

THE PRODUCT

“I See You” Seattle



A virtual reality educational experience to build empathy and improve communications and interactions between commuting cyclists and drivers

THE PEOPLE



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THE PROCESS

1. Design Problem
2. User Research
3. Ideation + Sketching
4. Prototyping
5. Design Solution
6. Future Steps

1. DESIGN PROBLEM

Through discussion and general research we identified a communication problem we wanted to address, a design question we would seek to answer, and a plan for how we could address them.

How might we improve the interactions and communications between cyclists and drivers?

There is not a standardized system for cyclists and drivers to communicate with each other while in transit. The lack of ability to communicate effectively can lead to contentious confrontations and potentially serious consequences, particularly for cyclists.

Our aim was to research the interactions between cyclists and other people in transit in order to develop a design solution to improve communication between these parties.



2. USER RESEARCH

To evaluate the problem space in response to our design question, we identified the core users we were aiming to understand and selected a combination of research methods we deemed most likely to give us a mix of qualitative, quantitative, objective, and contextualized data.

Target Users



Primary Users

Cyclists in Seattle, who commute by bicycle at least once a week to get to/from work or school.



Secondary Users

Car drivers in Seattle, who commute by car at least once a week to get to/from work or school.



Tertiary Users

Pedestrians and other people in transit were taken into consideration, but were not included in our research.

Research Methods



Surveys

Collected responses from 98 cyclists and drivers via an online survey in order to gather quantitative data regarding their pain points in interactions and communications.



Interviews

Conducted semi-structured interviews with 3 cyclists and 2 drivers in order to gain a deeper understanding, with context, of the experiences of members of each group.



Timelapse Videos

Captured footage in 6 different Seattle locations during peak commute times, resulting in 25 time-lapse video clips in order to achieve an objective understanding of interactions between cyclists and drivers.



Comparative Research

Conducted a web search to identify existing products/tools designed to help cyclists signal to and communicate with others while in transit.

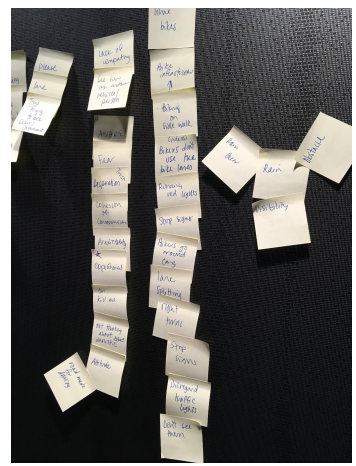
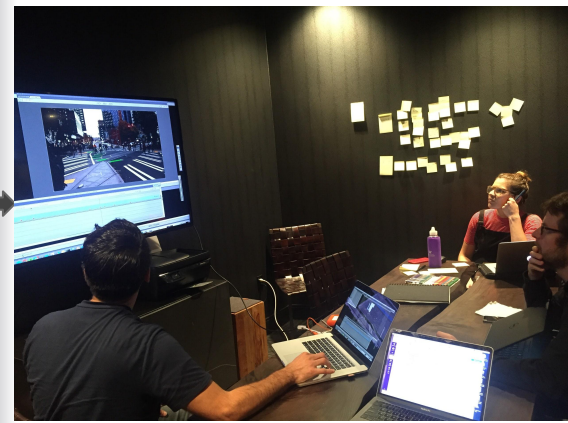
Analysis + Findings

We analyzed the results from the survey, interviews, and time-lapse videos. Through use of sticky notes, we created affinity diagrams of the pain points, valuable experiences, and vocalized desires of our users.

Key findings:

- Both cyclists and drivers voiced frustration with the general behavior of the other group, citing breaking of traffic rules, lack of proper signalling, and generally inconsiderate and rude behavior.
- Cyclists already utilize bike gear such as helmets, lights, and gloves, but were unlikely to use specialized gear (helmet with blinkers or other products identified through our comparative research).
- Drivers desired ways to anticipate cyclist behavior at red lights and stop signs, to better understand arm signals, and to have clearly visibility of cyclists.
- The infrastructure designed specifically for bicycles was described as confusing by both cyclists and drivers.

With the results of the analysis and affinity diagramming in mind, we created the primary persona of a cycling commuter (and a secondary persona of a car commuter).



The Cycling Commuter

He chooses to bike to work because he is socially conscious and wants to do what's best for the environment. He also does not have a direct public transportation option to get to work. While it's not his main goal, he also enjoys the exercise, as he spends most of his day at a desk.

He communicates with others in transit mostly by using hand signals and will occasionally communicate vocally with other cyclists

He views others in transit as obstacles to get around, the quicker the better and he doesn't mind breaking the rules a bit in order to to reach work faster. He feels that if drivers won't be considerate of bicyclists, he doesn't need to be considerate of them.

Marcelo

Product Manager at a tech company in downtown Seattle. He bikes to work every day and has about a 25 minute commute from his home in Greenwood.

- He needs to**
- Be visible to drivers (have them aware of his physical presence)
 - Clearly communicate his intent to merge, turn, and stop
 - Get to work as quickly as possible
 - Avoid any crashes or accidents
 - Have drivers acknowledge him as a person

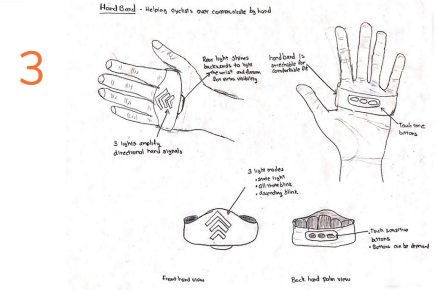
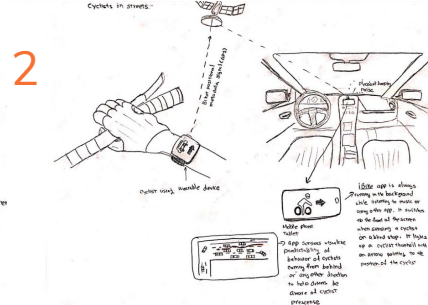
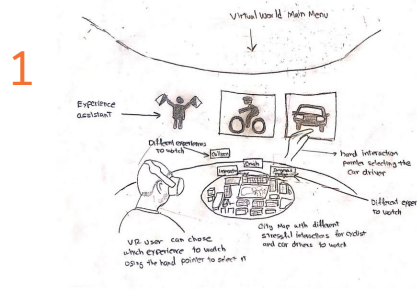
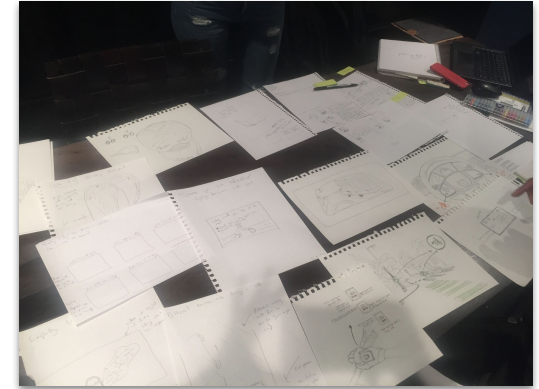
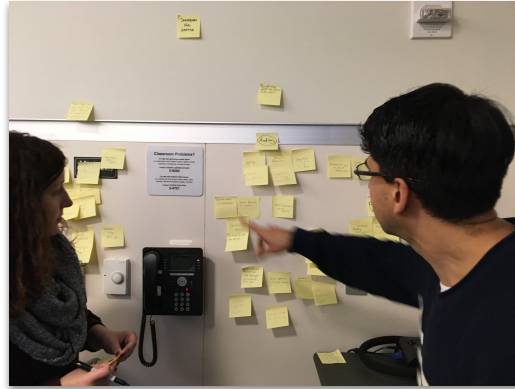
3. IDEATION + SKETCHING

We underwent a four-part sketch design sprint to get our ideas out there, then focus them. Next, we divided our preferred ideas into four categories:

- Wearables
- VR/educational
- Integrated car/bike communication
- Improved signage

After a lengthy sketching session, we selected three final potential design solutions:

- 1) WheelSwapping (VR)
- 2) iBike (Integrated comms)
- 3) HandBand (Wearable)



Evaluating with Design Principles

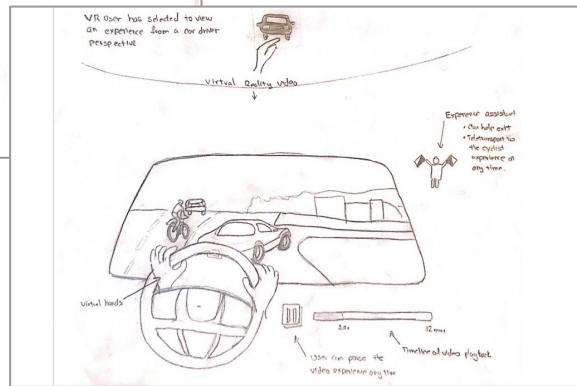
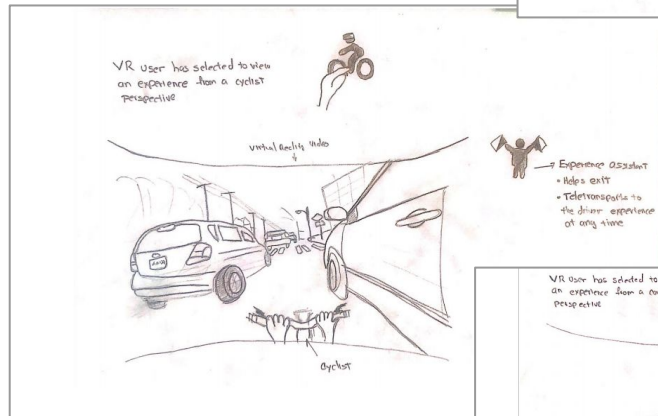
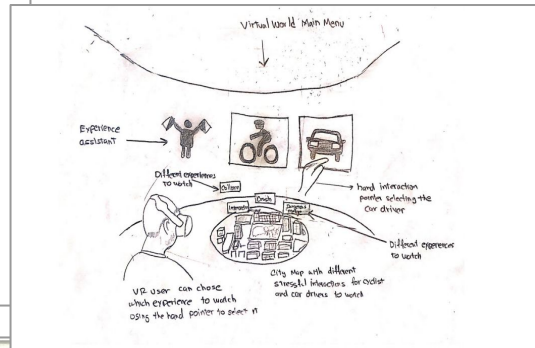
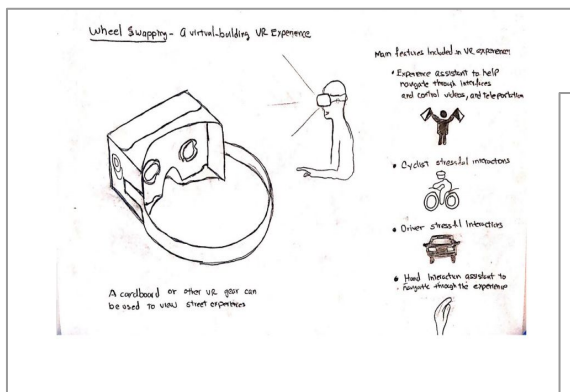
With three promising design solutions on paper, we held them up to our design principles for a clearer picture of just what our users might be looking for.

Design Principles:

1. Improve communication and understanding
2. Be safe to use and operate, and improve safety outcomes
3. Be easy and accessible to use
4. Attract and appeal to users
5. Work in context and fit into existing structures
6. Incorporate sensory information

Final Design Idea

While each design matched more closely with some principles and not others, ultimately, we decided to trust our research findings' persistent emphasis on empathy and move forward with WheelSwapping, a virtual reality education and empathy-building experience. WheelSwapping (later renamed "I See You - Seattle"), allows cyclists and drivers to experience real-world situations from the other's point of view.

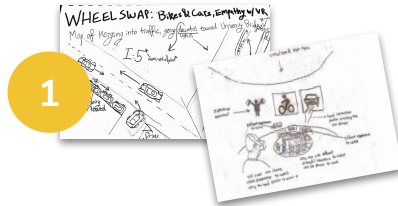


4. PROTOTYPING

Prototyping for virtual reality is challenging due to the abstract nature of the content, interactive functionality, and the required gear to visualize and build the virtual experience. We employed a live prototyping approach, utilizing software tools such as Sketch VR, A-Frame and HTML/JavaScript.

Our prototype is hosted on the cloud by Amazon Web Services and can be accessed by any browser compatible with WebVR - a Web browser engine that allows one to experience VR content in the Web. The content is also optimized for use with a VR viewer.

Prototype Design Process



1

Storyboard + UI Sketches

Produced storyboards of possible driver and cyclists interactions, and detailed sketches for UI



2

Video + Image Capture

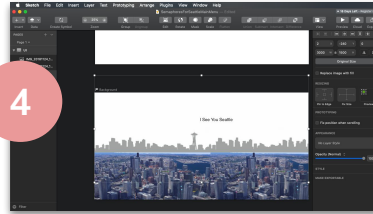
360-degree camera mounted on helmet to capture videos from cyclists point of view



3

Selection of 360 Images

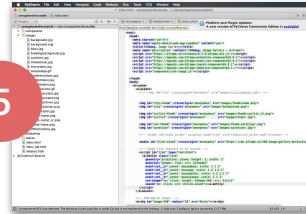
Non-linear 360-degree video editor and image capture



4

VR Content User Interface

Loading of 360 photos in Sketch to pre-visualize images and stage UI layout during prototype iterations



5

WebVR Prototyping

Basic animation of virtual menu and interaction with 360-degree images using A-Frame and HTML/JavaScript



6

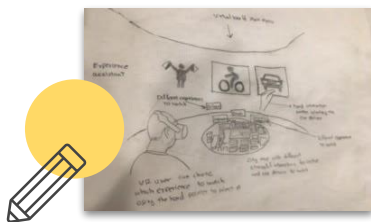
View VR Experience

Tested prototype iterations using VR glasses

Iteration

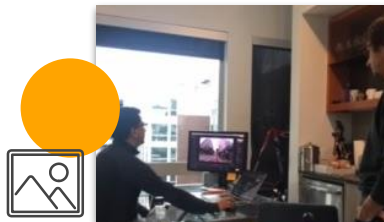
While exciting that a VR educational campaign was identified to meet the design requirements of our users, we faced steep learning curves in bringing the idea to life.

We tested and adapted ways to communicate about the experience we were building with each other and users. We ultimately had to start to build the VR elements to assess what to incorporate/exclude, and assess how the final design should function.



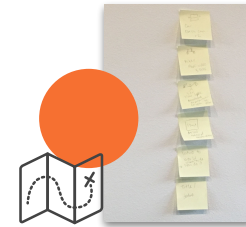
Sketch

A combination of sketches and descriptions helped visualize how an educational experience could come together through VR.



Draft and Produce

To familiarize ourselves with the technology, we captured first-person 360 video footage and leveraged Google Maps aerial footage to initiate draft.



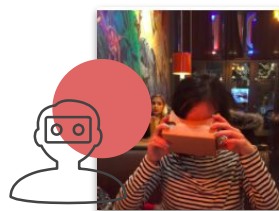
Journey Map

Mapped the user journey to build VR experience prototype and ensure user had necessary information to evaluate .



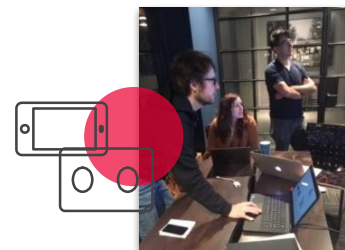
Storyboard/Lo-Fi Prototype

Conducted 5 informal usability sessions using storyboard and draft main menu 360 image to assess initial proof-of-concept.



Test and Validate

Incorporated user feedback to build out higher fidelity "I See You" experience prototype, and tested with 3 additional users and captured feedback.



Refine and Expand

Evaluated suggestions outlined through user testing to identify modifications to design solution prototype and recommendations for potential future iterations.

Incorporating Usability Findings into the Design Solution



“Showing someone’s experience causes you to think differently and could be persuasive”



”Having different locations really doesn’t matter... it’s about the story and the experience, not the place.”

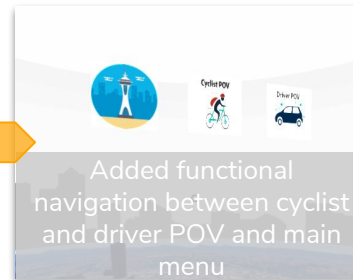
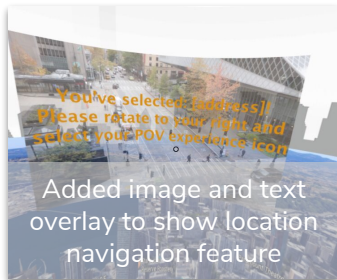
Storyboard/Proof-of-Concept

- Users overall liked/understood the concept and novelty would encourage them to tell others.
- Would like more visual cues in the experience about what to do/pay attention to.
- Suggest adding stats or other information on bike safety/accidents.

Lo-Fi Prototype

- Most participants identified they would like more information to orient to what you are seeing.
- Stressed importance of motion video.
- Focus on hot spots, highest stress situations, and showing biker/driver POV in parallel.

Based on this feedback we made following revisions to prototype: ‘



5. DESIGN SOLUTION

Our goal is to build empathy between cyclists and car drivers through emergence in real life experiences and alternative perspective while commuting. For that reason our prototype includes 360-degree image simulations from the perspective of both a cyclist and a driver, and a basic interactive menu for navigation.

Design solution prototype: <http://view.iseeyouseattle.com/>



Main Virtual Menu with 3 options:

- View experience from a cyclist POV
- View experience from a driver POV



Driver VR experience



Cyclist VR experience



Educational Elements

To contextualize and set the stage with users, we described that the “I See You” experience would be disseminated along with a Google Cardboard VR viewer through a media partnership with *The Seattle Times*. We also developed the above logo as initial campaign visual ID.



Could VR be the secret to Seattle's commuting woes?

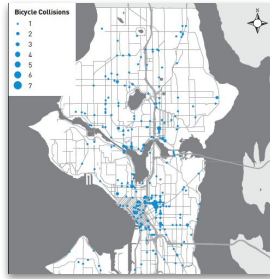
A new study finds that the key to improving communication between cyclists and drivers is less about content and more about building empathy.

To build understanding between everyone on Seattle's streets, and particularly bicyclists and drivers, "I See You," shifts your perspective on sharing the road.

Go to view.iseeyouseattle.com to access the experience and instructions to use the enclosed Google cardboard.

6. FUTURE STEPS

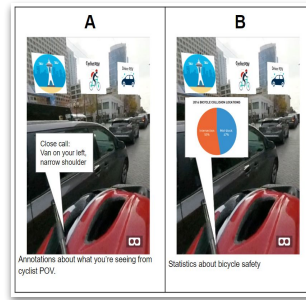
With additional time and resources we would...



Build out the VR world

Based on user testing, we identified the following work to be done to build the overarching narrative of the “I See You” VR experience:

- Storyboard new situations that describe more useful interactions for primary users
- Simulate live-action footage in 360° footage focusing on hot spots throughout the city, rather than simply landmarks/locations.
- Incorporate teletransport feature to view parallel points of view for both the driver and the cyclist.



Conduct additional user testing

We received mixed feedback on the amount and type of information users desire in the “I See You” experience.

While some reported wanting more instructions or visual cues baked into the experience, others preferred to be fully immersed and limit the amount of text they are required to read. More user testing, specifically with A/B examples, could help determine what type of content will help the most with empathy building.



Launch an education and PR campaign

How can we leverage enthusiasm to make a difference? To build out the educational components of the “I See You” campaign, we would:

- Encourage users to commit to calls-to-action to increase safety and 'see' each other
- Build campaign website with consolidated resources and information
- Amplify through earned and social media. Pitch to local news outlets and encourage social sharing using #iseeyou hashtag



Make it an “experience”

To ensure maximum number of people view/interact with the campaign/experience, we would bring to local farmers markets, bike shows, sports events, etc.

We could explore potential partnerships with interested stakeholders/businesses to expand the campaign. This could enable us to offer prizes to participate and/or host a photo booth to take photos of people using headset to post on social media.

References for Data

- <https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812507>
- http://www.pedbikeinfo.org/data/factsheet_crash.cfm#No1
- <https://www.seattletimes.com/seattle-news/data/seattle-bike-commuting-hits-10-year-low-census-data-show/>

References for Images

- <https://www.bicycling.com/rides/a20039883/9-ways-to-make-bike-commuting-easier/>
- http://www.seattle.gov/Documents/Departments/SDOT/About/DocumentLibrary/Reports/2017_Traffic_Report.pdf
- <http://onlinepubs.trb.org/onlinepubs/conferences/2014/Paratransit/Presentations/PaulSup.pdf>