MOMENT

Mobility independence for all

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MOMENT

PROBLEM

People who are visually impaired struggle to quickly adapt to **vast and drastic environmental changes** that disturb their mental maps.

SOLUTION

Moment is a haptic device that assists with **on-the-spot decision making for individuals** with visual impairment. Moment provides directional cues when users are faced with an environmental obstacle in their path.

KEY FEATURES

OPTIMIZED WAYFINDING

Save routes and creates custom commutes between multiple frequently visited locations to alleviate the stress of prepatory stages

PERSONALIZE

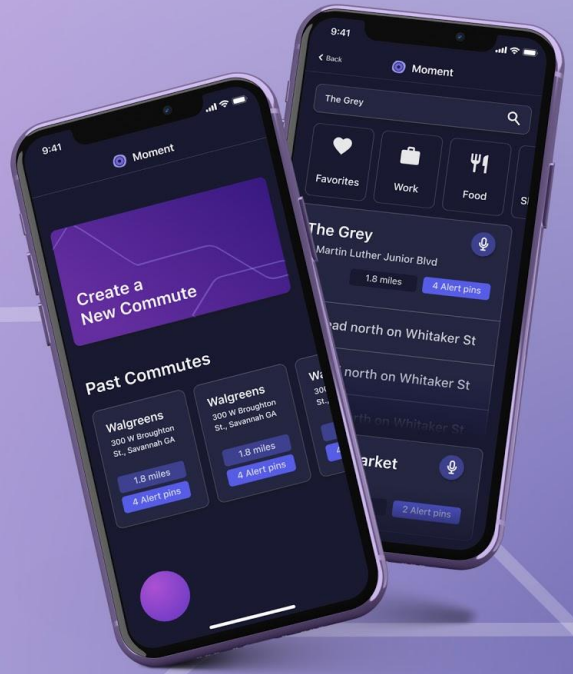
Customize general accessibility settings as well as haptic alerts for your moment device to change it to fit to your needs

HAPTIC ALERTS

Haptic cues for on the spot unexpected obstacles gets rid of anxiety and aids with better navigation to destinations.

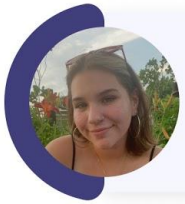
PIN ALERTS

A system where pins can be placed on routes and commutes for more confident commute and better locational awareness.


9:41
Moment
Create a
New Commute
Past Commutes
Walgreens
300 W Broughton
St., Savannah GA
1.8 miles
4 Alert pins
Walgreens
300 W Broughton
St., Savannah GA
1.8 miles
4 Alert pins
9:41
Back
Moment
The Grey
Favorites
Work
Food
The Grey
Martin Luther Junior Blvd
1.8 miles
4 Alert pins
ad north on Whitaker St
north on Whitaker St
arket
2 Alert pins

Our Team

Yeji Han
Project Manager



Edie Alvarado
Research + Prototyping

Andrew Goodridge
Prototyping + Visual Designer

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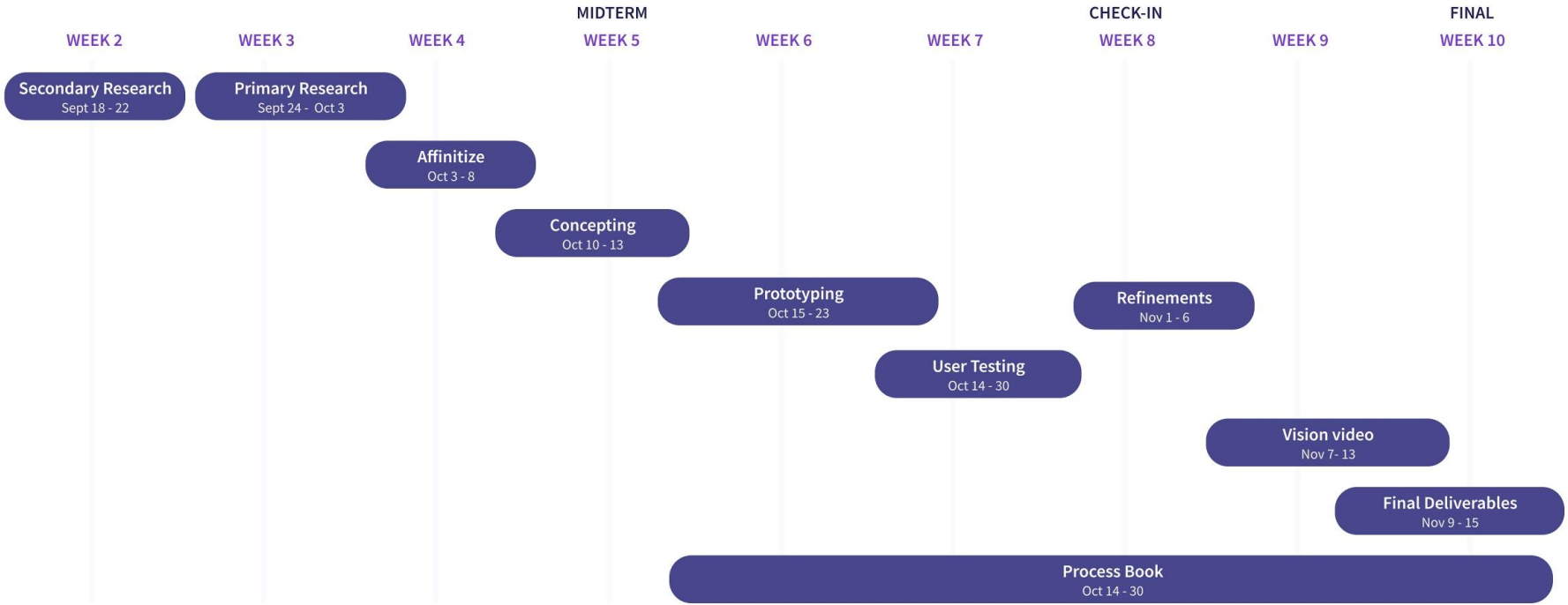
Prototyping + Visual Designer

Andrea Guth
Visual Designer

Erin Mills
Product Designer

Project Roadmap



01. Discover

PROMPT

Create something that was not possible six months ago

To start off the project, we looked closely into the prompt that was given to us, and we asked ourselves...

What has happened in the last six months?

What are the things that hasn't been put into attention six months ago and now?

What is happening now that didn't happen six months ago?

Who is being affected by the events happening in the past six months?

AREA OF INTEREST

Events impacting the visually impaired

We realized that due to the vast environmental changes because of recent safety regulations, many aspects of society such as public spaces disproportionally affect those who are visually impaired. Our focus was specifically on how these changes affected mental maps for the visually impaired.

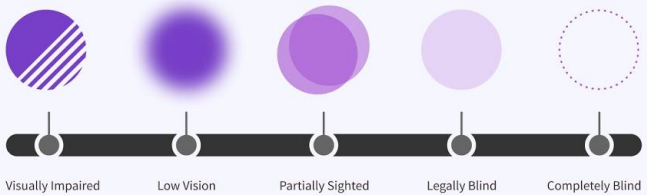
INITIAL RESEARCH

What is Visual Impairment?

Visual Impairment (VI) is a decrease in the ability to see to a certain degree that aren't typically fixable by traditional means such as contacts or glasses. Visual impairment may include a loss of visual acuity, loss of visual field, photophobia(inability to look at light), diplopia(double vision), visual distortion, or a combination of those features.

Types of Visual Impairment

Here is a spectrum of the different types of visual impairment:



Industries For The Blind and Visually Impaired - ibvi.org

CURRENT SITUATION

COVID-19 Impact

The vast changes of physical spaces due to COVID-19 guidelines may disrupt existing mental maps.

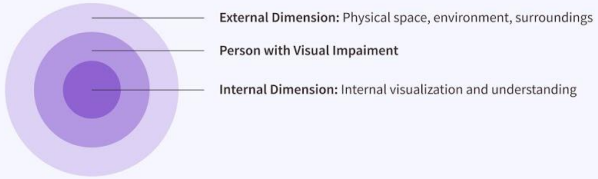
According to the RNIB, two-thirds of visually impaired individuals feel they have become less independent since the start of lock down.

Industries For The Blind and Visually Impaired - ibvi.org

Mental Maps

A type of mental representation that helps an individual to decode the physical attributes of a spatial environment.

Dimensions of Mental Mapping



This is a visual representation of how mental maps work for people who are visually impairred

People who are visually impaired need a seamless transition and experience that allows a minimal disrupted commute.

Neuroplasticity

Neuroplasticity is the ability of the brain to form and reorganize synaptic connections, especially in response to learning or experience.

This ability is engaged when an experience requires an adaptation, often when an integral part of the senses is missing.

Neuroplasticity in VI people

Cross-neuroplasticity has been associated with the visual brain areas recruitment during the sound and auditory processing.

Research has reported superior performance in VI in a variety of sensory and cognitive processing tasks that include hearing, touch, and smell.Cross-neuroplasticity has been associated with the visual brain areas recruitment during the sound and auditory processing.

PROPOSED TOPIC

Vast changing environments that impact mental maps for the visually impaired

THE PROBLEM

People who are visually impaired struggle to quickly adapt to vast and new environmental changes

EXPECTED OUTCOME

To facilitate the independence of indivisuals who are visually impaired in public environments.

To design and create an adaptive solution that evolves with the users' needs throughout new and changing experiences and environments,

RESEARCH METHODS

In order to understand the problem area, it was important to do primary and secondary research that will help bring us perspective and key insights, here are some research methods we used:

Secondary Research (far and wide)

Validate the problem area with a wide user group (and possibly outside of our user group) both quickly and efficiently, while also gaining a variety of different perspectives.

Survey

Validate the problem area with a wide user group (and possibly outside of our user group) both quickly and efficiently, while also gaining a variety of different perspectives.

Interviews

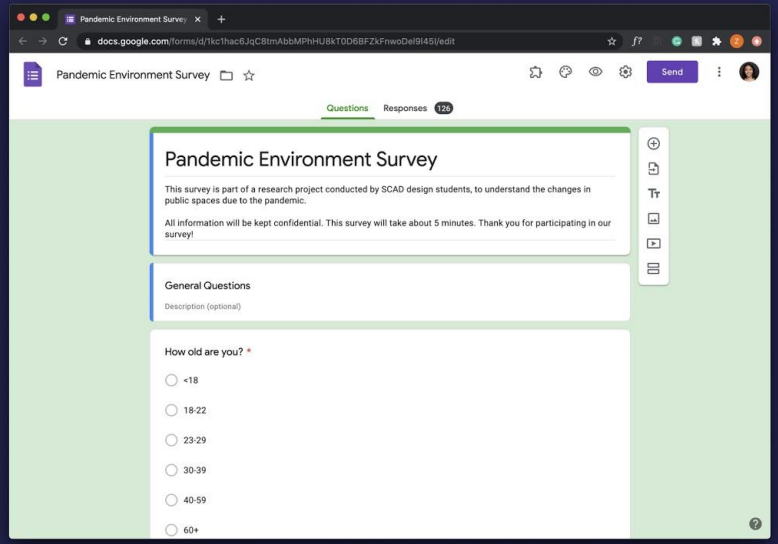
Get first-hand reports of prior experiences to narrow pain points and see what the target market is currently thinking on the issue.

Interviews

Work to embrace a miltu-sensory experience; expert level opinion is needed to descern a feasible solution.

SURVEY

Through this method, we were aiming to collect quantitative data about differences in public environments since the start of the pandemic. This method's participants were not limited to our target audience since environment changes has impacted a wide variety of people.



Number of responses: 126

SURVEY INSIGHTS

Regardless of who they are, the majority of respondents feel that changes due to COVID-19 has greatly impacted their routine.

98% of respondents reported that the implementation of COVID-19 guidelines have changed the public spaces they visit.

65% of the respondents reported that these changes due to the guidelines have majorly impacted their daily routines.

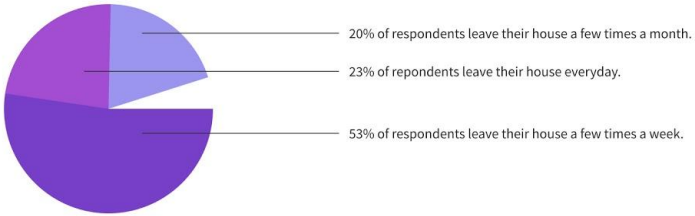
However, respondents (58%) have reported that adjusting to these changes have been easy. Keep in mind that most of the respondents are sighted people.

Most respondents are dependent on someone else for certain things

43% of respondents are dependent, 38% are independent, 16% are co-dependent.

Human dependency is seen to be common among people, regardless of their situation.

Even during the pandemic, respondents still go out of their houses for various reasons.



The most common reasons for leaving the house is to run errands, exercise, to take a break, meeting friends, and meeting family.

Public spaces are considered the same or even less accessible compared to prior COVID-19 guidelines

Prior to the pandemic, public spaces are already considered as a middle-space of being somewhat accessible but not entirely.

Since the pandemic, 37% of the respondents don't actually notice accesibility in public spaces, 36% feel that places are still the same, and 23% reported that public spaces have become less accessible.

Products that are helpful for people with disability is often a byproduct rather than an enhancement

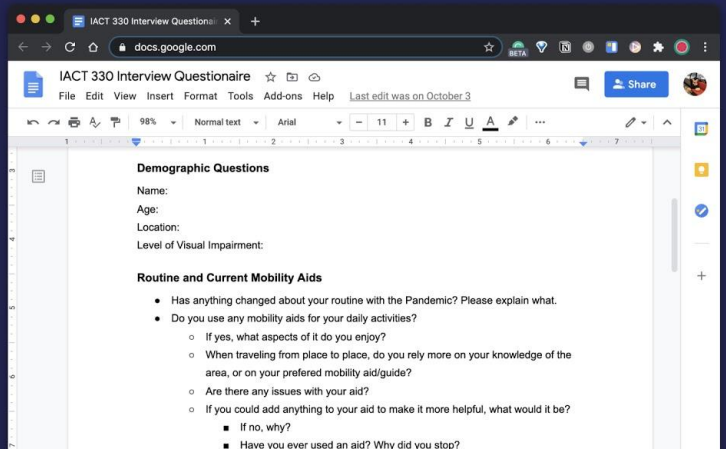
"Intuitive signs on the floor or the notice on the wall can be helpful for the people with disability but it was not an intended enhancement. It was rather a byproduct. Authorities can be and should be much more conscious of the people with disability using the crisis as an opportunity."

USER INTERVIEWS

Goals: Get first-hand reports of prior experiences to narrow pinpoints and see what the target market is currently thinking on the issue.

Renee VanDoren
Mainly Blind

Jose Ignacio
Totally Blind



INTERVIEW INSIGHTS

Current mobility aids do not account for on-the-spot problem solving.

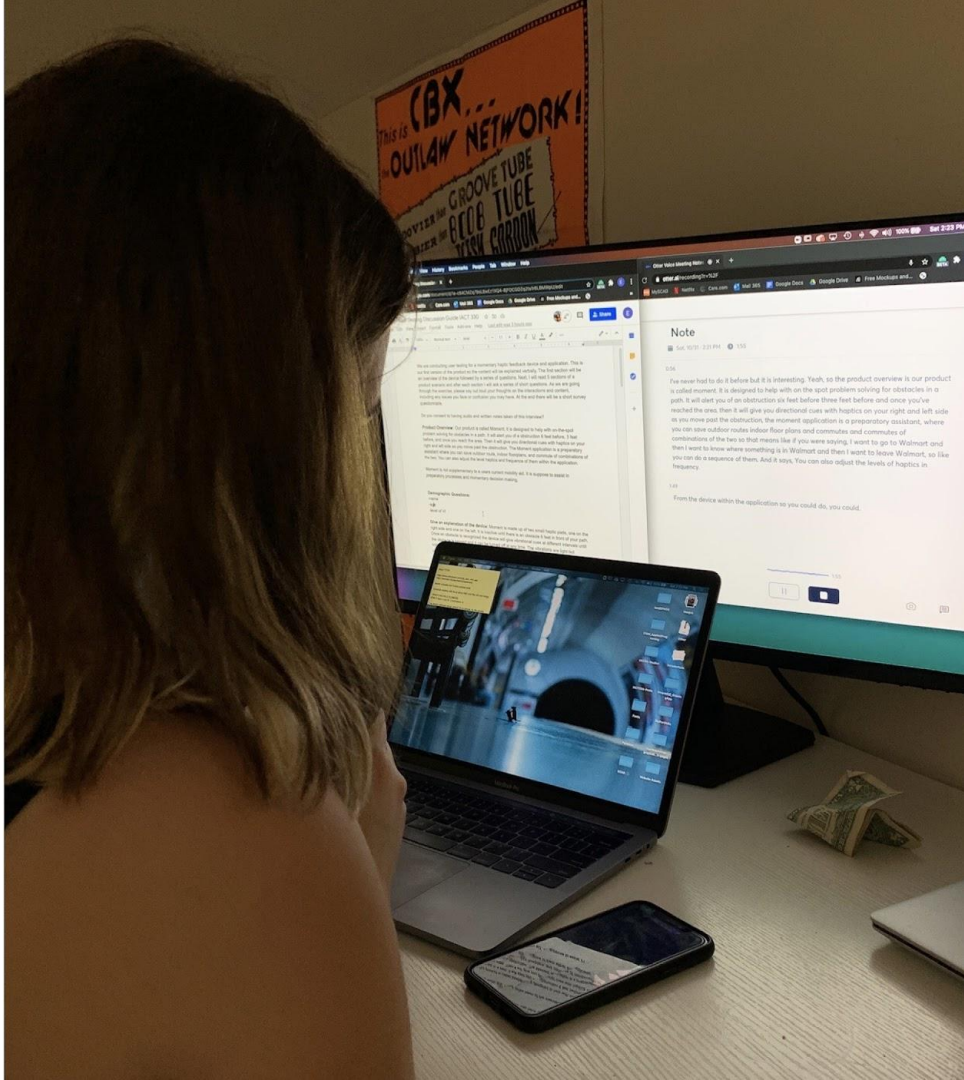
> "If i can follow a shoreline with my cane, I'll follow that, but its not always the case" - P2
>
> "When my guide dog and I are faced with a momentary obstacle I have to try and understand the alternative route and then I try to figure out how I might get around it. Which way do I walk? How do I get around?" - P1
>
> "Sometimes I have to rely on outside people to guide me in the right direction but it makes me nervous." - P1

Due to tactile limitations, VI participants feel a decrease in independence when away from sighted guides.

> "I do not go shopping unless someone is with me to assist during the pandemic" - P1
>
> "There are marks on the floors where you stand in line but I cant see them or train my dog around them so I just avoid it." -P1

Individuals who are VI place a large emphasis on preparatory routines prior to leaving the house.

> “I will practice the route before I get to a new place. I need an opportunity to get comfortable with the environment.” - P1
>
> “If I can, I will find the floor plan to get an idea of the room and general space.” - P1
>
> “Typically for the first time [in a new envirnoment] I go with someone. In the case of SCAD, my mom and I went beforehand and she guided me around the campus so I can memorize.” -P2



EXPERT INTERVIEWS

Goals: To understand how business owners have changed their spaces due to the pandemic and how take accessibility for those who are visually impaired into mind for their space.

Ava
General Manager Starland Yard

Goals: Gain a better understanding of how changes in environment affect those who are visually impaired and current accessibility best practices to ensure our solution's success

Jen
Head of Acessible UX at Google

Johan
Inclusivity consultant at Google

Accessible design is achieved by working with a specific group or individual with that said disability.

> "The best way to design for accessibility is to be able to design with a group or someone with the disability." - Ava (Starland Yard Manager)
>
> "I start with a specific group to design for and over time, encompass many other groups who might benefit from a solution." - Johan (Inclusivity Consultant)

Expert Insights

After talking to our experts Ava, Jen, and Johan we learned about the importance of inclusive design. So going ahead of our project we wanted to clearly understand and identify our target audience and keep inclusivity in the back of our minds.

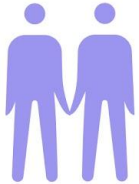
> ***"The best way to design for accessibility is to be able to design with a group or someone with the disability"***
>
> -Ava

> ***"I start with a specific group to design for and over time, encompass many other groups who might benefit from a solution"***
>
> -Johan (Inclusivity Consultant)

The main takeaway from our research on current mobility aids prove that they do not account for on-the-spot problem solving entirely. For example, guide dogs don't react to color or texture contrast. Another reserach we found is that most people who are visually impaired don't use a white cane. In fact, only an estimated 2% to 8% do.

Guide Dogs

White Cane



Sighted Guide

Electronic Mobility Aids

Sonar Glasses

Sonar Glasses are smart glasses with a sonar sensor to detect obstacles in front of the user. Some impressive features of this product is that it reduces sun glare as well as detects obstacles. Its also a relatively good hands-free solution for those who are visually impaired. That being said, there is no haptic feedback, as it only includes audio feedback, which makes it distracting to others.

Eyeronman

Eyeronman is a vest retrofitted with both spatial sensors and haptic motors to detect obstacles for visually impairred users. It has dynamic tactile feedback and also doesn't impact hearing which is a plus, but it is unfortunately a very bulky, two part system. Its main use is for first responders and industrial use.

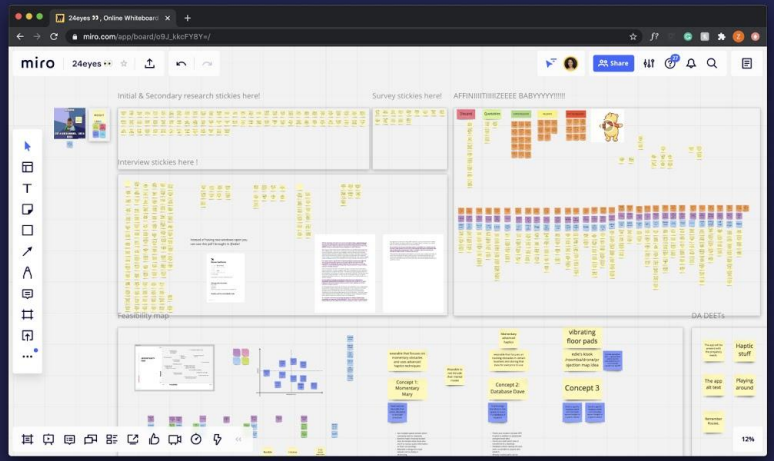
WeWalk

WeWalk is a smart cane which detects obstacles and notifies you of them. It comes with a companion app which helps you find walkable routes. Some faults of it is that the user still needs to carry a white cane around and the sensor itself is partially redundant.

02. Define

AFFINITIZATION

Our affinitization process started with around 230 raw yellow data points where we narrowed down to 32 most relevant and important findings. With the synthesized 32 data points we organized it into Super relevant, relevant, and not so relevant categories to guide us to creating powerful insights and HMW questions to guide our design process further on.



CORE INSIGHTS

Momentary Decision Making

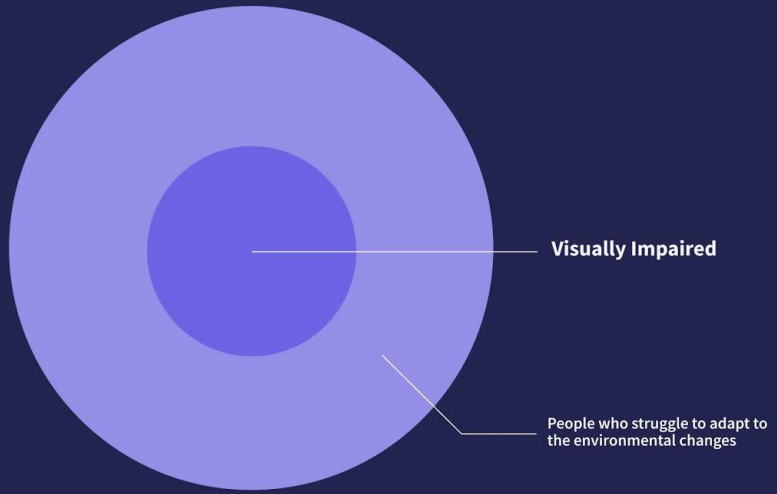
Current mobility aids do not account for on-the-spot problem solving

Supplementary Sensory Inputs

Due to tactile limitations, VI participants feel a decrease in indepeendence away from sighted guides

Environment Preparation

Individuals who are VI place a large emphasis on preparatorrry routines prior to leaving the house.



Defining our Target Audience

The visually impaired is our focus tarrget audience. But we are keeping in mind to have our design as something that is inclusive to other users that also share these navigational or changes/adaptation pain points.

Facilitate the independence of individuals who are visually impaired in public environments by developing an adaptive solution that evolves with the users needs throughout new and changing experiences.

USER PERSONA 1

Iris Stein

Chicago

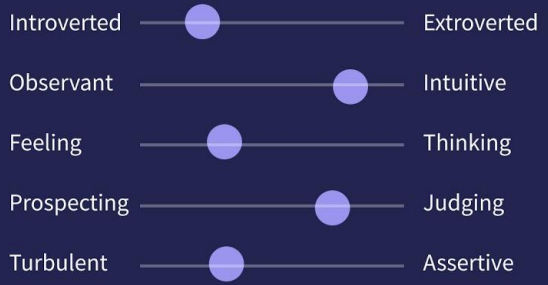
48

Alone

Social Worker

Iris is a social worker at the Medical Children's Center in Chicago. She is born sighted however has been visually impaired for now 5 years. Iris recently got a guide dog named Magician which has help her a lot with navigating especially her commute. However the pandemic has been a great struggle for her as many changes have been made where Iris was completely unaware of.

Motivations



“It is very fustrating dealing with unexpected obstacles on the way to work”

Frustrations/pain-points

- Struggles with unexpected obstacles
- Keeping the 6ft rule

Goals

- Doesn’t want to rely on her friends and family
- Wants to be more confident when traveling to new places

USER PERSONA 1

Mike Wilson

Atlanta

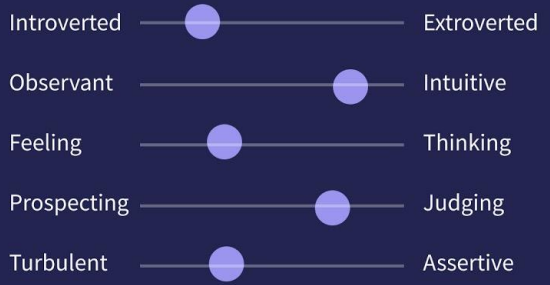
78

Alone

Retired

Mike is a retired senior living in the busy city of Atlanta. He lives alone in his apartment, and he considers himself to be highly independent. Even though he doesn't like to ask for help, he has been experiencing some issues when completing his routinely errands lately. Changes around the city have confused him, and caused several route incoveniences when leaving his house. Because of this, he has leaned towards staying home, not allowing himself to complete several errands he usually needs.

Motivations



"You shouldn't be surprised when I get lost. It happends a lot to me."

Frustrations/pain-points

- Relying on other to fullfill his daily commute
- Changes that throw him off his routine
- Not being able to leave his house confidently

Goals

- Remain independent
- Adapt better to chainges in his sorroundings

Journey Map

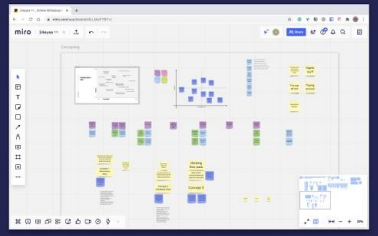
Iris Stein
Mike Wilson

	Pre departure	Walking to the train station	Buying the ticket	Traveling in the train	Navigating in a new space	Arrival
THOUGHTS	"I wrote down the address, now I'm exited to see my family" " I need to make sure to practice and prep before I leave"	"I know how to navigate my town" " I don't go to the station that often so hopefully things go well"	"Have to check the directions again on my notepad" " I don't read braille so I have to ask someone to help me"	"I need to make sure I find an empty cart for social distancing" " Im not sure if I am 6 feet away from people"	"This google maps my son told me to use doesn't make any sense" " With the construction going on it's super difficult to find an alternative route"	"The roads and buildings looks the same to me" " Was pretty rough having to find an alternative path"
PAIN POINTS	The need to spend a lot of time looking up the route and prepping to travel to a new location.			Health concerns of self and others with the social distancing because of the pandemic.	A lot of anxiety and uncertainty when it comes to facing unexpected obstacles/challenges along the way	
OPPROTUNITY	Alleviate the stress and worries when it comes to preparing/traveling to a new location				Provide a service that will guide and help navigate on where to go in unexpected situations.	

03. Design

CONCEPTING

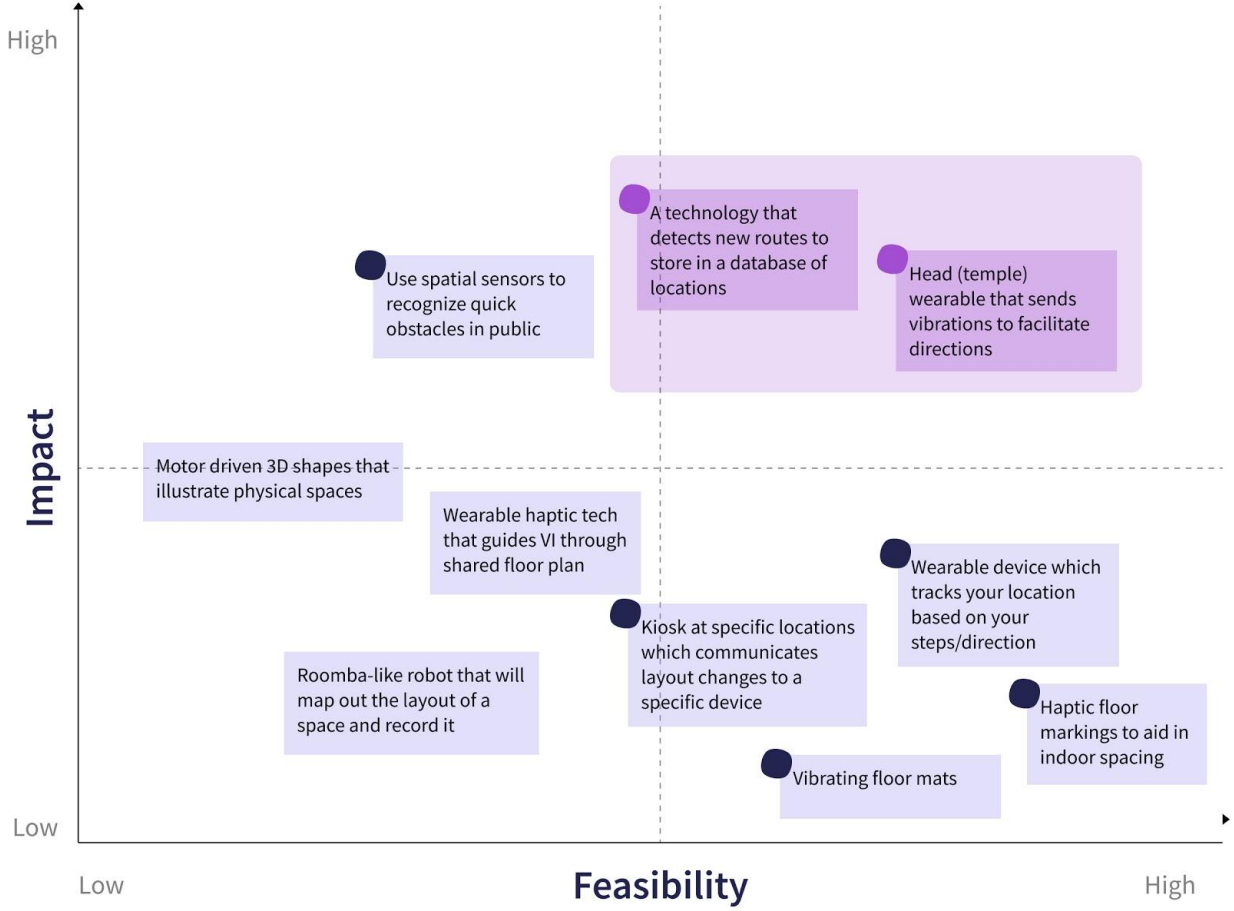
Our team met over a series of meetings to ideate several potetial concepts that allign with our insights and HMW questions. We used various methods such as the opprotunitiy map to evaluate the strengths and weaknesses of the different concepts created.



FEASIBILITY MAP

Mapping Our Ideas!

We collated all of the conecpts we had and mapped them on a feasibility chart. We did this to identify the features which have the highest impact yet are feasible with our skillset and timeframe. We highlighted two concepts which excelled in both aspects and turned them into our two concepts.



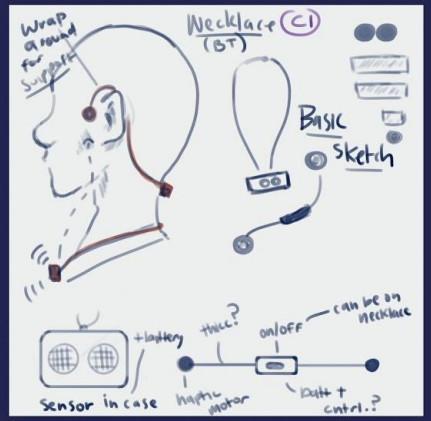
CONCEPT 01

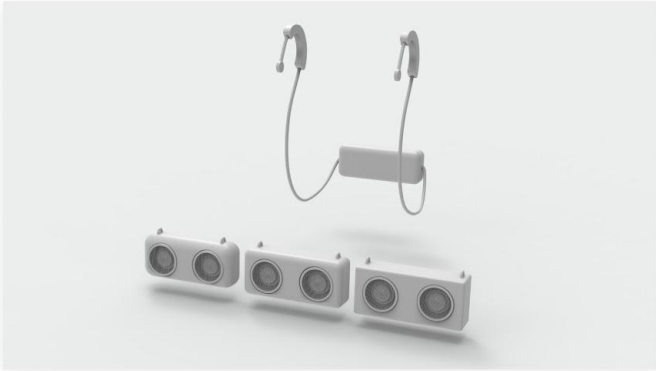
Moment

A wearable which helps VI users avoid momentary obstacles while walking in public.

Proximity sensors look for obstacles and sends a variety of dynamic haptic feedback to the user depending on the situation.

Comes with quick on/off switch, as well as a companion app which allows for settings to be fine-tuned to the users needs.





PARTS NEEDED

Type	Product	#
MCU	Adafruit Feather nRF52840 Express	1
Battery	Lithium Ion Polymer Battery - 3.7v 2500mAh	1
Haptic Driver	Adafruit DRV2605L Haptic Motor Controller	2
Haptic Motor	Vibrating Mini Motor Disc	4
Proximity Sensor	US-100 Ultrasonic Distance Sensor	3
On/off Button	Tactile Switch Buttons(ID: 1119)	1

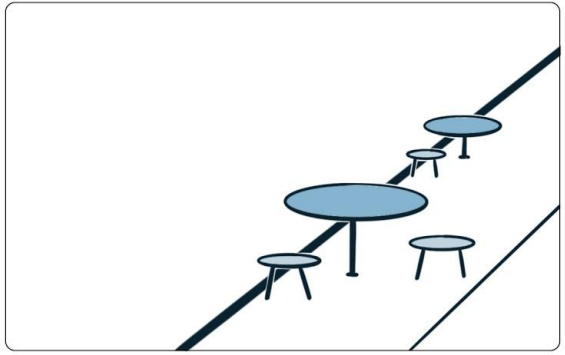
Concept 1

Moment

Iris is planning to run some errands on her own.

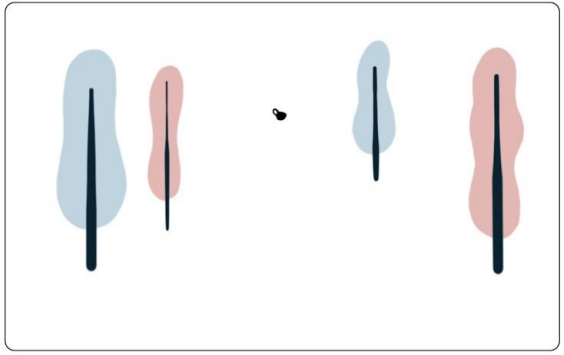
Before leaving, she makes sure to to check Google Maps and prepare for her travels.

After memorizing the route to the grocery store, she leaves her house.



But due to new COVID guidelines, there are new outdoor seating arrangements that weren't specified in Google Maps.

With Moment, it notifies her beforehand to move over so she wouldn't clash with the new seating arrangements.



Iris walks confidently around her area knowing that Moment will notify her for any obstacles she isn't aware of.

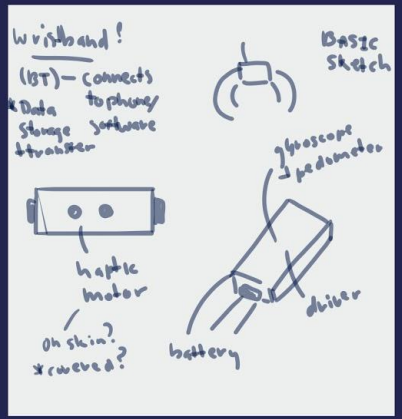
CONCEPT 02

Path→

A wearable which helps VI users prepare for routes which have drastic changes to them.

Keeps track of routes you take routinely and collates the community's paths together to find patterns and irregularities.

Companion app helps users plan and discover new routes, as well as notifying when there are possible obstructions in the way of a recognized path before you leave.



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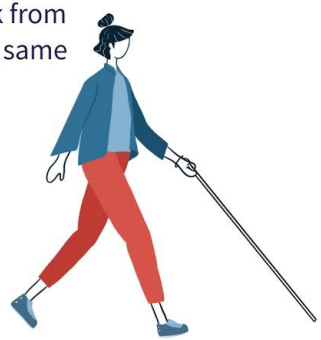
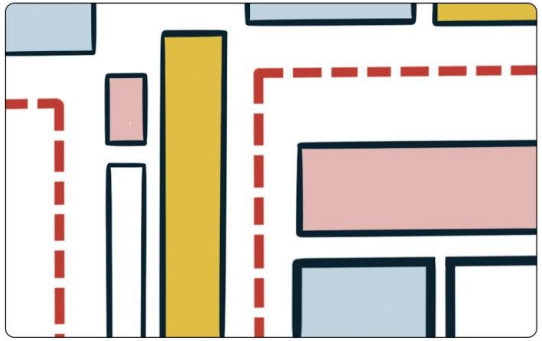
Proximity Sensor	US-100 Ultrasonic Distance Sensor	3
On/off Button	Tactile Switch Buttons(ID: 1119)	1

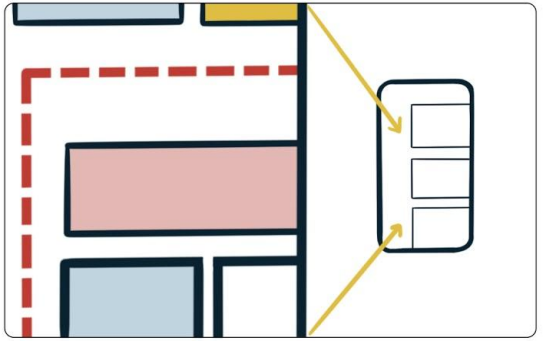
Concept 2 **Path**

Iris walks to work from her house on the same route everyday.

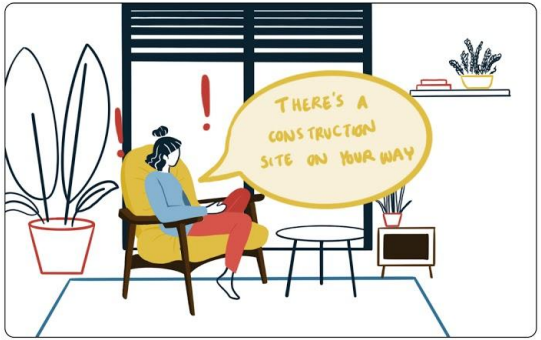




She's been tracked and given basic directional cues on her daily path.



Her path is uploaded to a shared platform and she can view other users' routes to different locations.



One day, before going to work, Iris is notified that there is a new construction on her regular path.

As she is preparing to leave, she is given an alternative route that she can take.

She can now leave the house prepared and can follow the basic directional cues along her new route.

Moment + Path

After running it through our participants and getting feedback on both of our concepts, we landed on a merged and improved concept that tackled and alleviated their greater pain points and concerns.

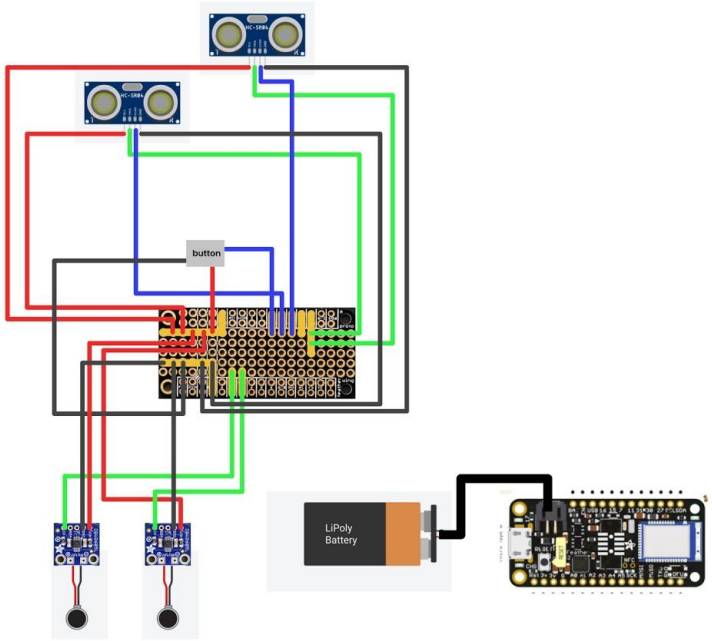
Our newly explored concept was designed to accompany them through moments of transition, as well as prepare them for unexplored routes.

Through these features, our solution aims to diminish negative feelings that arise in situations where they are exposed to unknown environments providing them preparation tools, and guiding them in the moment through haptic feedback.

PROCESS

Arduino Schematic

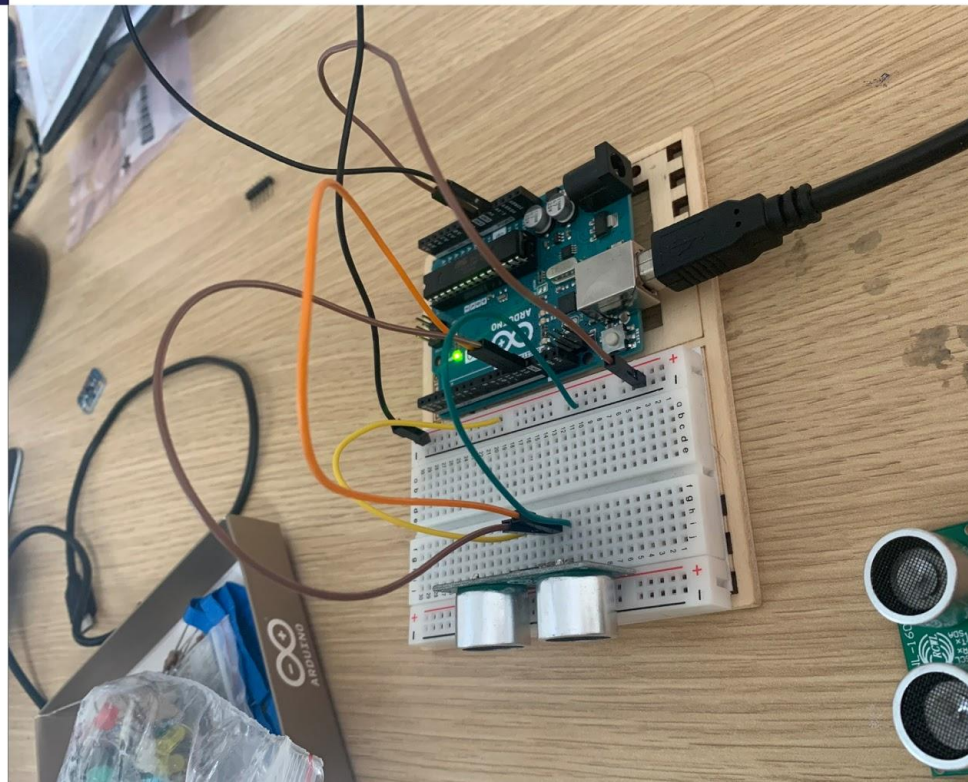
In order to define the required materiales and get a sense of the functionality of our product, we developed a schematic that could guide us through the building process. This included all the components and connections in order to understand the electronic aspect of it and start developing the casing.



PROCESS

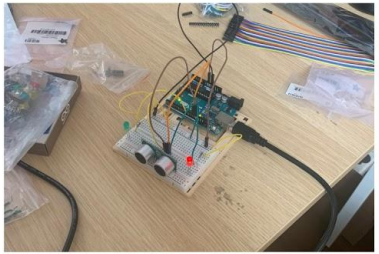
Arduino Test

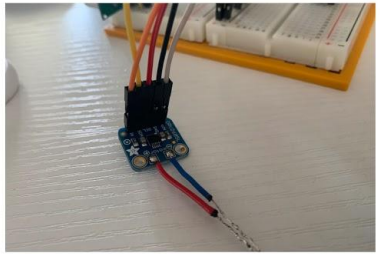
Prior to our final prorotype of the Moment Device, We tested each individual parts to make sure of its functionality and capability.

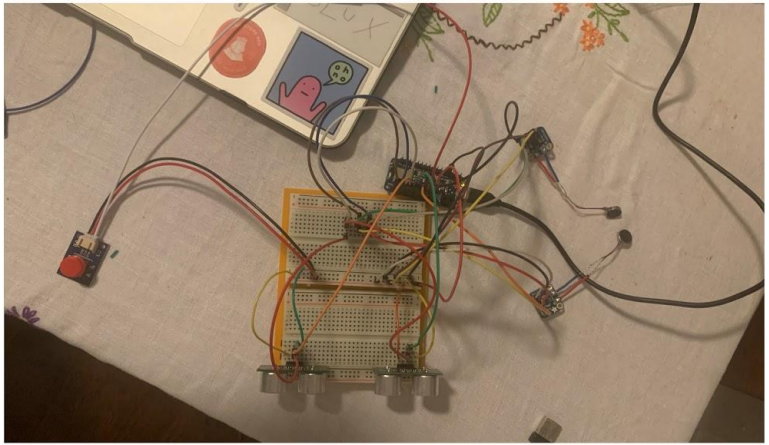


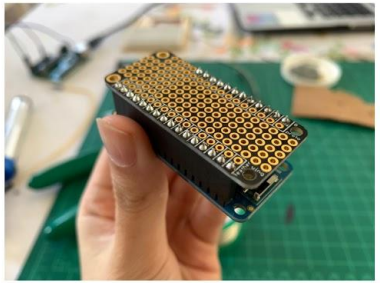
PROCESS

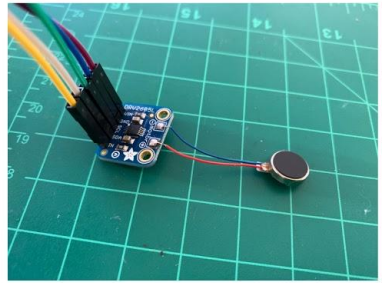
Below are additional photographs of our team testing different parts. We also did a rapid prototype with the USB and bread board and confirmed that the device was properly fucntioning.







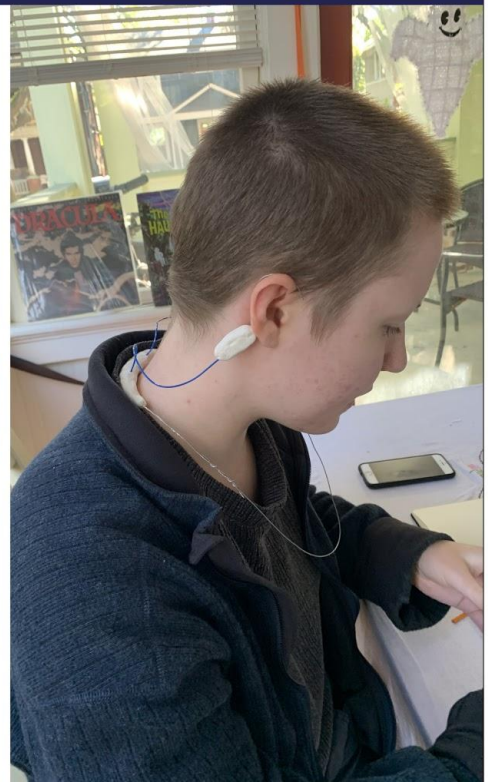


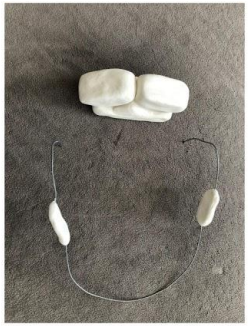


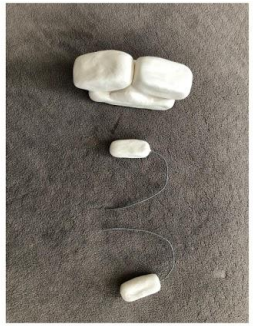
PROCESS

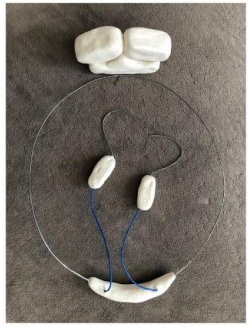
Physical Build Design

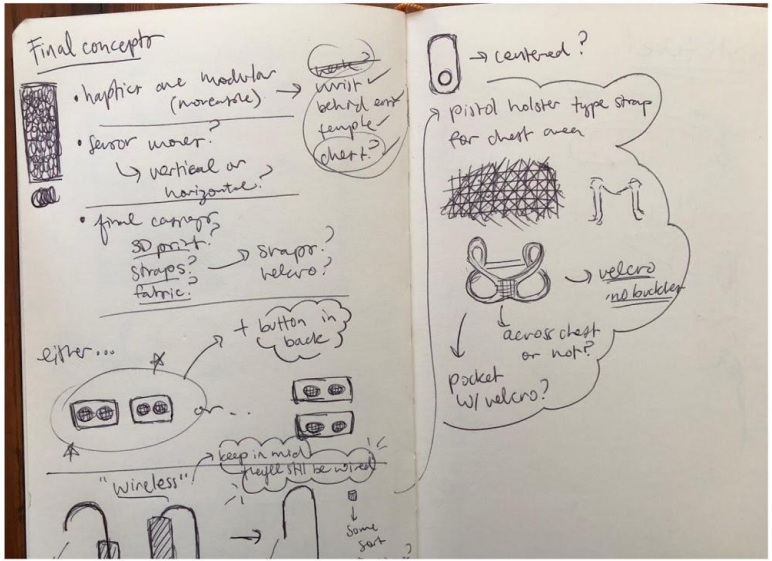
Since our product is a wearable device we wanted to conduct research and testings to find the most optimal shape for our users. Along with various sketches and quickly prototyped clay models we were able to narrow down the most effective shape.







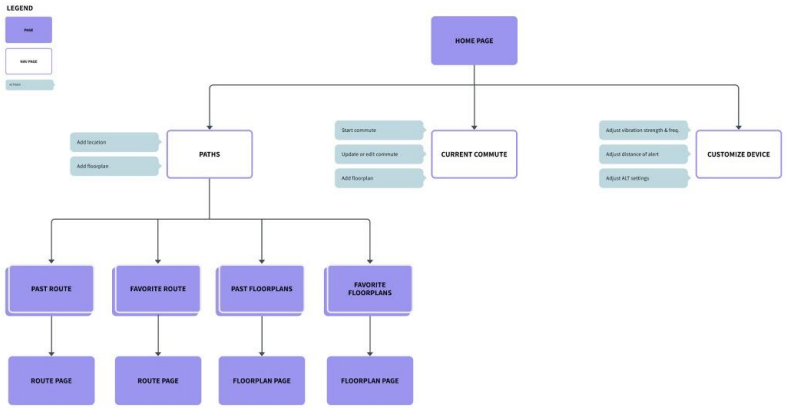




PROCESS

App Site Map

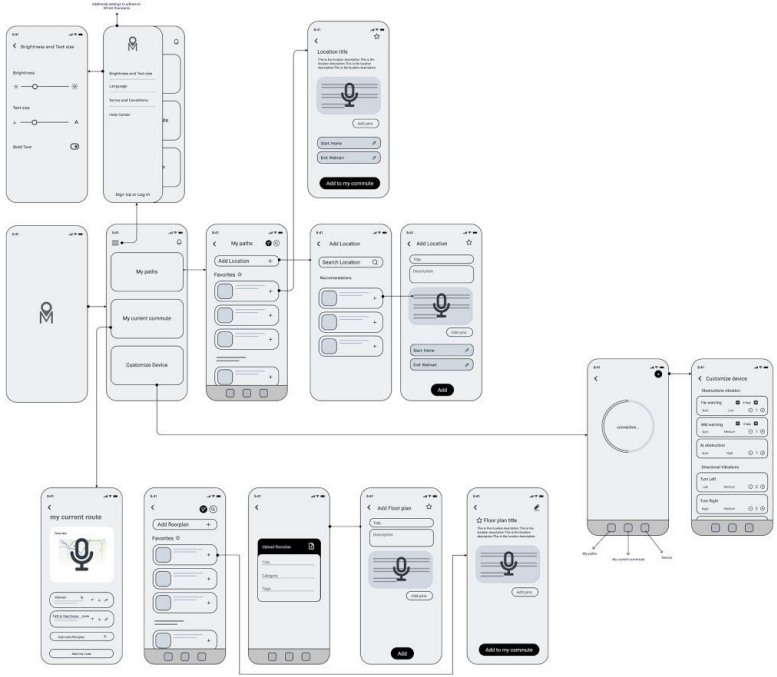
Along with creating the app Lo-fi screens our team built app site maps to have a more clear understanding of the information architecture within the app.



PROCESS

App Lo-fi

We wanted ensure that the app would meet the WCAG standards. With this, we focused on making our UX writing consistent, add aadditional settings for accessibility, and have clear organization of the information architecture.



USER TEST

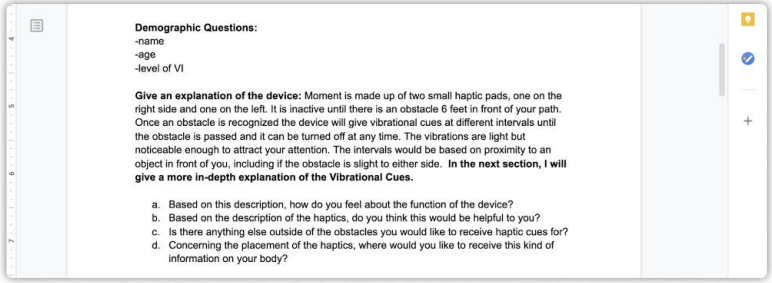
Wizard of Oz

Given the situations of the pandemic, our team decided to use the Wizard of Oz techinque verbally through zoom. With this method we ran our participants through our physical and digital product.

Renee VanDoren
Mainly Blind
Social Worker

Su Park
Light perception
Accessibility Consultant

Mark Melonson
Light perception
Senior App Security Engineer at HP



Demographic Questions:
-name
-age
-level of VI

Give an explanation of the device: Moment is made up of two small haptic pads, one on the right side and one on the left. It is inactive until there is an obstacle 6 feet in front of your path. Once an obstacle is recognized the device will give vibrational cues at different intervals until the obstacle is passed and it can be turned off at any time. The vibrations are light but noticeable enough to attract your attention. The intervals would be based on proximity to an object in front of you, including if the obstacle is slight to either side. **In the next section, I will give a more in-depth explanation of the Vibrational Cues.**

a. Based on this description, how do you feel about the function of the device?
b. Based on the description of the haptics, do you think this would be helpful to you?
c. Is there anything else outside of the obstacles you would like to receive haptic cues for?
d. Concerning the placement of the haptics, where would you like to receive this kind of information on your body?

What worked ❤️

- The location pins
- General haptic functions and guide
- Enjoyed the additional alt text directions on the app
- A nice secondary tool of navigation
- The customizable haptic experience

What needs improvement 🤔

- Understanding direction on location pins
- The range of the sensor
- Users preferred wrists for haptic feedback
- Haptics for indoors vs outdoors

Possible Changes 💡

- A compass or more haptic cues to help understand orientation on location pins
- A different arrangement of ultrasonic sensors to cover more area
- Separate customization for indoor and outdoor haptics

USER TEST

Physical Build + Arduino

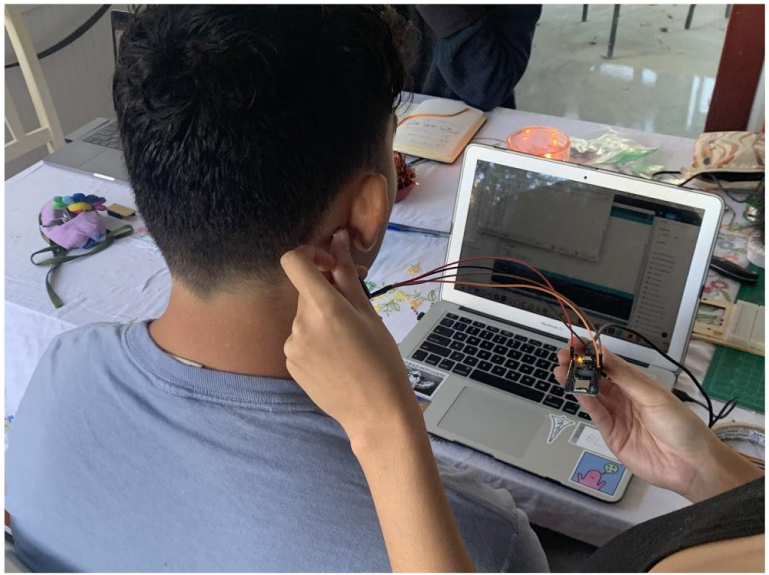
We tested our arduino haptic pads to several participants. Through these testings our goal was to understand preferences when it came to the location of the haptic cues on the body.

INSIGHTS

We learned that when it came to haptic vibrations the preference varied depending on the individual.

The vibrations from the haptics weren't strong enough for the users to notice.

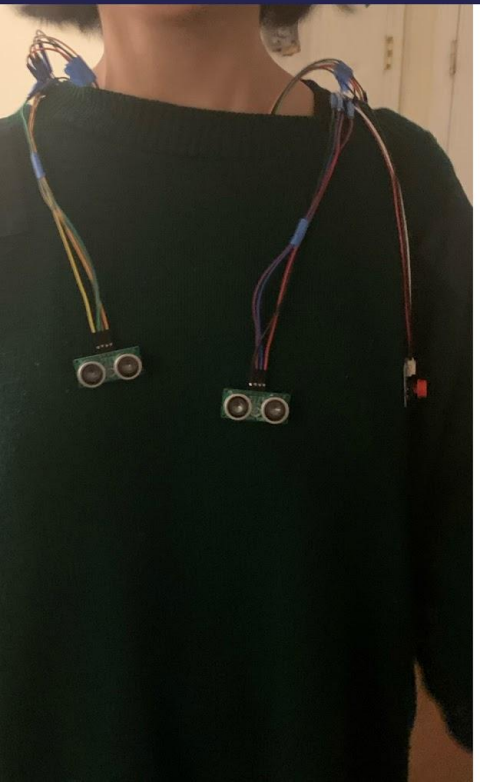
Users feel that the haptic placement can be disruptive for some cases, it's hard to decide which placement is suitable for all situations.

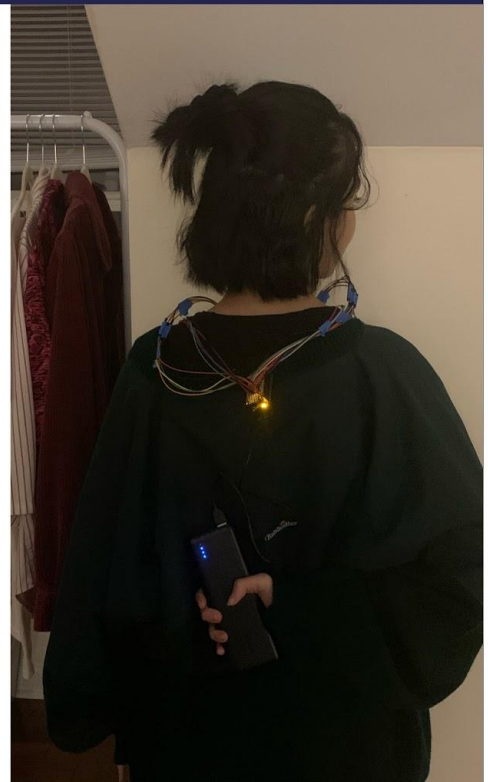


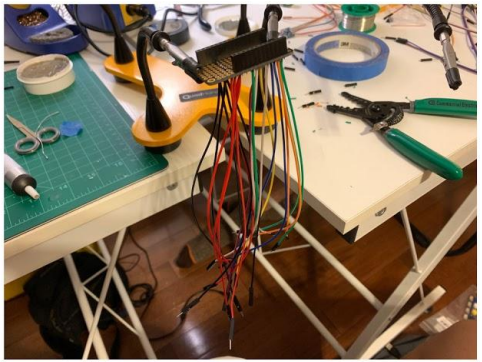
PROTOTYPE

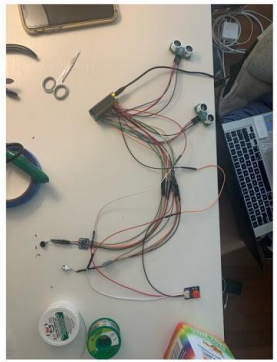
Alpha

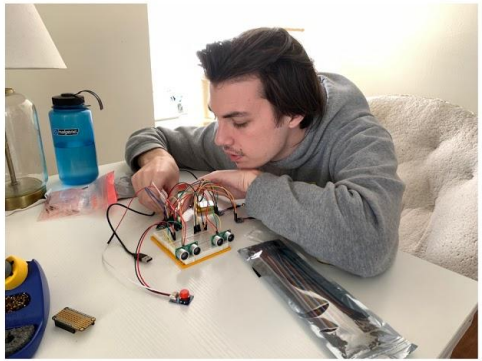
For the first round of our complete prototype, we managed to put all the parts together and organize the wires so it could be used as a wearable. For this prototype, we did the big chunk of the soldering and testing the sensors. The main issue at this time was that our LiPo battery didn't work, so we had to temporarily replace it with a powerbank.





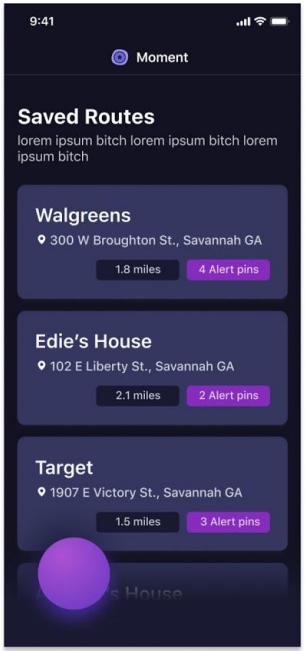


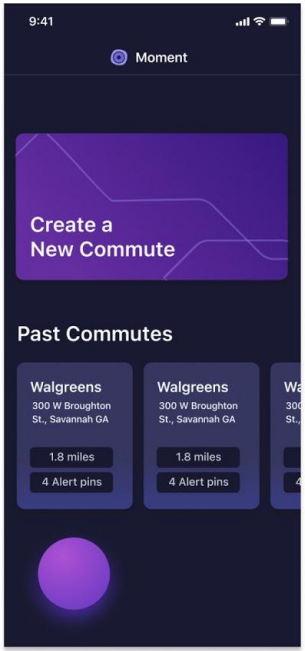


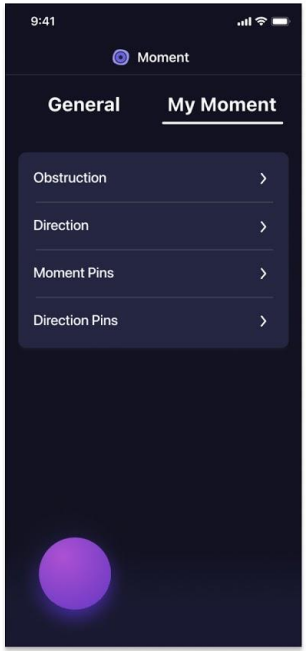


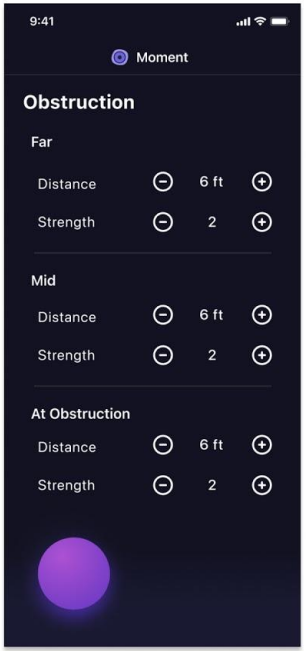
App Mid-Fi

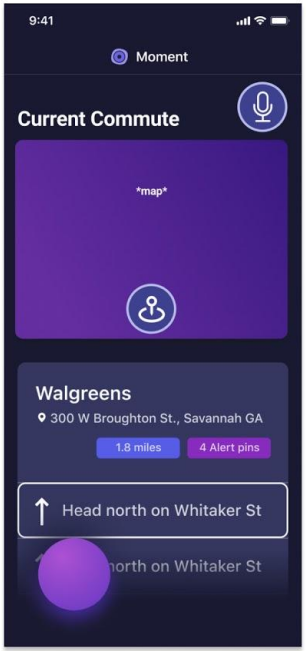
After our Wizard of Oz user testings, our team went through a pivot. We originally had a floorplan option to the app however got rid of this as we found that the idea didn't allign with our goals with the concept.











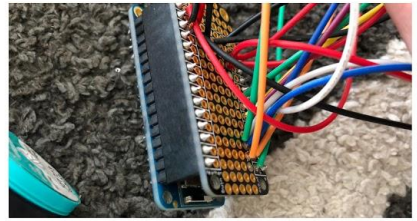
PROTOTYPE

Beta

For the second round of our prototype, we placed the wires and parts into a fabric sleeve. The main challenges that we encountered during this time is a lot of the wires would fall off, so we had to resolder them, and we also had to figure out how to neatly put on the sleeve over the wires. But overall, the prototype still worked perfectly.

Meetings, tests, and tears

After the Beta, we encountered some major issues with the connection of the wire. For a moment, our prototype broke and we realized it was because the solder from ground to power was leaking. But this last stretch to finalizing our product has led us to hours of soldering, hours of meetings, and hours or reassuring each other that everything will be okay.



04. Deliver

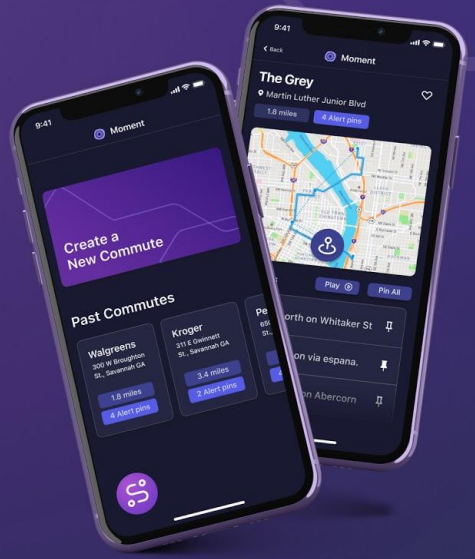
FINAL

Moment.

A wearable which helps visually impaired users avoid **momentary obstacles** while walking in public.

Proximity sensors look for obstacles and sends a variety of dynamic haptic feedback to the user depending on the situation.

Comes with quick on/off switch, as well as a companion app which allows for fine-tuned product settings as well as pins to allow haptic alerts during their path.



Current Commute

ALT Text Directional Overview of Routes within commute

Modules of step by step directions make complex direction easy to understand

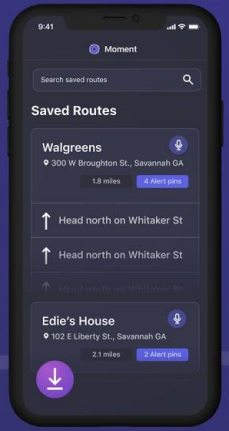
Edit and add destinations and Alert Pins while on a commute

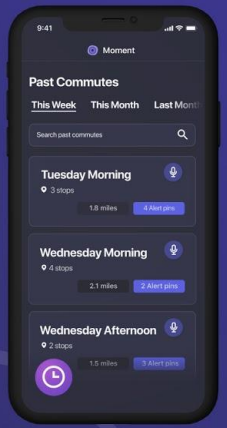
Pinning Alert

While creating Custom Commute you can add Aler Pins to highlight individual directional cues

Pins every ALT text direction for fully responsive Haptic GPS

Add pins throughout your commute for haptic cues along your way





Saved Routes & Past Commutes

Save routes to add to your commute.

Get quick alt-text description for your routes.

Customize Moment

Change general accessibility settings such as brightness and sizing display settings, ALT text speeds and contrast.

Customize the strength and distance of your haptic alerts.

Create specific haptic cues for your pinned alerts.

Two proximity sensors which scan for obstacles around the user and notify them via haptic feedback

A quick-access on/off button to allow for seamless transitions to indoor/close-quarter environments.

Pinned directions can be turned on so that when the user approaches a specific direction on their commute, Moment can send haptic feedback to ensure the user is going in the right direction.

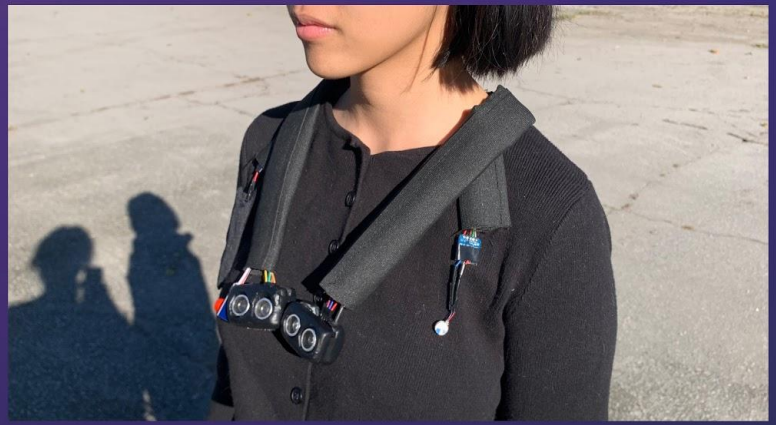
Haptic Language

Proximity directions:
Sensors each correspond with the motor on their side, so if there is an obstacle on the left, the only the left haptic motor will go off. They can also go off simultaneously if theres an object in front of both sensors.

Proximity: Far objects:
Set default as 5.5ft away
• Moment will send one quick buzz every 700ms. This acts as a gentle reminder that there might be an obstacle in front of the user

Proximity: Close objects:
• Set default as 3ft away
• Moment will send two quick buzz every 700ms. This acts as a stern notice that there is an obstacle in close proximity to the user

Pinned Directions:
• Using the user's phone GPS, the phone is able to send quick alerts to the device on which direction the user should go at any given location on their commute
• Moment will send two long buzzes every 400ms depending on which direction the user should be moving to stay on route to their destination



MOMENT

Mobility independence for all

Avenir Black

Source Sans Pro SemiBold

#6D64E4

#9B95EE

#232450

#22252B

Text Contrast Ratio

Thumb-Zone Navigation Menu

Responsive ALT Text to Speech Curated to Current Location

In-Depth Overview of Directional Cues and Route

RATIO

14.58:1

NORMAL TEXT	LARGE TEXT
✓ AA – 4.5:1	✓ AA – 3:1
✓ AAA – 7:1	✓ AAA – 4.5:1

Alleviate the pain of the prepatory steps going to a new location

Better navigate on the spot unexpected obstacles.

Provide confidence with wayfinding through precise haptic cues.

MOMENT

Mobility independence for all