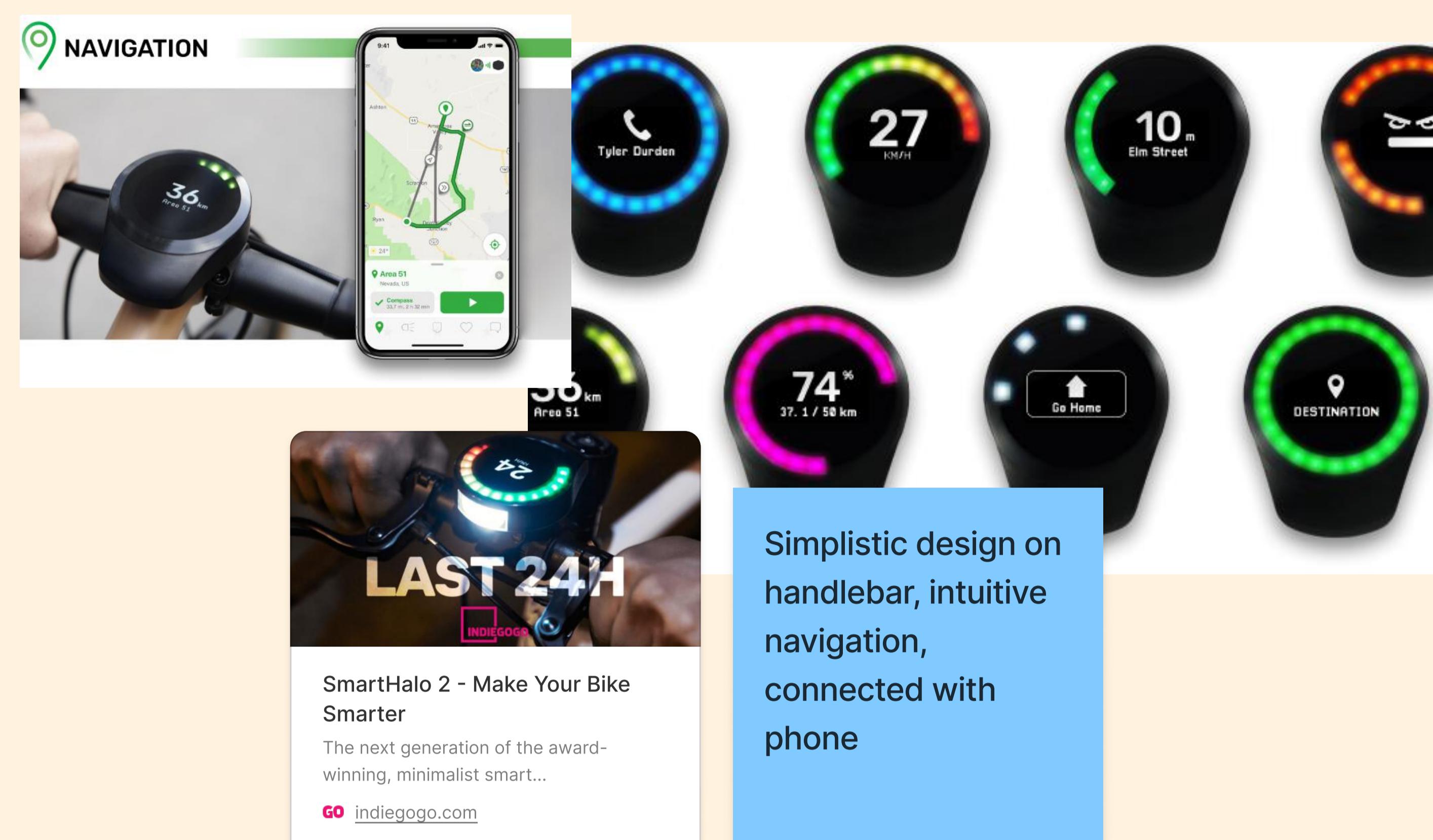


1. Navigation

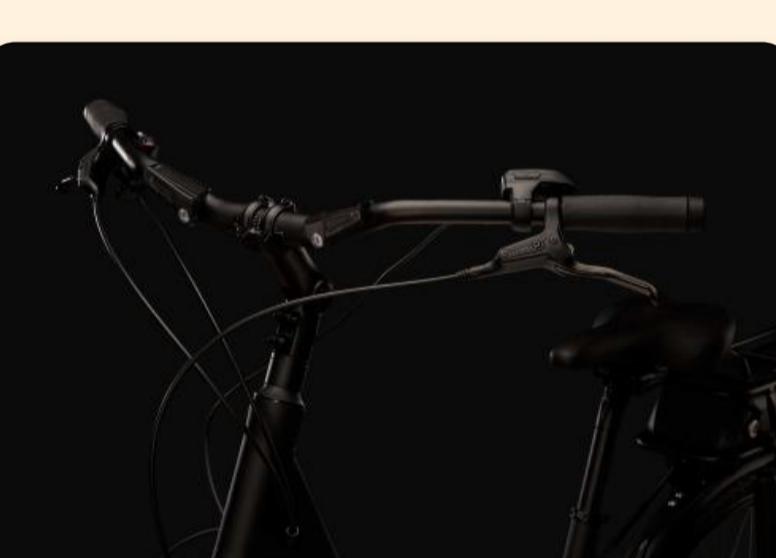


SmartHalo

Gesture Bike | Proceedings of the 2015 International Conference on Interactive Tabletops & Surfaces
dl.acm.org



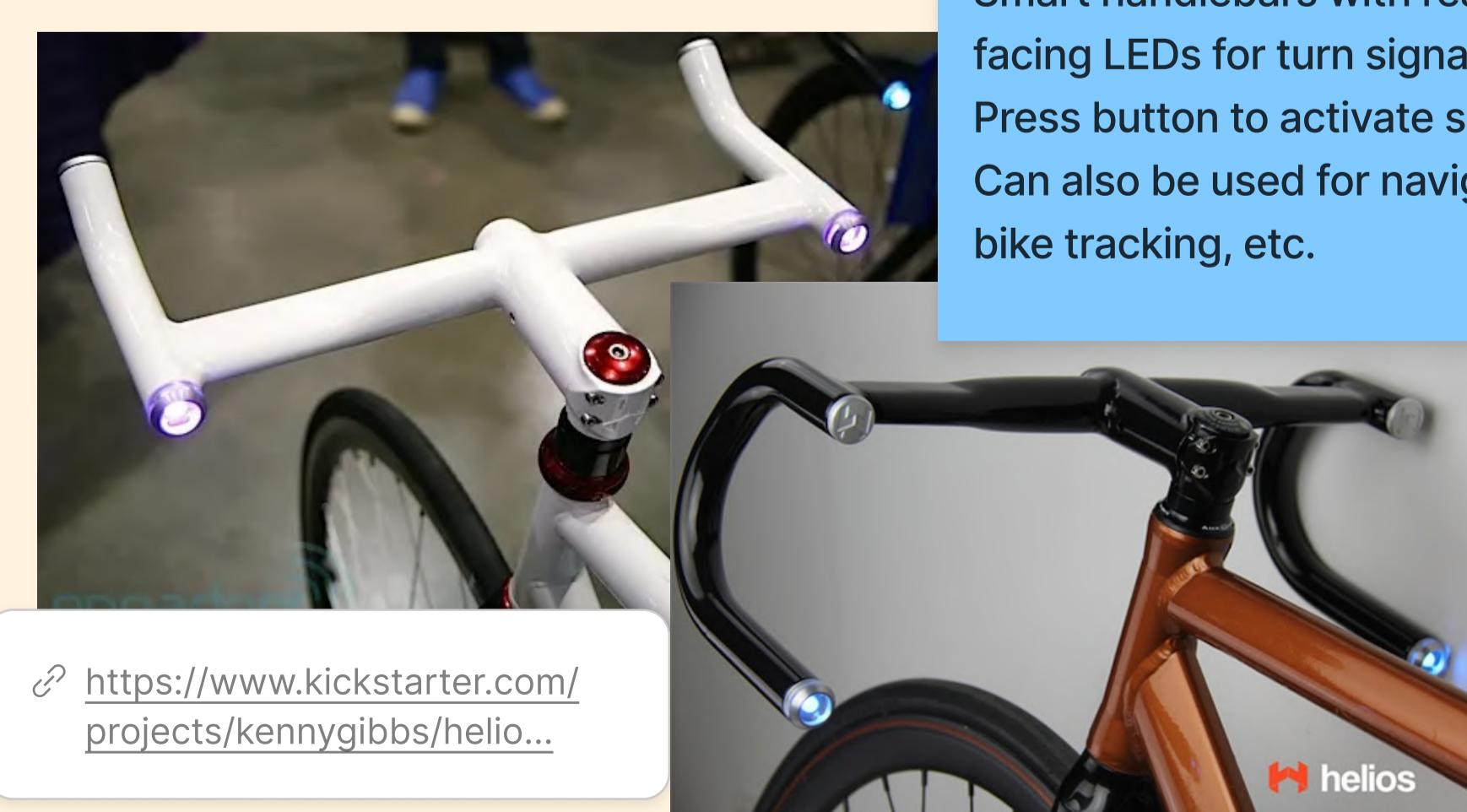
Research abt map navigation and turn signaling



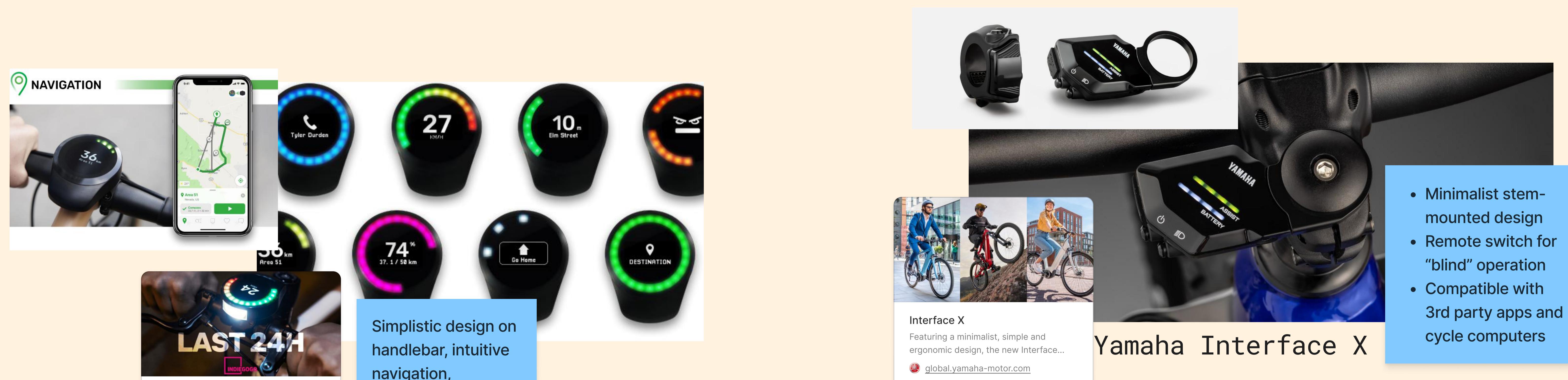
Wink Bar, the story of Velco's connected handlebar - Velco
First product developed by Velco, Wink Bar the connected handlebar made a...
velco.tech

Winkbar similar to other smart / connected handle bars with LEDs for navigation, but more "classic" design. Even though product wasn't successful, company still exists

Connected handlebars with LEDs for navigation

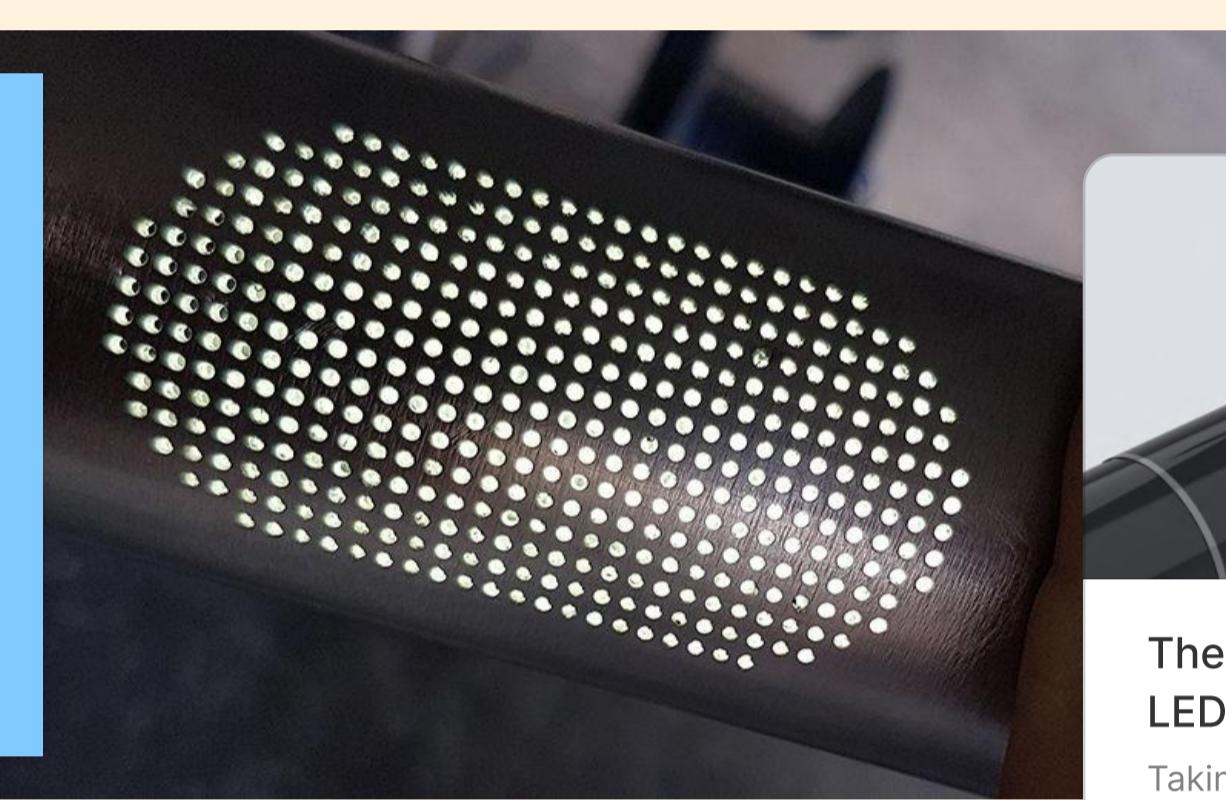


Handlebars with button and LED



Yamaha Interface X

VanMoof uses a series of LEDs inside the frame as their display, only showing limited info



Matrix Display



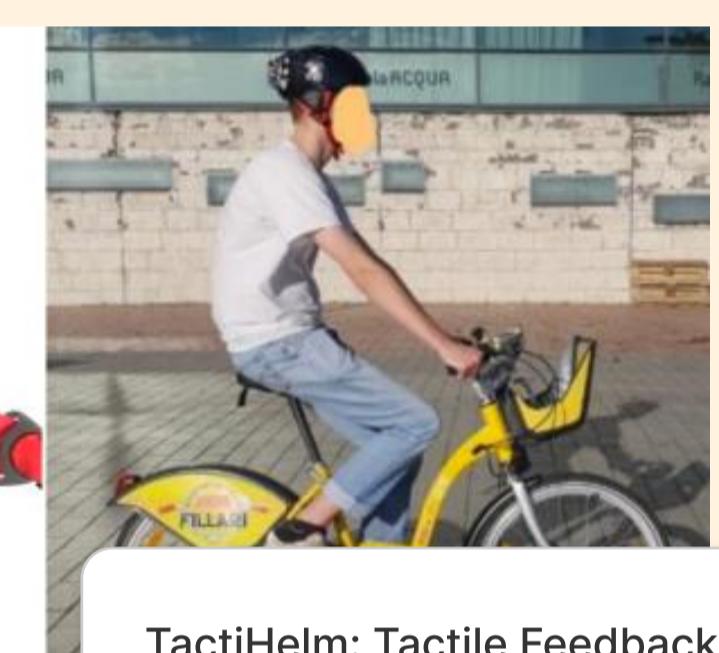
The Matrix Display: How 166 LEDs Will Change the Way You...
Taking its cue from old-school AV tech, the Electrified S2 & X2's Matrix...

vanmoof.com

Inspiration: Existing stuff



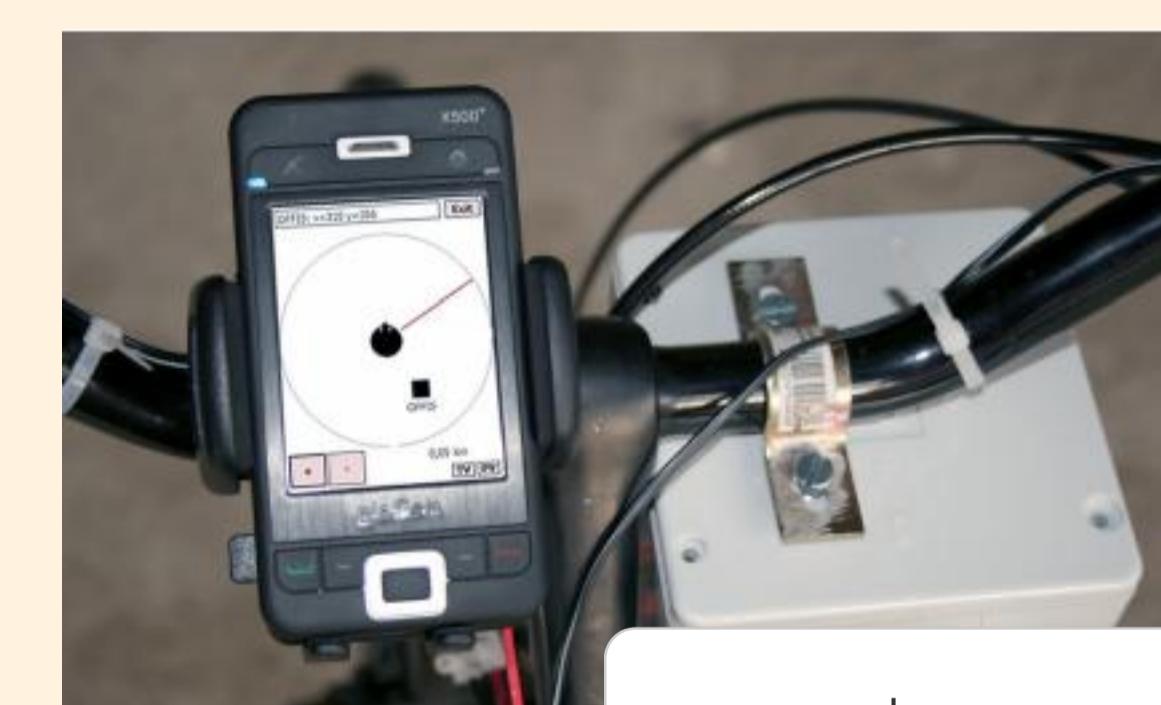
Tactile alerts in helmet to avoid collisions



TactiHelm: Tactile Feedback in a Cycling Helmet for Collision Avoidance | Extended...
dl.acm.org



Bicycle-Mounted Device Projects Signals On Cyclists' Backs | Bic...
Jun 24, 2015 - A mounted device that projects signals on cyclists' backs mi...
nl.pinterest.com



Tacticycle | Proceedings of the 11th International Conference on Human-Computer Interaction...

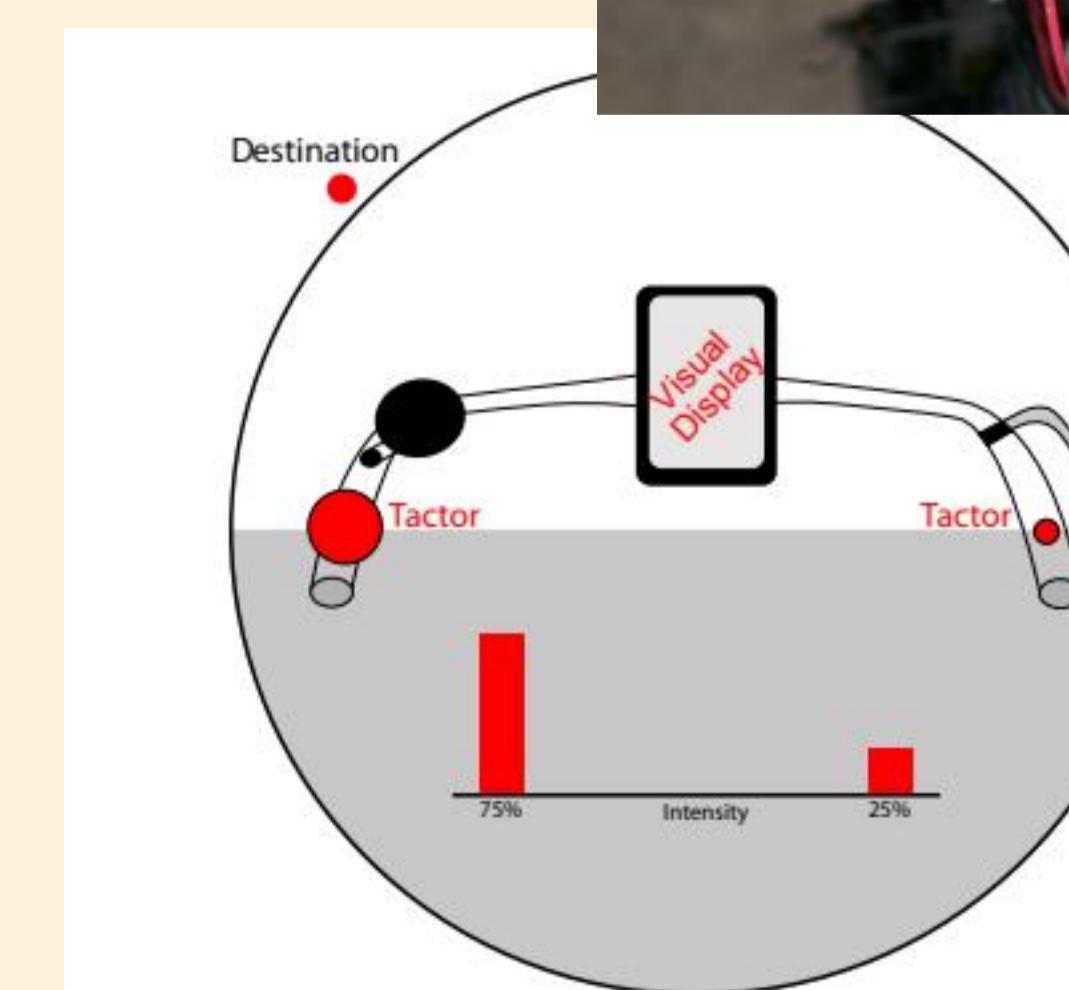
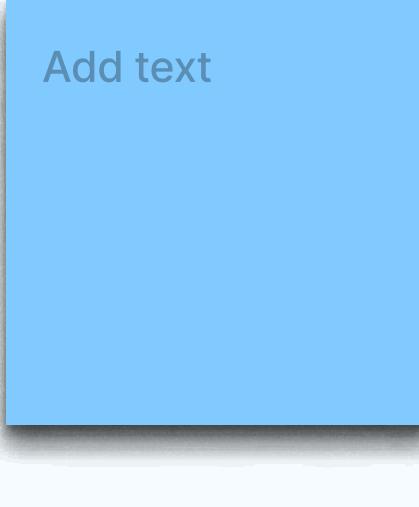


Figure 2: The tactile actuators have different vibration intensities to show towards the destination.

Tactile feedback on handlebars for tourist navigation

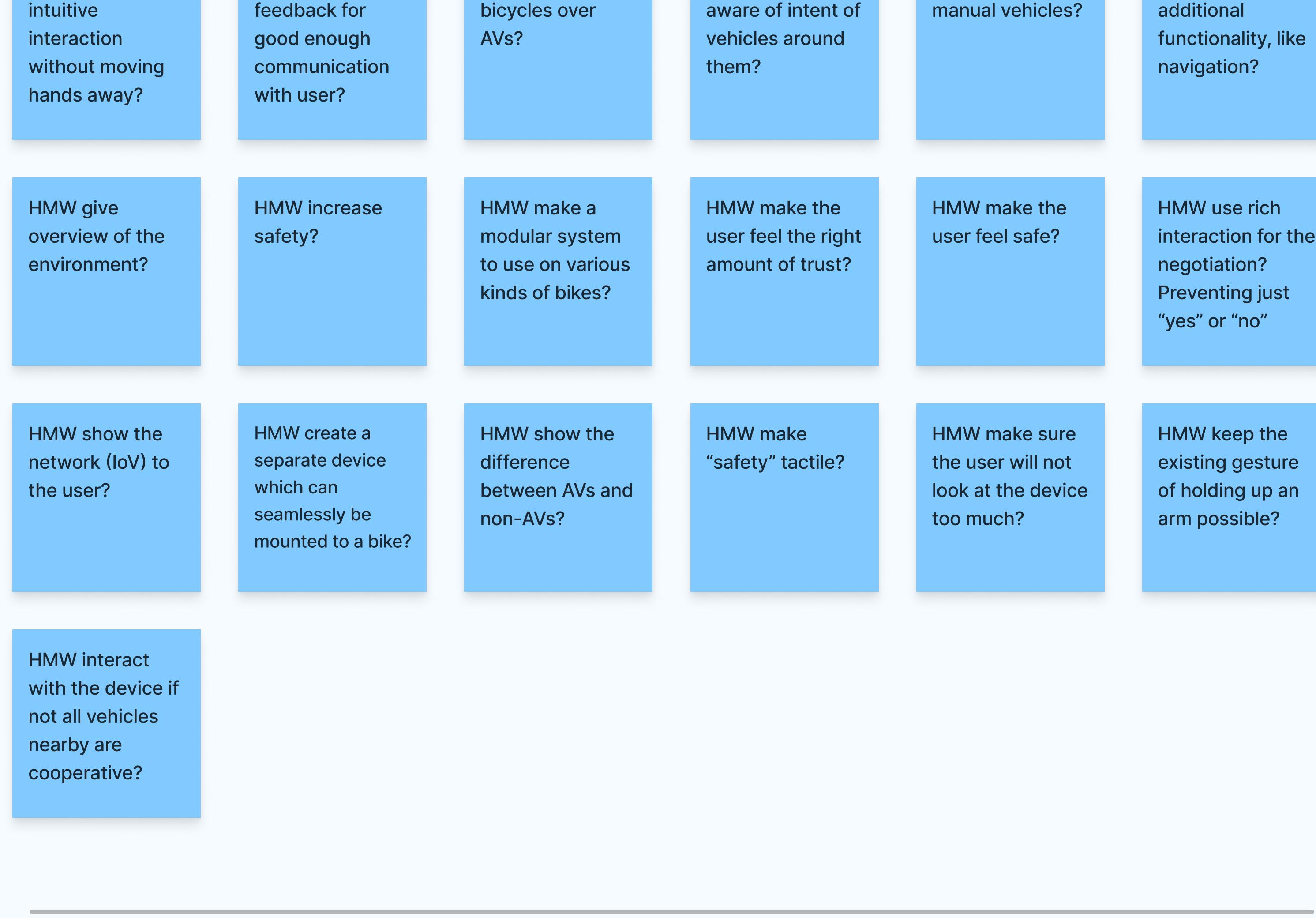
"HMW" Stands for "How Might We?", It means:

- How: The answer is out there
- Might: Might or might not work, all is okay
- We: Teamwork (well not in my case lol)



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Affinity Mapping / Clustering

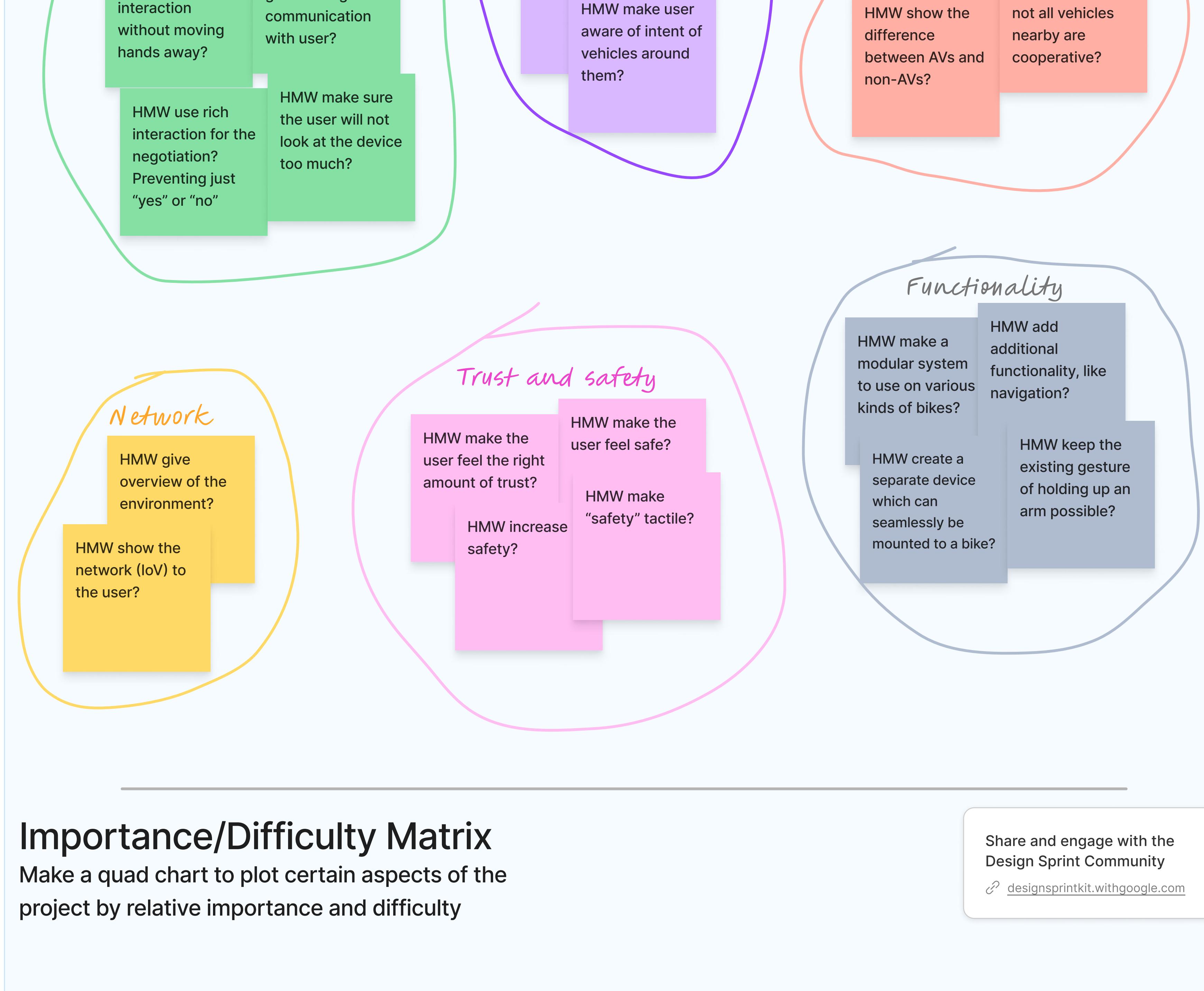
Sort the HMW notes into clusters with similar notes

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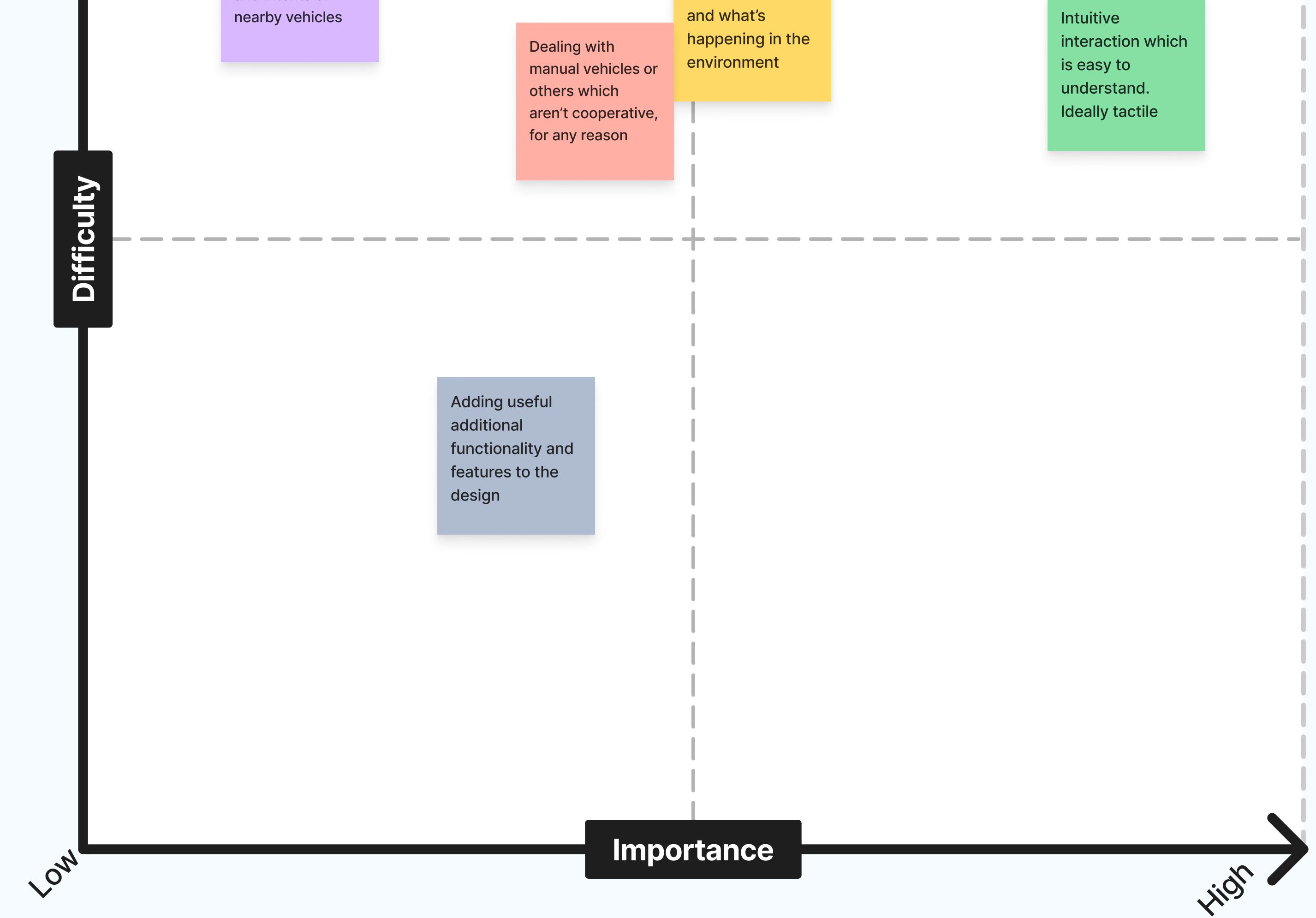


Importance/Difficulty Matrix

Make a quad chart to plot certain aspects of the project by relative importance and difficulty

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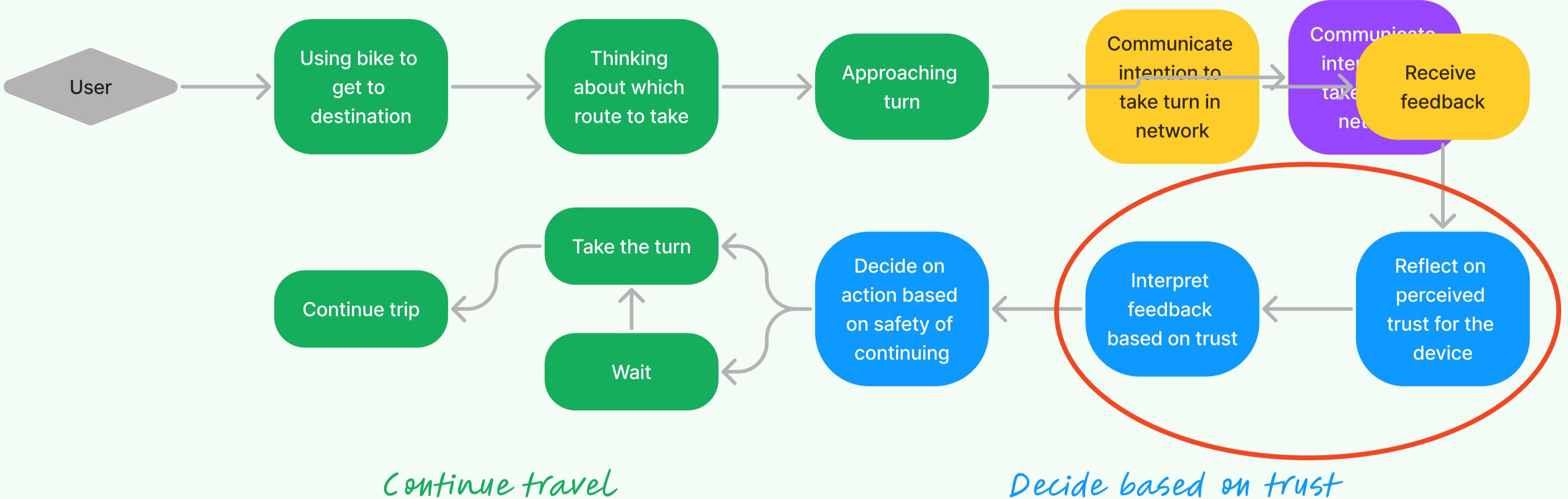
User mapping

How will the user use the device? What actions will they take?

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Travelling on bike

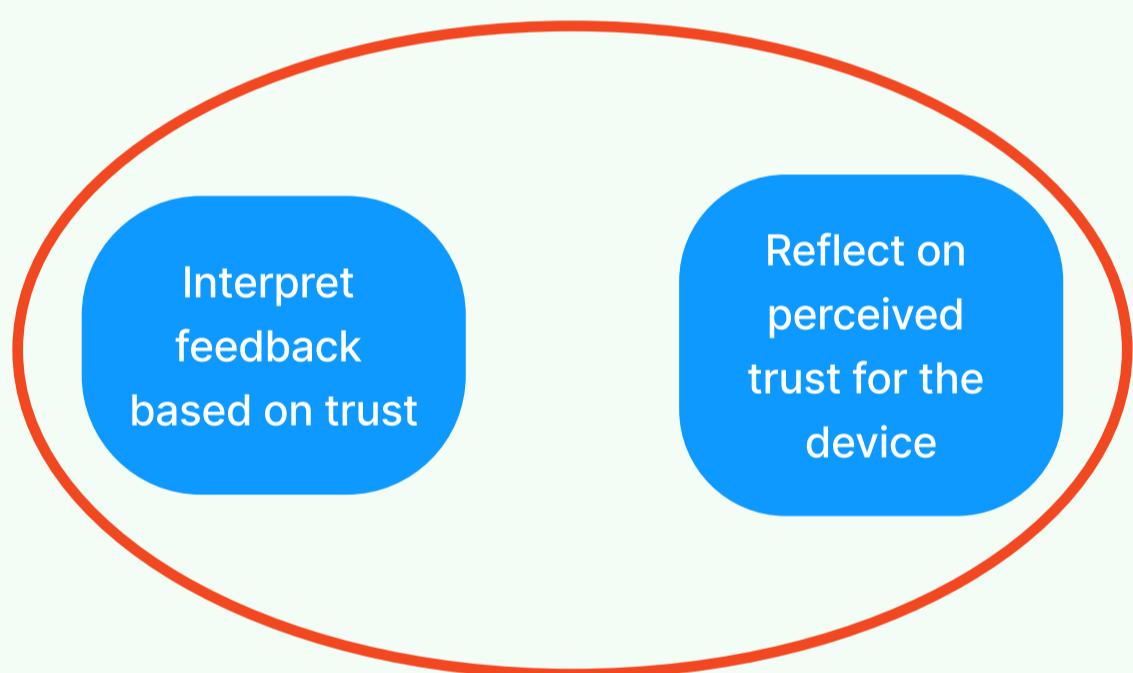


Pick a target

Locate the points on the user map with the biggest opportunities and with the biggest risk. Circle these, they are the main target of the remainder of the design sprint.

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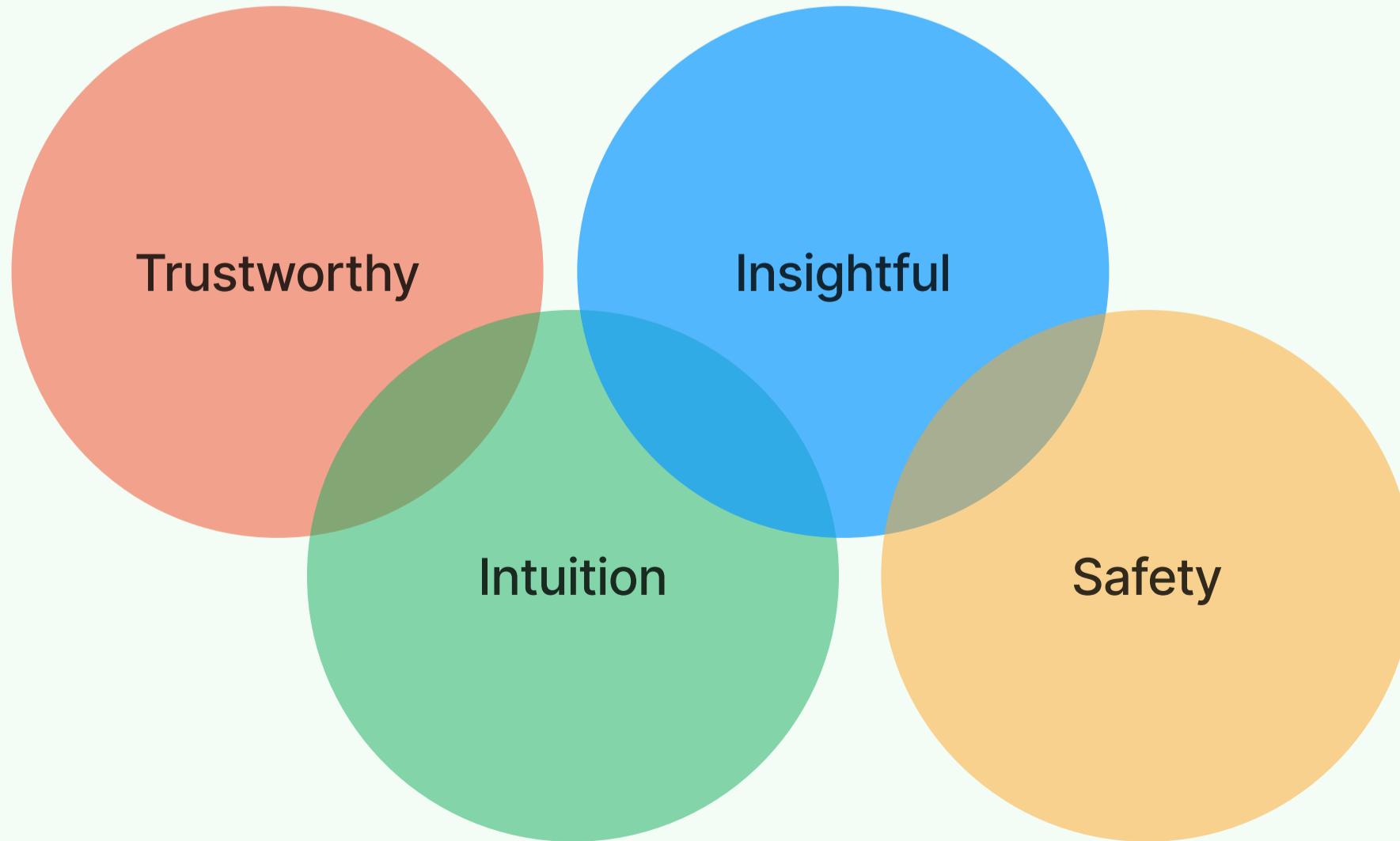
Getting the trust right is a very important aspect of this concept. Somehow, the amount of certainty should be communicated to the user. If, for example, not all vehicles nearby are AVs, certainty cannot be 100% and the user would still need to check with human drivers around them. If all vehicles in the vicinity are AVs and they are giving the cyclist the right of way, the device can communicate this with enough confidence, so the user has enough trust to take the turn.

Design Principles

Defining relevant design principles to guide the project.

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Boot-up note taking

1. Take some time to review the goals, whiteboards, and all HMWs
2. Write a list of ideas that you find compelling and want to explore

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Goals:

- Creating a design that inspires the right amount of confidence and trust in the user each time.
- Intuitive enough interaction to not be distracting, making sure not to reduce safety.
- Allowing the user to become a part of the network of vehicles and negotiate with it.

Ideas:

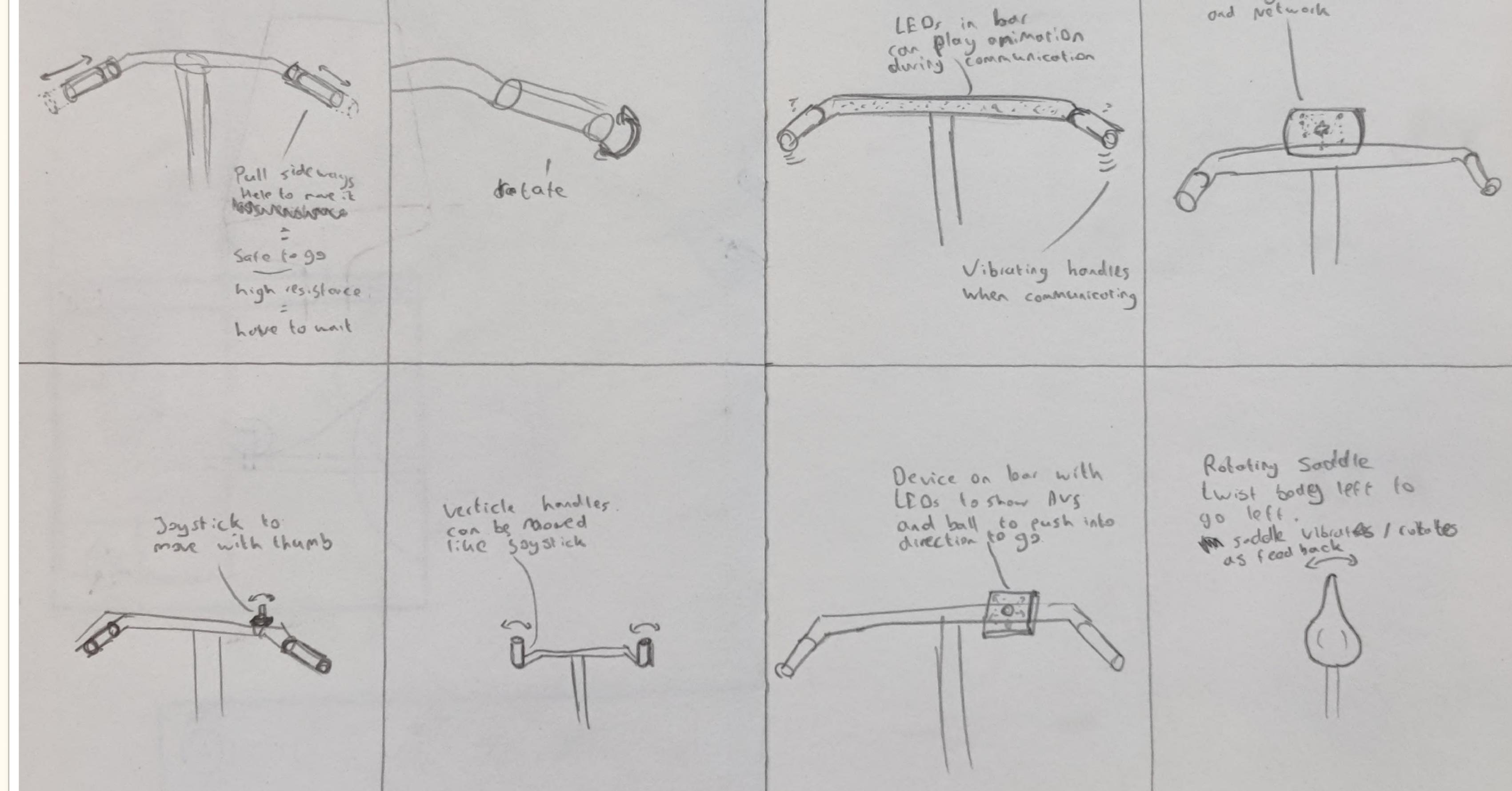
- Interaction with handles
 - Pulling handles sideways
 - Rotating handles (like scooter)
 - Varying amount of resistance or assistance with motion as feedback
 - The clearer the feedback the higher the confidence → trust?
- Vibration in handles to tell communication is happening
- LEDs on handlebar to visualize communication
- Grid of LEDs (matrix) to visualize environment
- Physically only allow for interaction if AVs are close, if only manual vehicles no interaction possible
- Lasers pointing to AVs which are being communicated with
- Joystick mounted to handlebar
- Bending handle as joystick into right direction

Crazy 8's

Quickly sketch 8 rough ideas within 8 minutes (took me a bit longer, 15 or so)

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Solution Sketch

A more detailed sketch with an idea for a complete solution. Can be from crazy 8's or not.

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