Industrial Design

Portfolio 22

Ross Cameron

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Industrial Designer

Everything I create is driven by the idea that design has the power to change, improve, and save lives. I am a skilled designer and researcher with a strong focus on crafting solutions to real-world problems and creating tools for vulnerable users caught in life-threatening situations. My work utilizes futurism and emerging science combined with broad creative and manufacturing knowledge to envision a brighter outlook for the world.

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Education

Pratt Institute — 2019—2022
Master's of Industrial Design

Bard College — 2009—2013
Bachelor's of Biology

Experience

Graduate Assistant — 2020—2021
Pratt Institute, Dept. of Industrial Design — Brooklyn, NY

Design & Communications Lead — 2015—2019
Helios Media — Philadelphia, PA

Programming & Design Assistant — 2015
DesignPhiladelphia — Philadelphia, PA

Design & Communications Coordinator — 2013—2015
South Kensington Community Partners — Philadelphia, PA

Software

SOLIDWORKS

KeyShot

F 360 · M AYA · Ps · Ai · Ae · Id · Lr

Skills

- Expert Written, Visual, & Verbal Communication
- Concept & Form Development
- Design Research
- User Testing & Research
- Analog & Digital Sketching
- Advanced Model Making
- Rapid Prototyping & 3D Printing
- CAD & 3D Modeling
- Photorealistic Rendering
- Color, Material and Finish Development
- Additive & Subtractive Manufacturing
- Mold, Tooling & CAM Design
- Production & Manufacturing Knowledge

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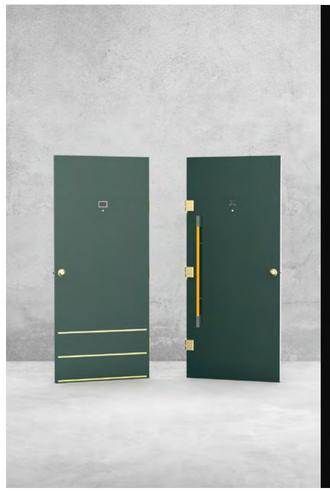
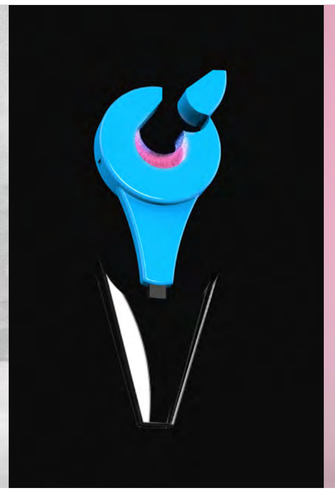
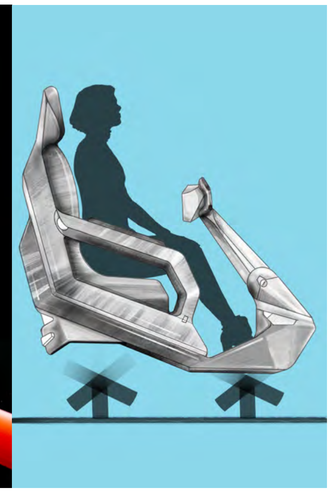









01 Wetwork

Deep Research
Mechanism Design
Rapid Prototyping

02 DropIt

Collaborative Design
Problem Solving
CAD & 3D Printing

03 NarCount

User Research
Use Case Sketching
CAD & Rendering

04 Minder

Scientific Research
User Experience
Emerging Tech

05 Layr

Factory Collaboration
Model Making
Color, Material & Finish

06 Loon

Form Development
Manufacturing Process
Final Production

07 Pascal

Market Research
Iterative Sketching
Transportation Design

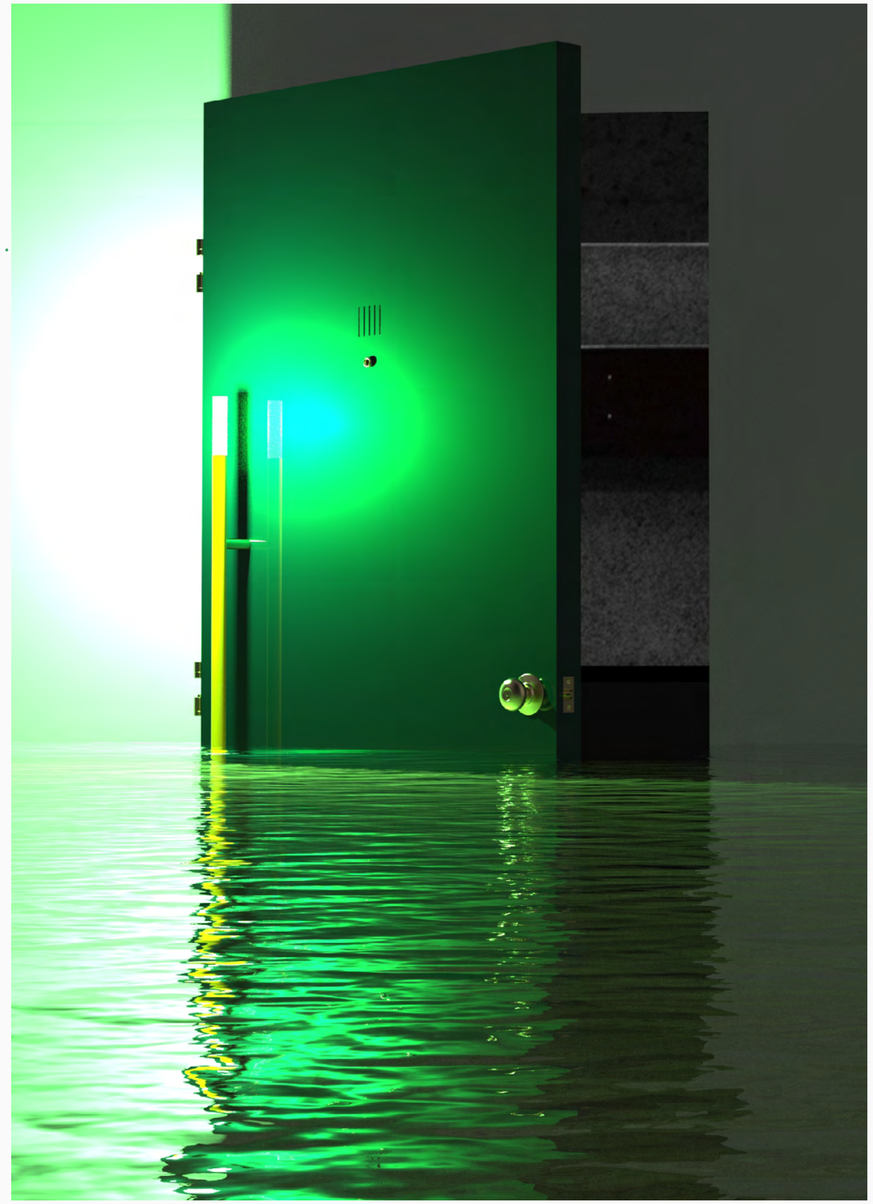
01 Wetwork

Part of what we're facing as a globe—with climate change and a rise in sea level—is a drastic increase in urban flooding over the next century. During floods, those in garden-, basement- or cellar-level apartments can become trapped in their living spaces due to the extreme pressure of the water rising outside. Wetwork explores possibilities for survival and lifesaving rescue in extreme urban flooding situations, revolving around the main entry door of these apartments, focusing specifically on illegally converted cellar apartments in New York City.

Stakeholder Organizations:

NYC Mayor's Office of Climate & Environmental Justice

FEMA



Climate change & sea level rise

Millions of humans and hundreds of cities in peril

With a changing climate and melting polar ice caps comes a potentially drastic increase in sea levels globally, possibly up to 10 meters by 2100. This rise in sea level will have a devastating effect on coastal areas, particularly in cities, and will additionally cause an increase in severe weather events throughout the century. Groundwater, coastal, and pluvial (or surface) flooding are much more prevalent and destructive in highly developed urban areas, and the effects of increased heavy rainfall events and sea level rise in some of these major coastal cities can be amplified.

Where will people feel the pain of sea level rise the most? Who needs protection?

When the streets become rivers

Short of building sea walls, what kind of precautions can we make against such a powerful force of nature?

Urban flooding is one of the most significant issues we will face as a result of climate change and sea level rise

One of the most notable examples of a city on the brink of a worsening flooding crisis is New York City, one of the most populous and economically developed cities in the world. Wetwork will focus primarily on New York and specifically on Brooklyn & Queens. This area is of marked significance because it has borne the brunt of the damage from the two most impactful flooding events in the past 20 years, and because it contains many areas in which architecture, urban planning, and geography align to create uniquely hazardous conditions during flash flooding events.

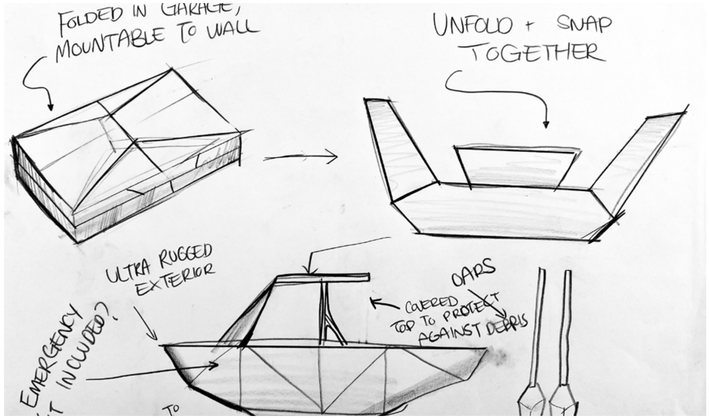
Case study: Hurricane Ida in NYC

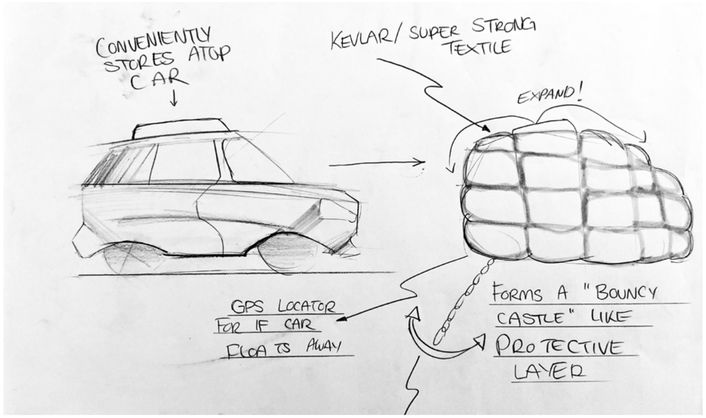
11 die in illegally converted basement-level apartments

Though flood planning was escalated after Hurricane Sandy in 2012, many of these plans were not realized in time for Hurricane Ida, which battered New York in September of 2021, killing 13 and flooding many neighborhoods across Manhattan, Brooklyn and Queens. Subways across the cities were flooded, as well as were many street- and basement-level apartments. A record rainfall hit working class and immigrant neighborhoods the hardest, with 11 out of the 13 deaths being people living in basement apartments, many of them immigrants in illegally converted cellars. The Wetwork project was largely based on first-hand survivor and witness accounts from this storm and its devastation, and focused particularly on a means to prevent the deaths that occurred during the storm.

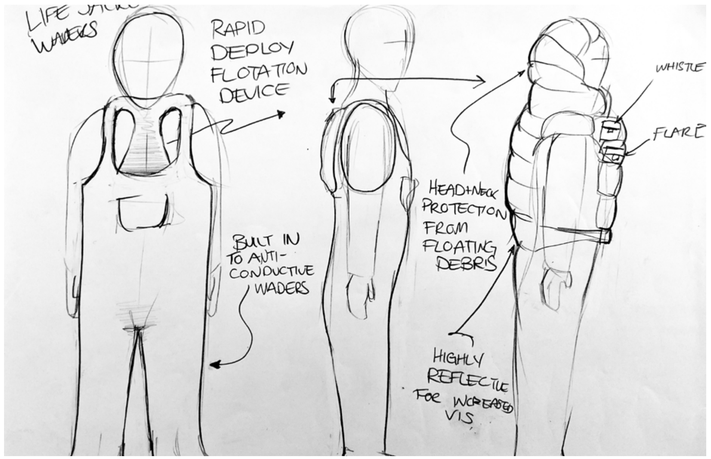
If widespread loss of property is inevitable, how can we prevent loss of life, especially among a city's poorest residents?

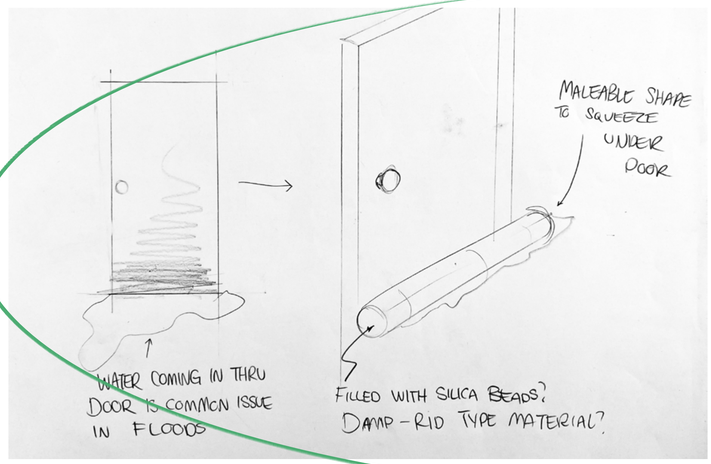
Exploring solutions to urban flooding

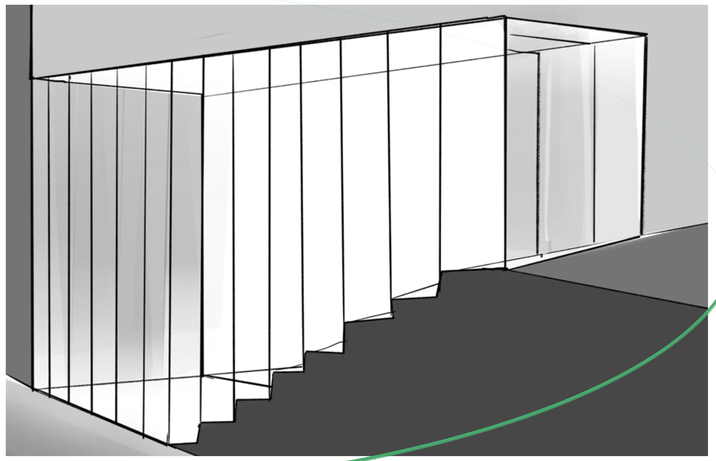


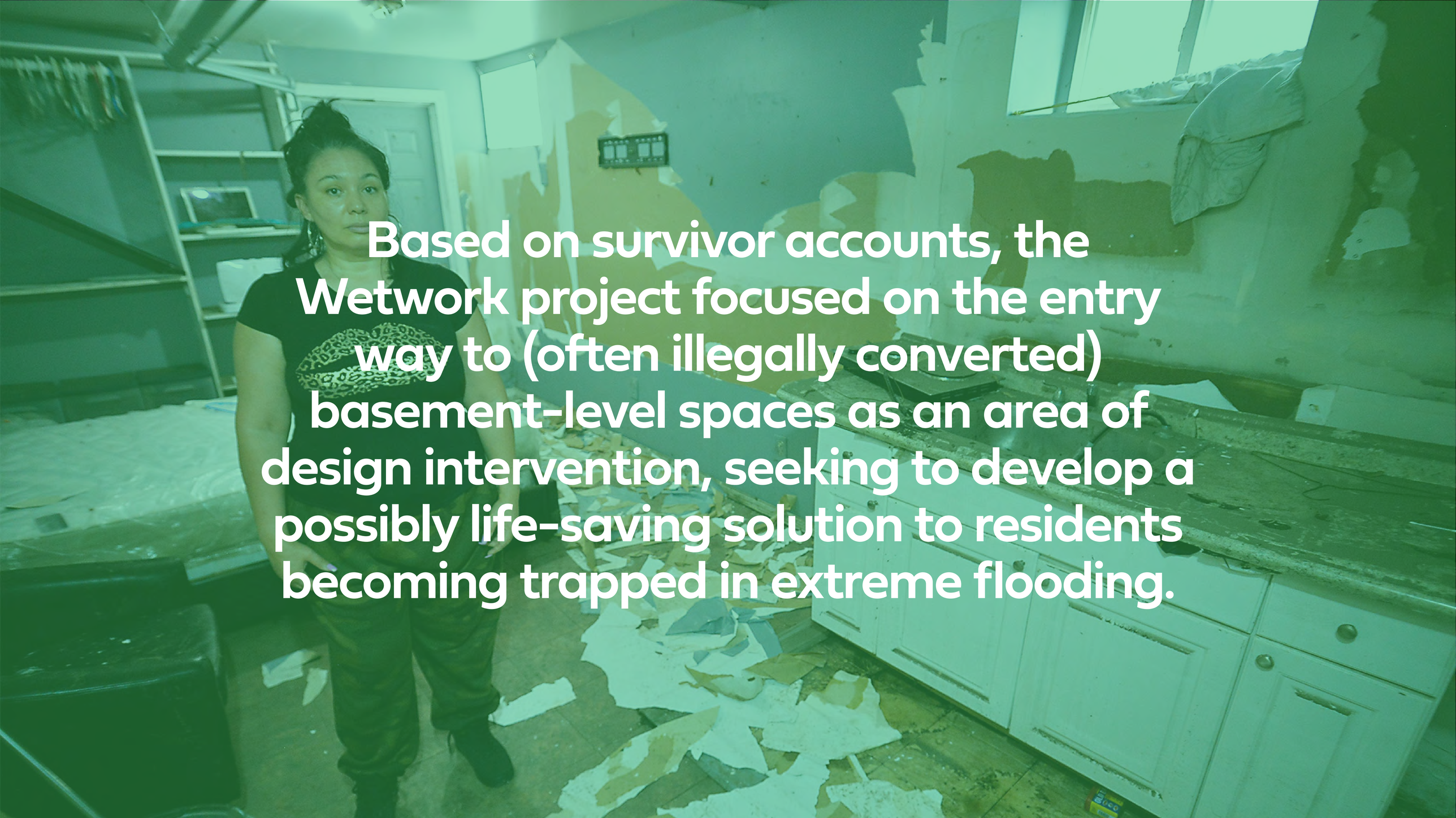


These early sketches are attempts at understanding how lives and essential property can be protected during floods. The two chosen sketches focus on the doorway, where flooding most often enters the home. Though not deemed practical, they informed the general direction of the project moving forward.







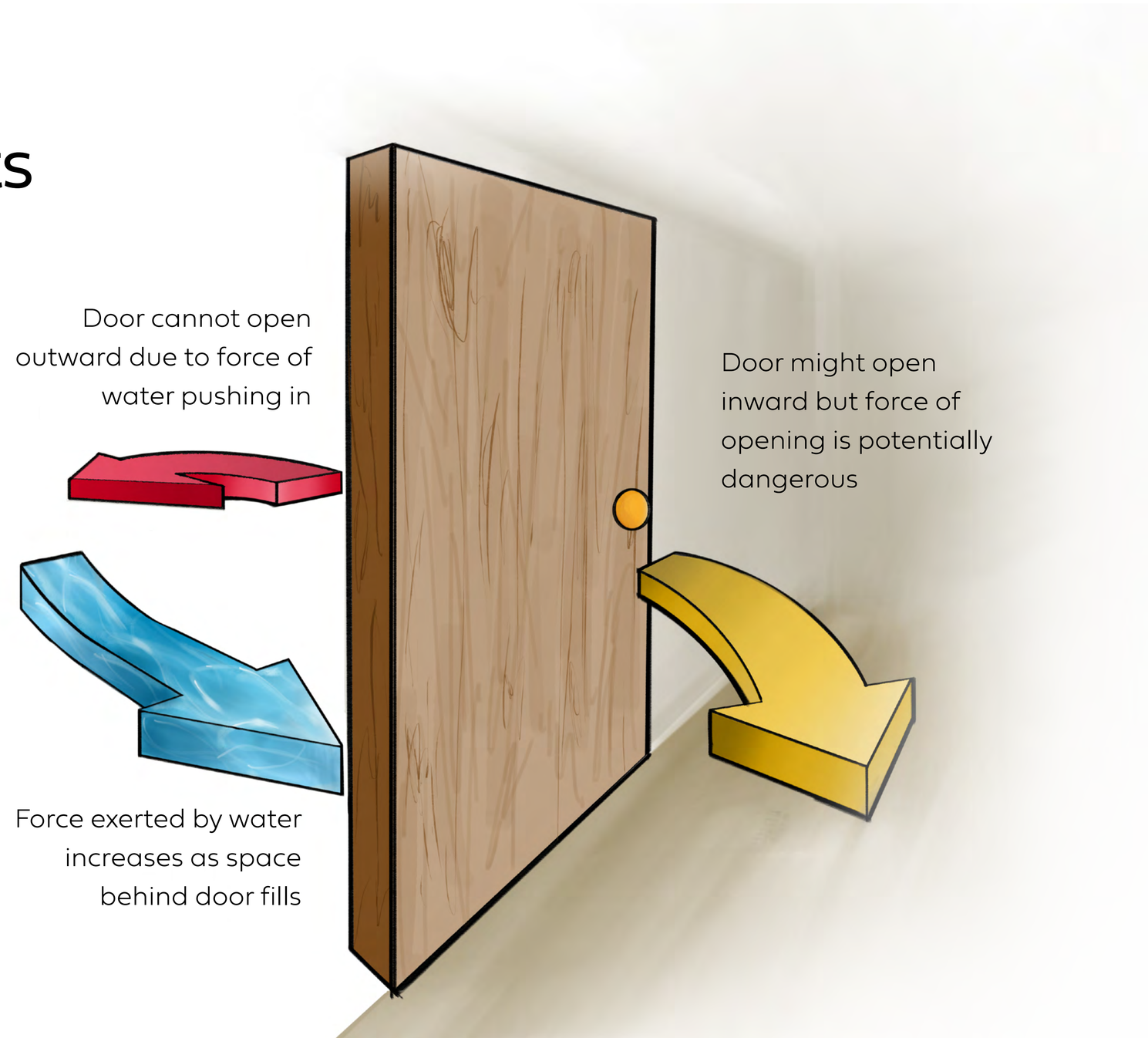


Based on survivor accounts, the Wetwork project focused on the entry way to (often illegally converted) basement-level spaces as an area of design intervention, seeking to develop a possibly life-saving solution to residents becoming trapped in extreme flooding.

Core issue in flooding basement apartments

Research for Wetwork found that people are most often trapped in flooding basement and street level spaces due to the pressure differential of water building up on one side of the only entry/exit to the space. When water level reaches only a few feet outside the door, the pressure exerted jams the door in either direction. When pushed, the force of the water is too great and the door will not open. When pulled, the mechanics of the knob are often seized. When the water level is equal on both sides, the door can usually operate in a normal fashion.

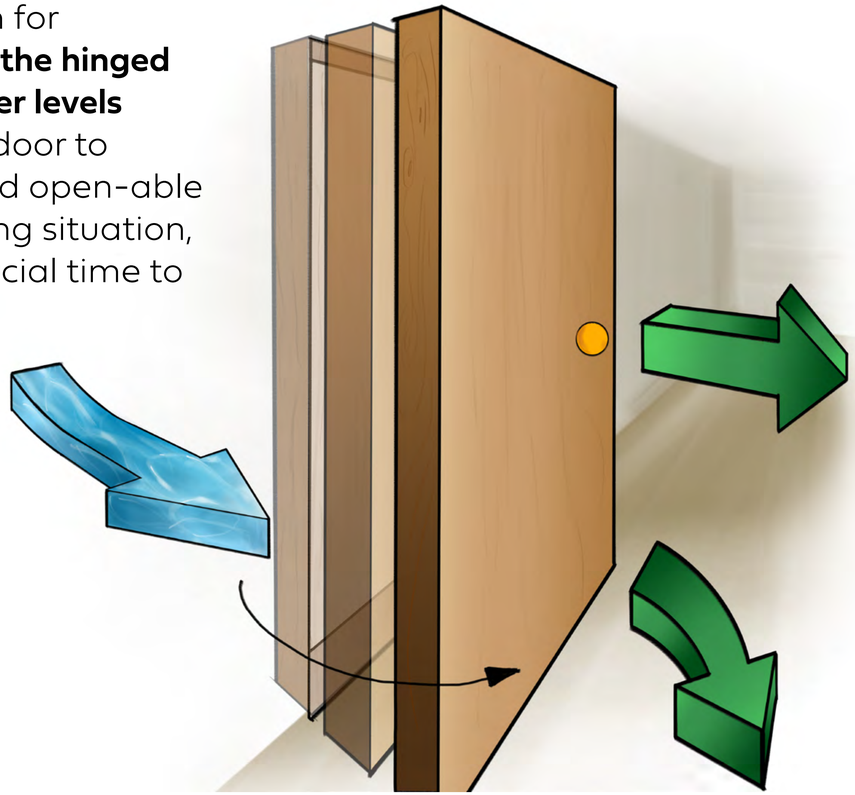
Tragically, by the time most residents are aware of the flooding occurring outside their door, the pressure has increased beyond their capacity to overcome it.



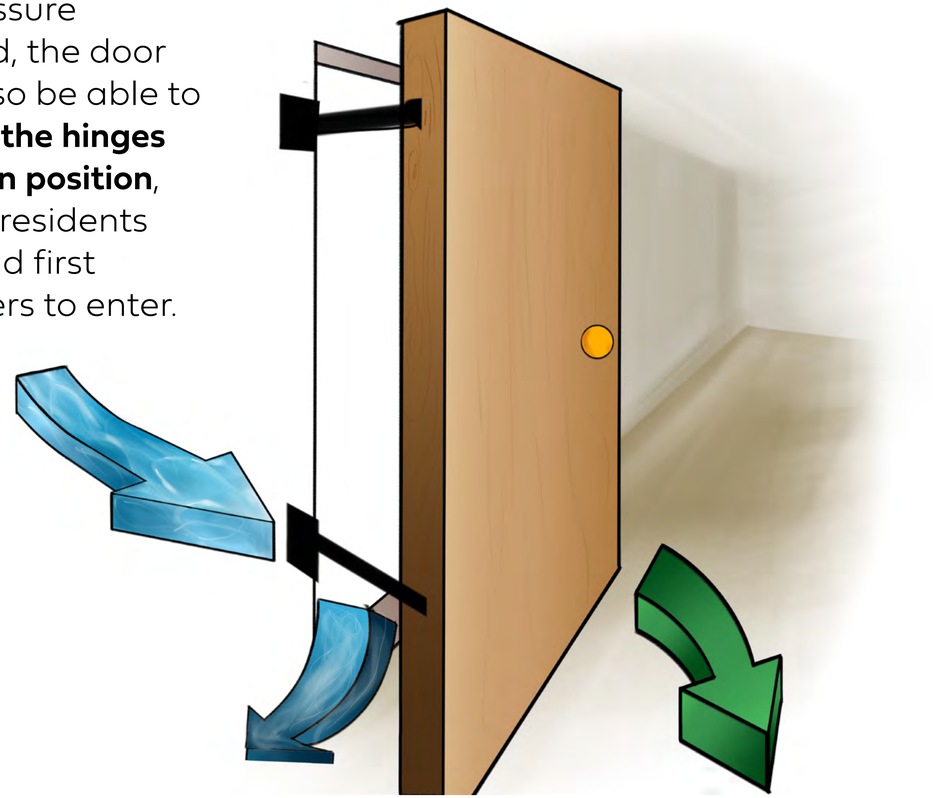
A possible door-based solution

The core concept of this project centers around a **mechanism for equalizing the pressure differential** on either side of the entry, and for alerting residents of danger before the situation becomes deadly.

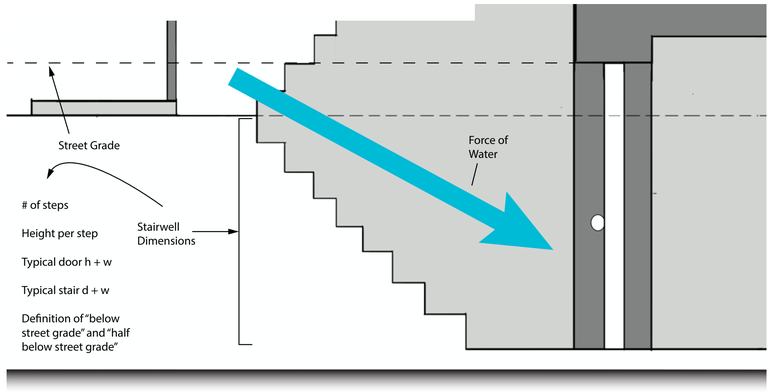
A stable mechanism for **opening the door on the hinged side could allow water levels to equalize** and the door to remain operable and open-able throughout a flooding situation, buying residents crucial time to escape.

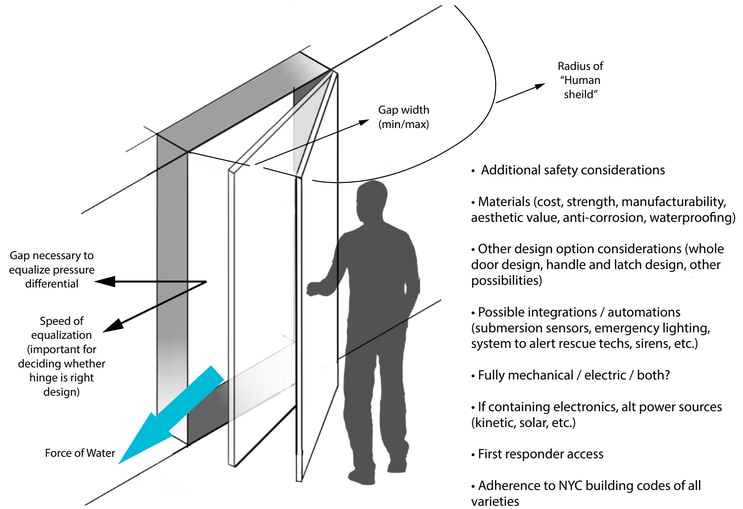


With pressure equalized, the door would also be able to **swing on the hinges in an open position**, allowing residents to exit and first responders to enter.

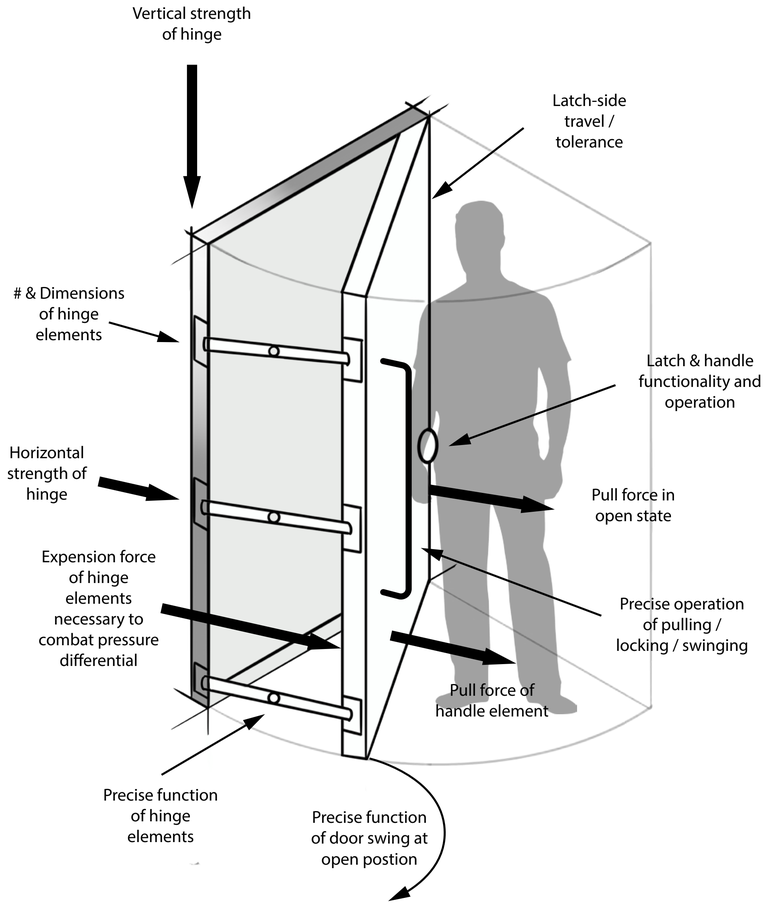


Dimensions & physics considerations





- Additional safety considerations
- Materials (cost, strength, manufacturability, aesthetic value, anti-corrosion, waterproofing)
- Other design option considerations (whole door design, handle and latch design, other possibilities)
- Possible integrations / automations (submersion sensors, emergency lighting, system to alert rescue techs, sirens, etc.)
- Fully mechanical / electric / both?
- If containing electronics, alt power sources (kinetic, solar, etc.)
- First responder access
- Adherence to NYC building codes of all varieties



Enabling escape

Considerations were made for what type of conditions would be necessary to allow for actual pressure equalization while allowing the door to swing freely.

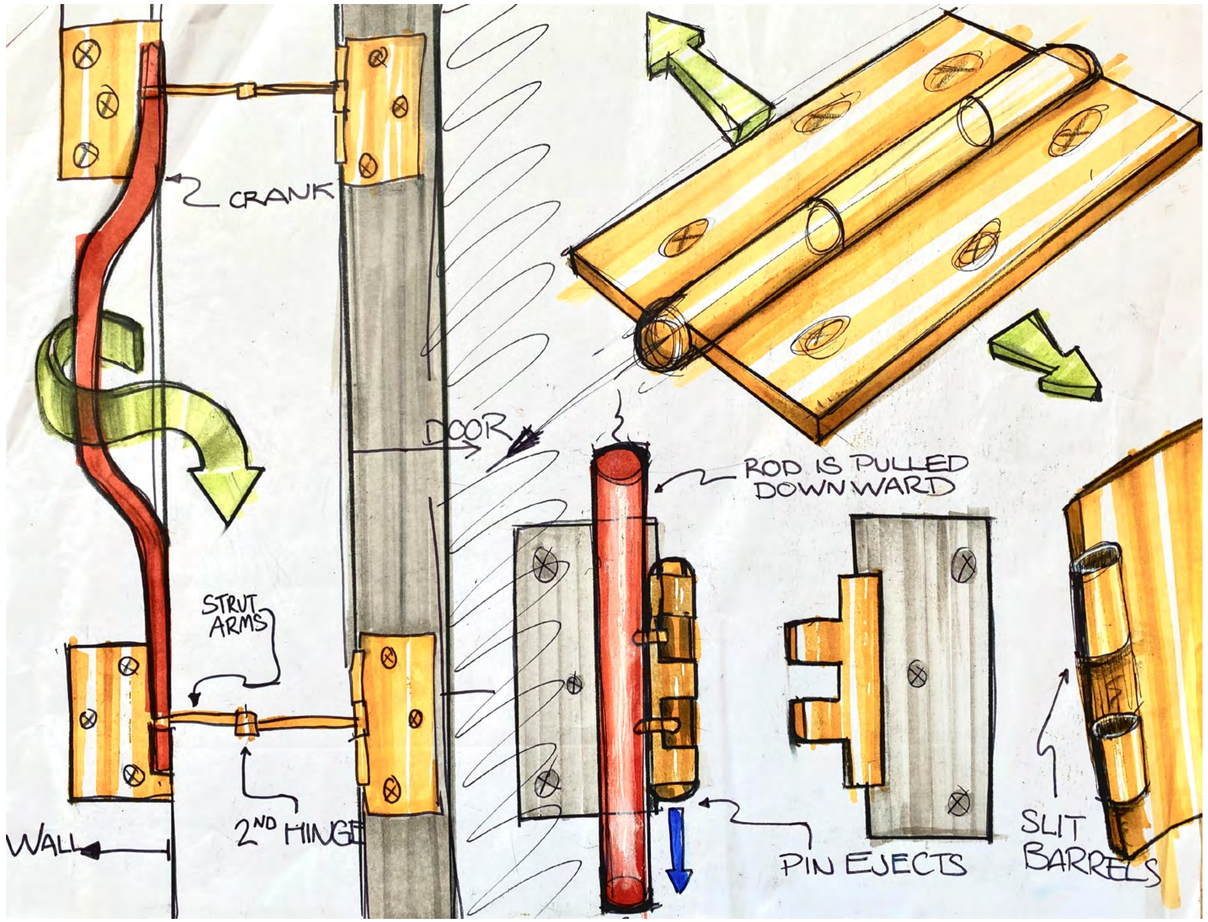
Shielding the escapee

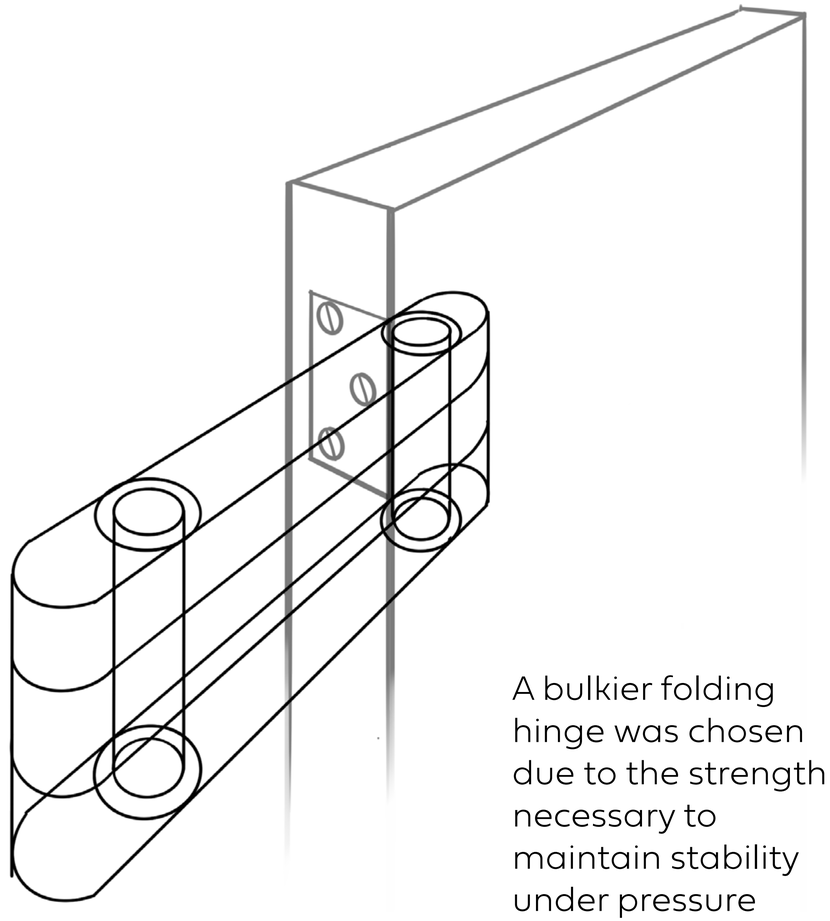
The distance of the hinge extension was designed to leave a gap behind the door in which a resident might take temporary shelter while waiting for water to equalize.

Enabling rescue

The door bolt was also included in the design, retracting when a critical level is reached to allow rescue by first responders.

Exploring options for a specialized hinge





A bulkier folding hinge was chosen due to the strength necessary to maintain stability under pressure

Brass hinges with a thick, hollow structure are both stable and can fit into the existing tenons cut for hinge plates, increasing adoption and reducing expense for the resident

The hinge is designed to collapse, allowing it to function normally in non-emergencies.

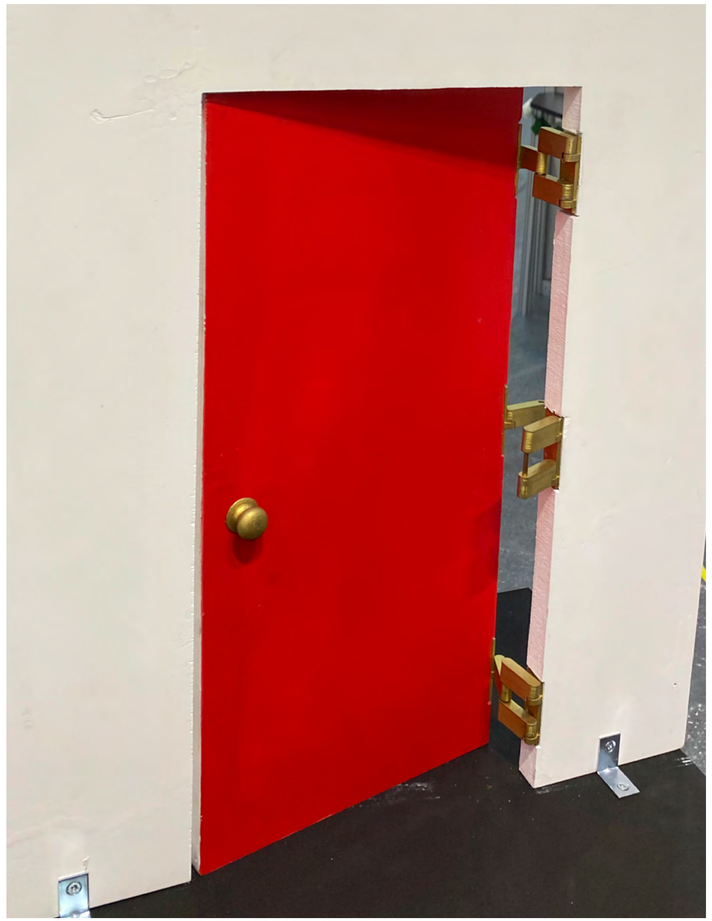
Full-scale experimentation & 3D printed

Proof of concept was achieved in **full scale experimentation** at Pratt Studios in Brooklyn. A full-sized, framed door was used to test the strength and form of a folding hinge with simple steel plates.

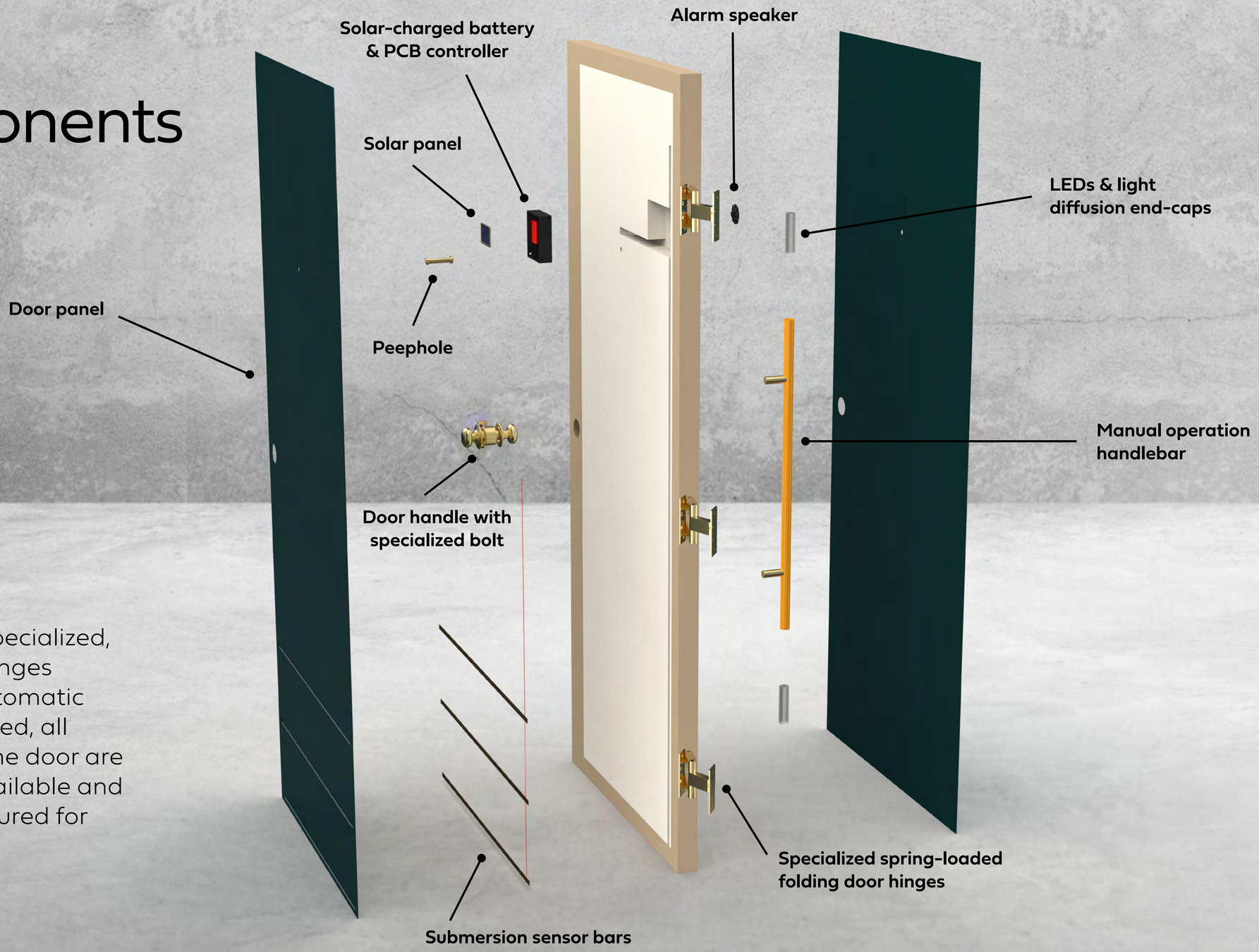
3D prints of the previously developed models were made to **test usability at a smaller scale**, and the feasibility of a collapsible-yet-functional hinge.

At left, early models were mounted to aluminum plates. Later, thick PLA screwplates were also mocked up.

Final exhibition and models



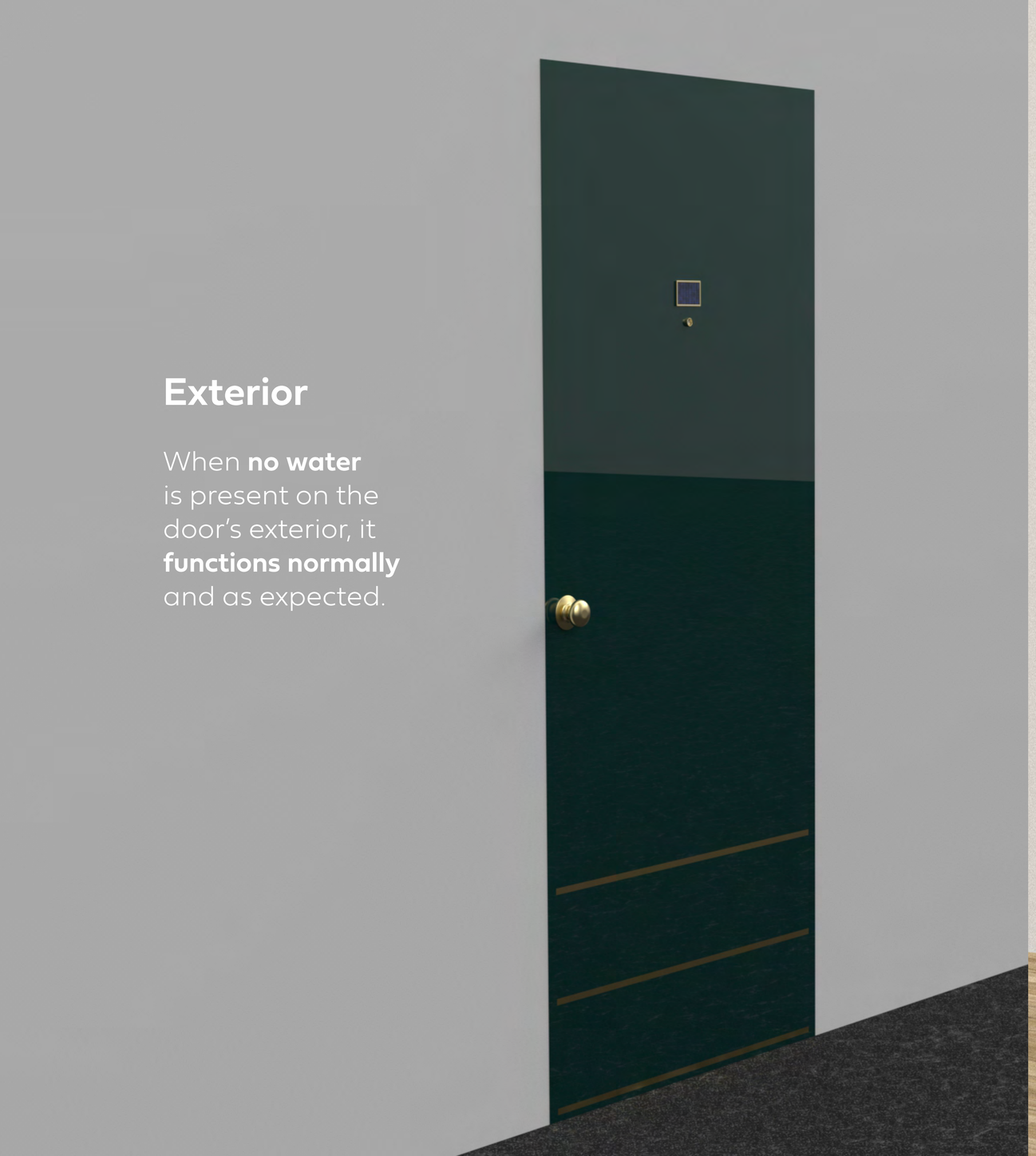
Components



Aside from the specialized, spring-loaded hinges and two-way automatic bolt that I designed, all components in the door are commercially available and widely manufactured for other purposes.

Exterior

When **no water** is present on the door's exterior, it **functions normally** and as expected.

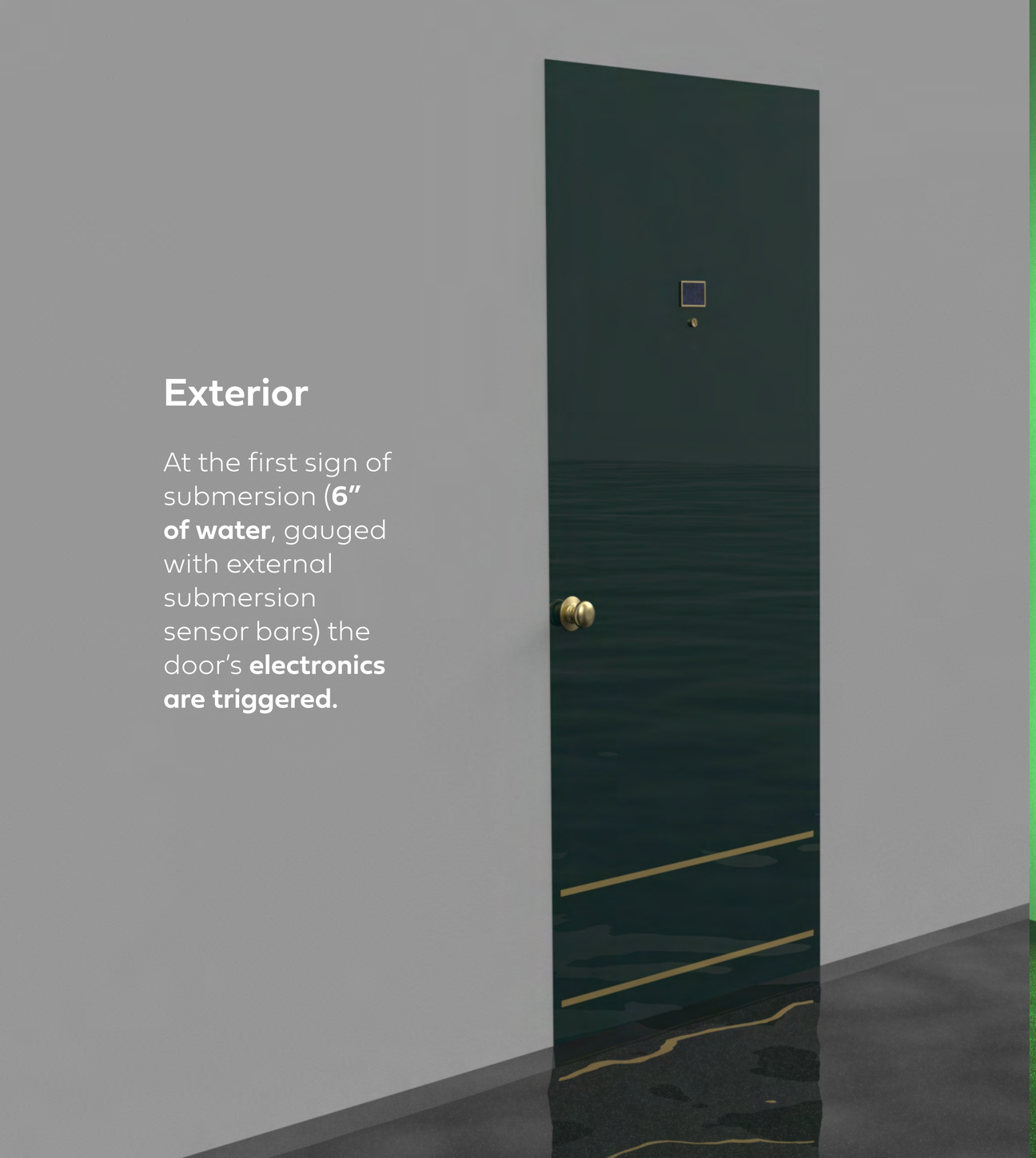


Interior

With no water detected on the exterior, **no indication is present** on the interior side.

Exterior

At the first sign of submersion (**6” of water**, gauged with external submersion sensor bars) the door’s **electronics are triggered.**



Interior

Lights on the interior manual operation bar are turned on, guiding the resident towards an exit.

Exterior

As water level rises **(12” of water**, gauged by a second submersion sensor) the s**pring-loaded hinges are released** to allow pressure equalization at an early stage.

Interior

Hinge release also triggers a built-in speaker inside the door to **emit a very loud alarm**, encouraging residents to exit immediately. Lights begin to pulse to further signify the emergency.

Exterior

At a **water level of 18”+**, the bolt and pin of the **door handle are automatically disengaged**, allowing the door to swing open freely with the force of water.

Interior

The open door, combined with lights and alarm **allow entry for first responders** and alert them to the emergency inside the apartment to limit any final chance of a resident being trapped inside.

02 DropIt

Designed collaboratively by a multi-national team of students from Pratt Institute in Brooklyn, New York, EAPD school of design in San Juan, Puerto Rico and ESNE University in Madrid, Spain, DropIt is a water quality assessment tool designed to help those living in areas with interrupted, inconsistent or limited access to fresh, potable drinking water.

Team Members:
Ross Cameron (Pratt Institute)
Katherine Cruz, Gabriel Mendez (EAPD)
Alejandra Alandete, Sofia Vigil (ESNE)

In collaboration with:

SOCENTLABO

Is this water safe to drink?

People all over the world lack access to clean water

After a natural or humanitarian disaster occurs, access to potable water can be threatened, forcing people to drink contaminated water and often suffer severe consequences. Contamination can come from agriculture, industry, human waste, contact with sewage and many other sources. Many of these sources are exposed when flooding occurs, and can leech contaminates into water sources. This makes access to clean water difficult in areas susceptible to flooding. Lack of access to clean water is also a persistent issue in much of the developing world, not just in areas vulnerable to extreme flood events.

If people will seek out alternative water sources regardless of their drinking safety, how can we lower instances of water-borne illness and death?

Puerto Ricans need a reliable way to differentiate between clean and contaminated water sources, especially those that are assumed by default to be "safe," such as municipal water and community wells.

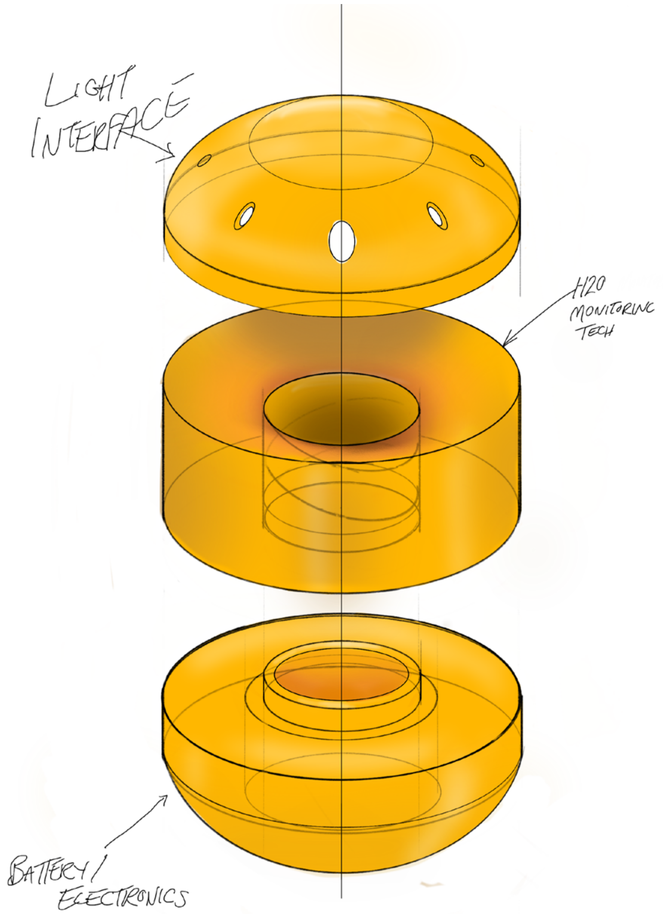
Case study: Hurricane Maria

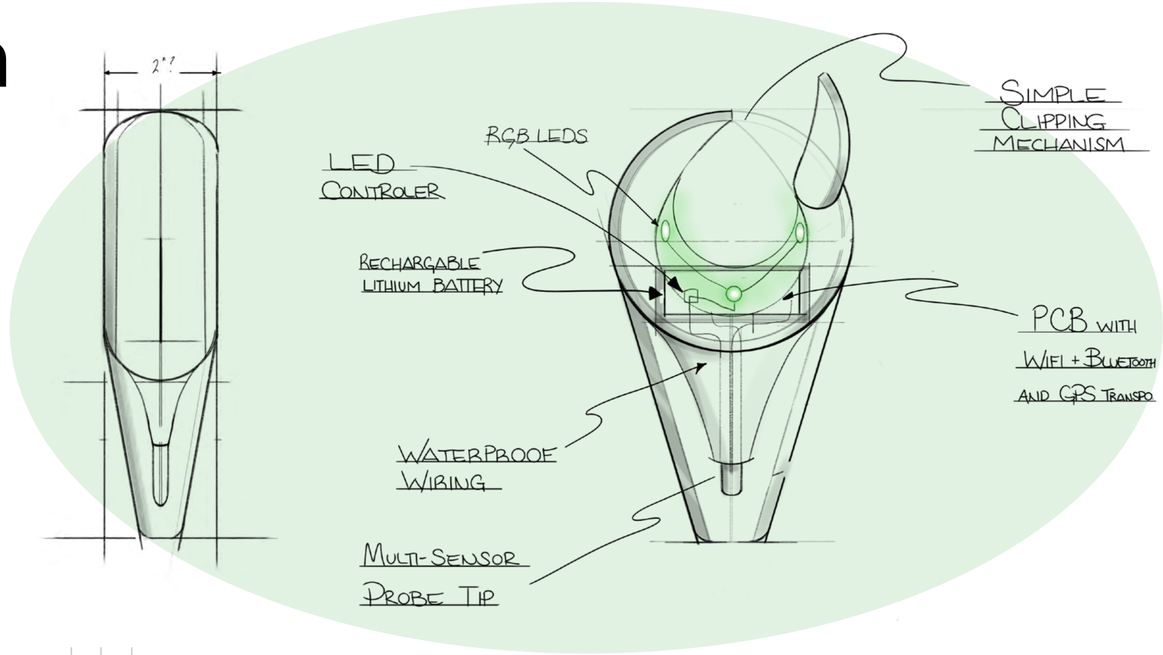
An on-the-ground view of the aftermath and its devastating effect on the water supply of Puerto Rico

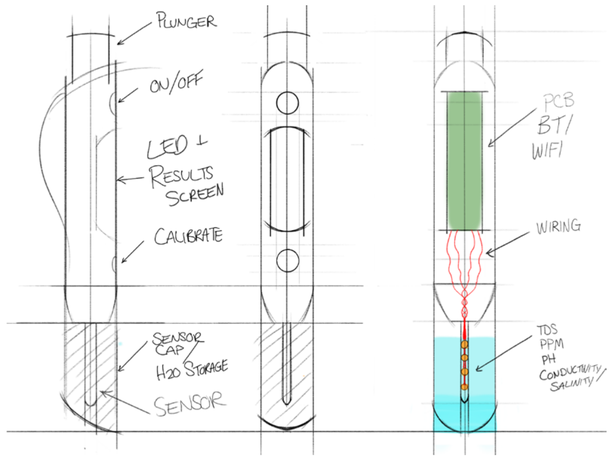
Using Puerto Rico and its ongoing recovery from the devastation caused by Hurricane Maria in September of 2017, our process of research and discovery started with in-situ field studies and observations by team members living in Puerto Rico. The team focused on the problem of water access and security that still plagues many areas within Puerto Rico, years after Maria. Key insights from the population drove our design process, including the widespread use of contaminated water.


DropIt aims to limit community exposure to the toxicity of contaminated water by allowing individuals to cheaply and easily access water quality information at the point of access.

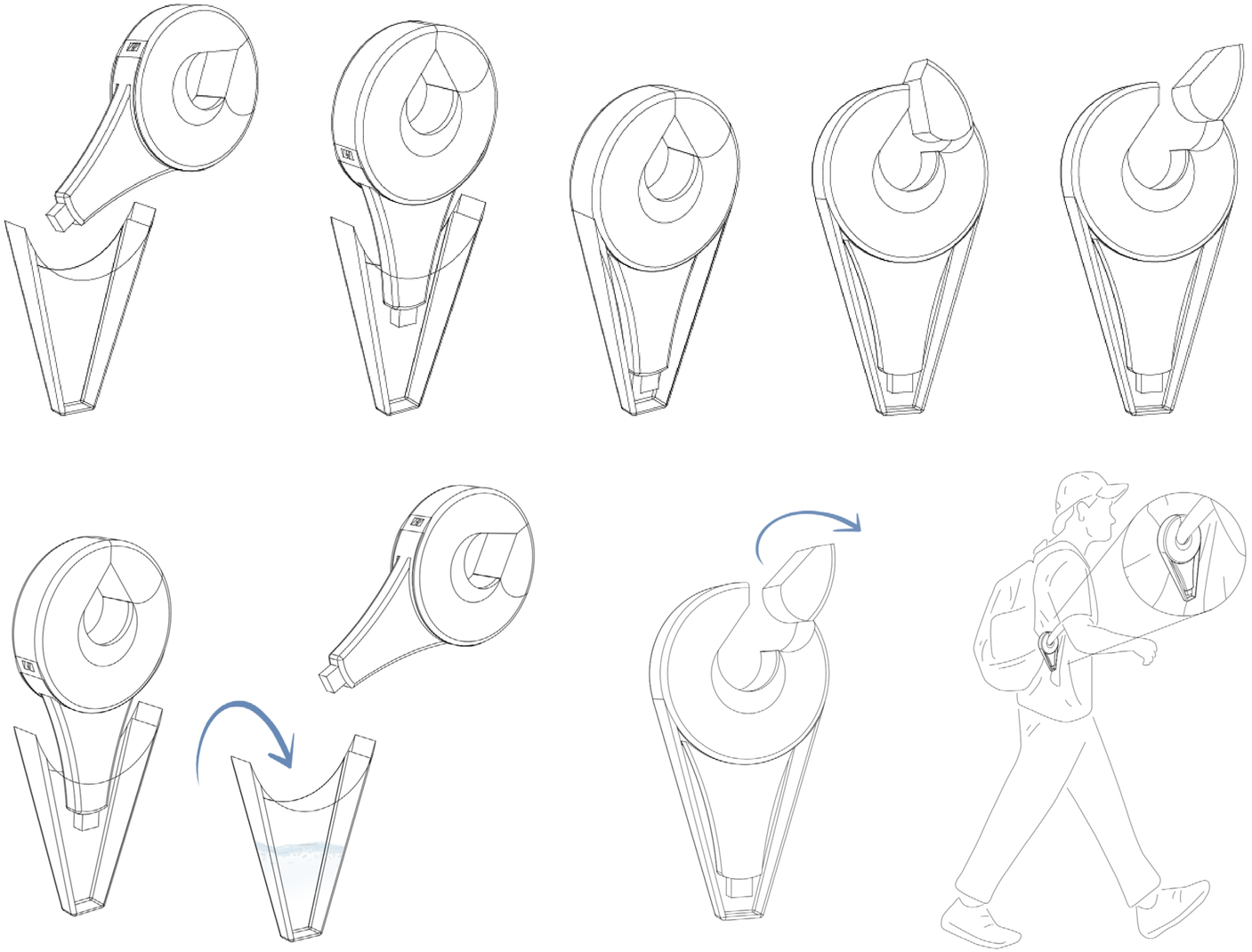
Early concept exploration







Early concepts envisioned larger devices, which were deemed as cumbersome and expensive, and smaller devices which were significantly more complicated and viewed more as technicians' tools. A **simpler interface** and shape that indicated the device's function were chosen for **user friendliness and portability.**



Function and portability

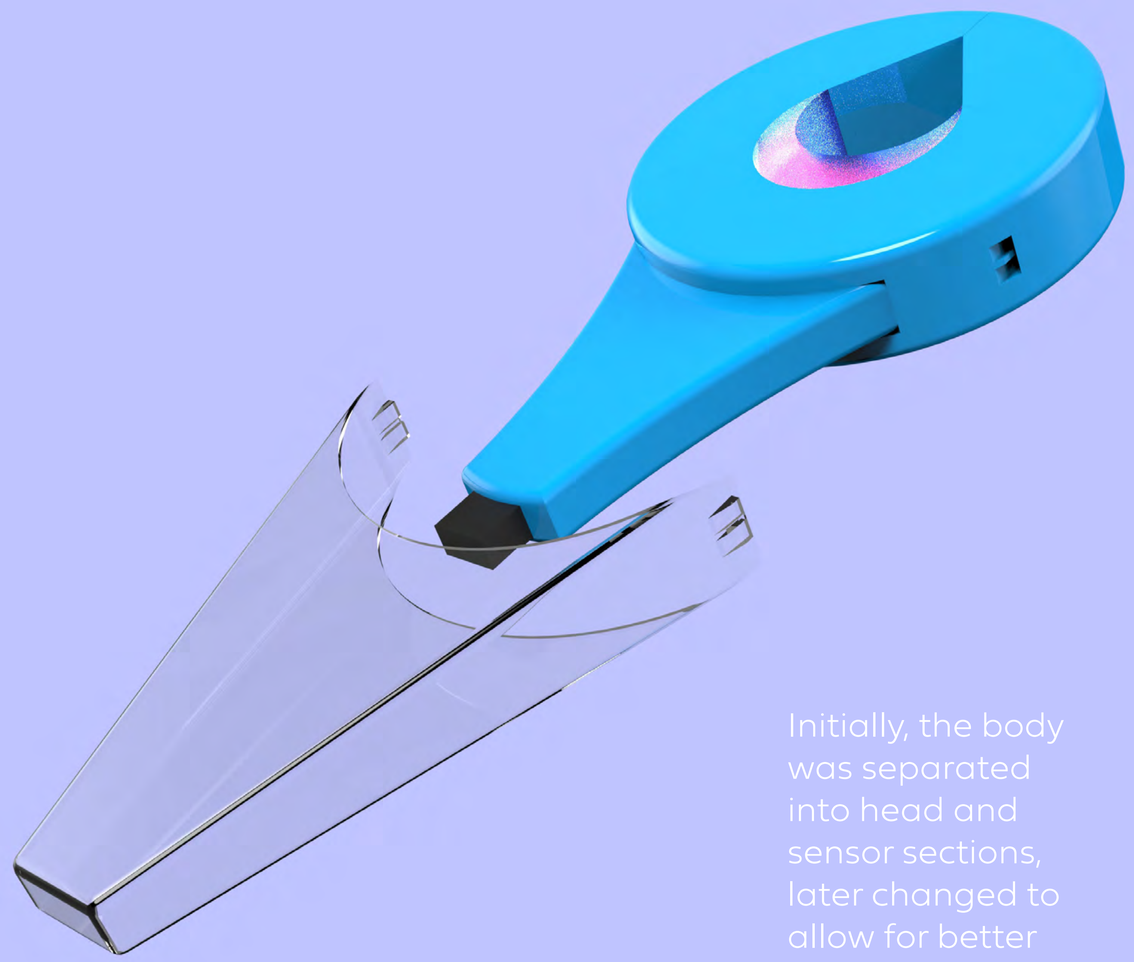
The **teardrop shape** of the final concept allows users to understand at a non-verbal level what the device is used for.

The **simple clasp** at the top, integrated into the body (later swapped for a metal hook to improve durability and ensure adequate space for internal components) allows it to be clipped on to a bag, string, belt or chain for increased portability and security.

A **top-heavy shape** feels good in the hand and prevents excessive swinging when clipped on the user's person, preserving internal component life.

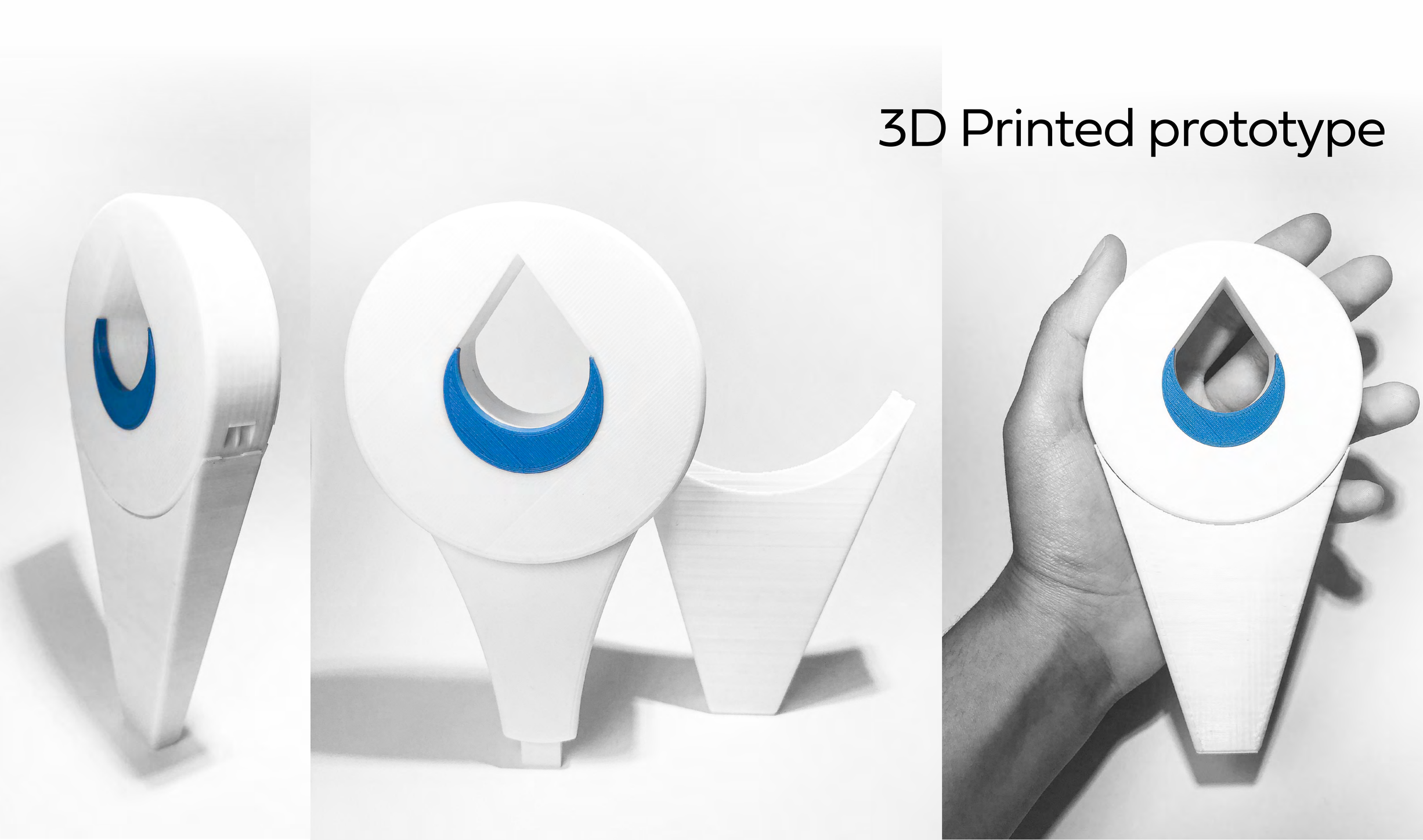
An ultra-portable device that travels anywhere with you.

Early CMF explorations involved bright colors and a hard, polycarbonate water vessel.



Initially, the body was separated into head and sensor sections, later changed to allow for better waterproofing

3D Printed prototype

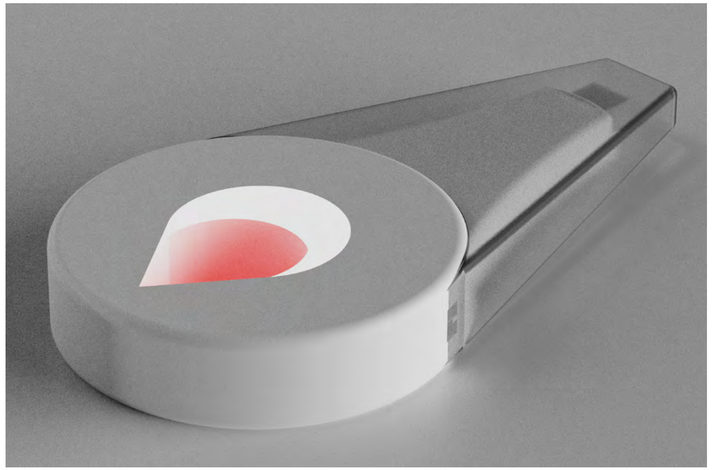


LEDs for easy water quality assessment

Universal colors help users understand safety at-a-glance

When **not in use**, DropIt remains unlit to preserve battery life and indicate a lack of presence of any water sample being read. This also increases the longevity of the internal sensors and PCB.

When water quality is **clean enough to drink**, the indicator LED shows green. Green and red are internationally recognized symbols of “go” and “stop”, “good” and “bad” respectively, and were chosen for this reason.



When contamination, water-borne microbes, or an excess of particulate matter are detected in the sample, the LED indicator shows red, warning the user that the water is **not safe to drink** and must be treated before consumption or contact.

A simple, accurate process

Obvious UX for difficult-to-misinterpret results

The DropIt device is separated from its water cup, and indicates it is ready to use by lighting up.

A sample is taken by dipping the vessel into the water and re-attaching it with a snap to the body of the device.

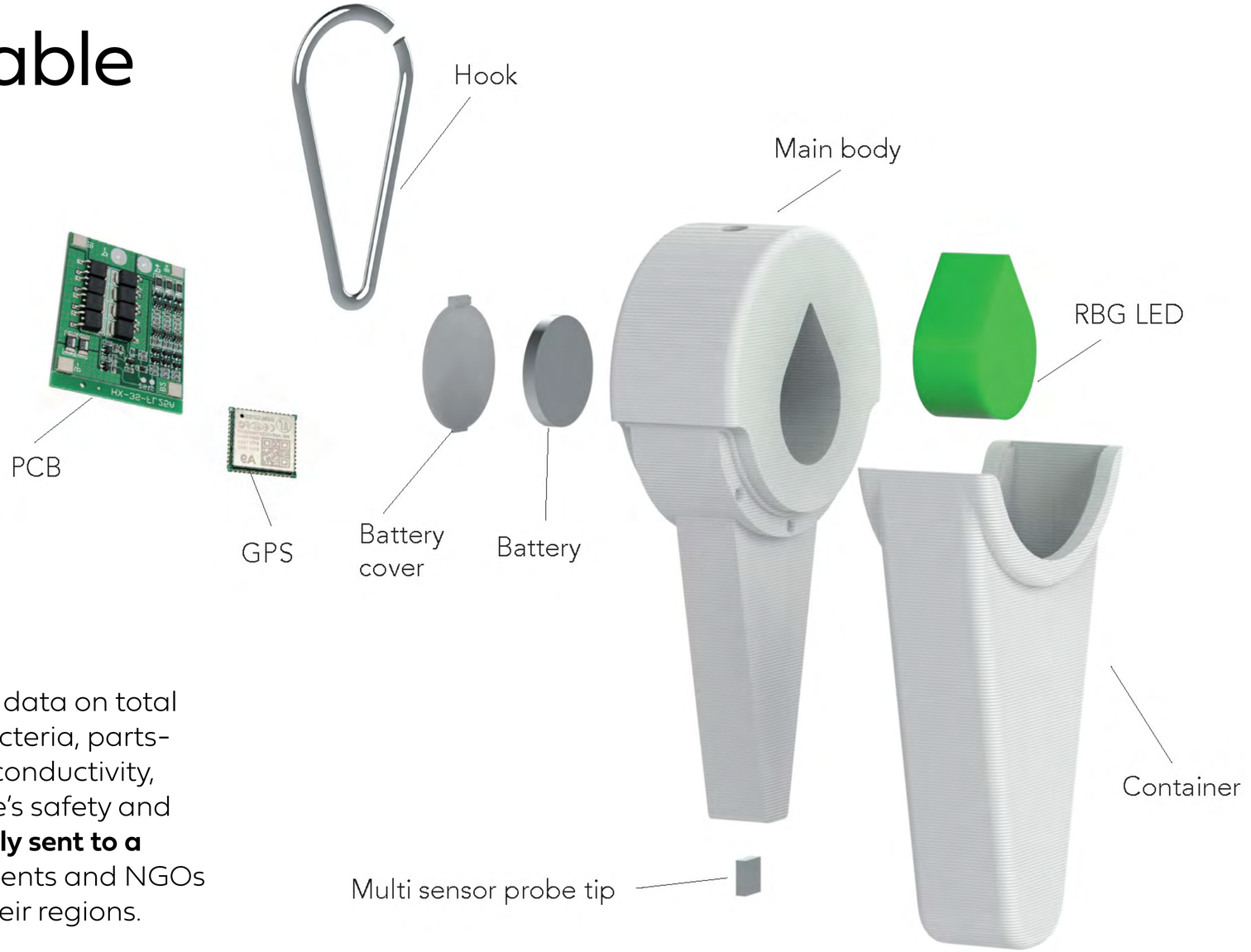
The device sensors read the water quality, log the geolocated data, and show the test result in a binary color scheme on the indicator LED.

Compact, affordable components

Geolocation provides invaluable data to governments and NGOs

Designed to be **3D printed and assembled with readily available components**, DropIt utilizes existing water monitoring tech combined with a PCB controller and GPS unit for gathering geolocated water quality data.

The sensor probe and PCB collect and read data on total dissolved solids, the presence of harmful bacteria, parts-per-million of particulate matter, electrical conductivity, radioactivity and pH to evaluate the sample's safety and potability. These **results are then anonymously sent to a database** that can be accessed by governments and NGOs to aid efforts to improve water security in their regions.



Enhancing local empowerment and community water security

Markers help a community identify multiple readings from a single site

In addition to sending data to organizations with the power and resources to address contaminated water, all DropIt devices are packed with spools of **marking stickers**, with the hope that communities can develop a lasting **system to signify which sources of water** commonly used in their areas bring up **consistent reads of "safe" or "dangerous."**

These marking stickers will fill in the gaps where a critical mass of DropIt devices have not been acquired by a community, and also can **aid technicians in tracking and testing water quality** with more advanced tools.

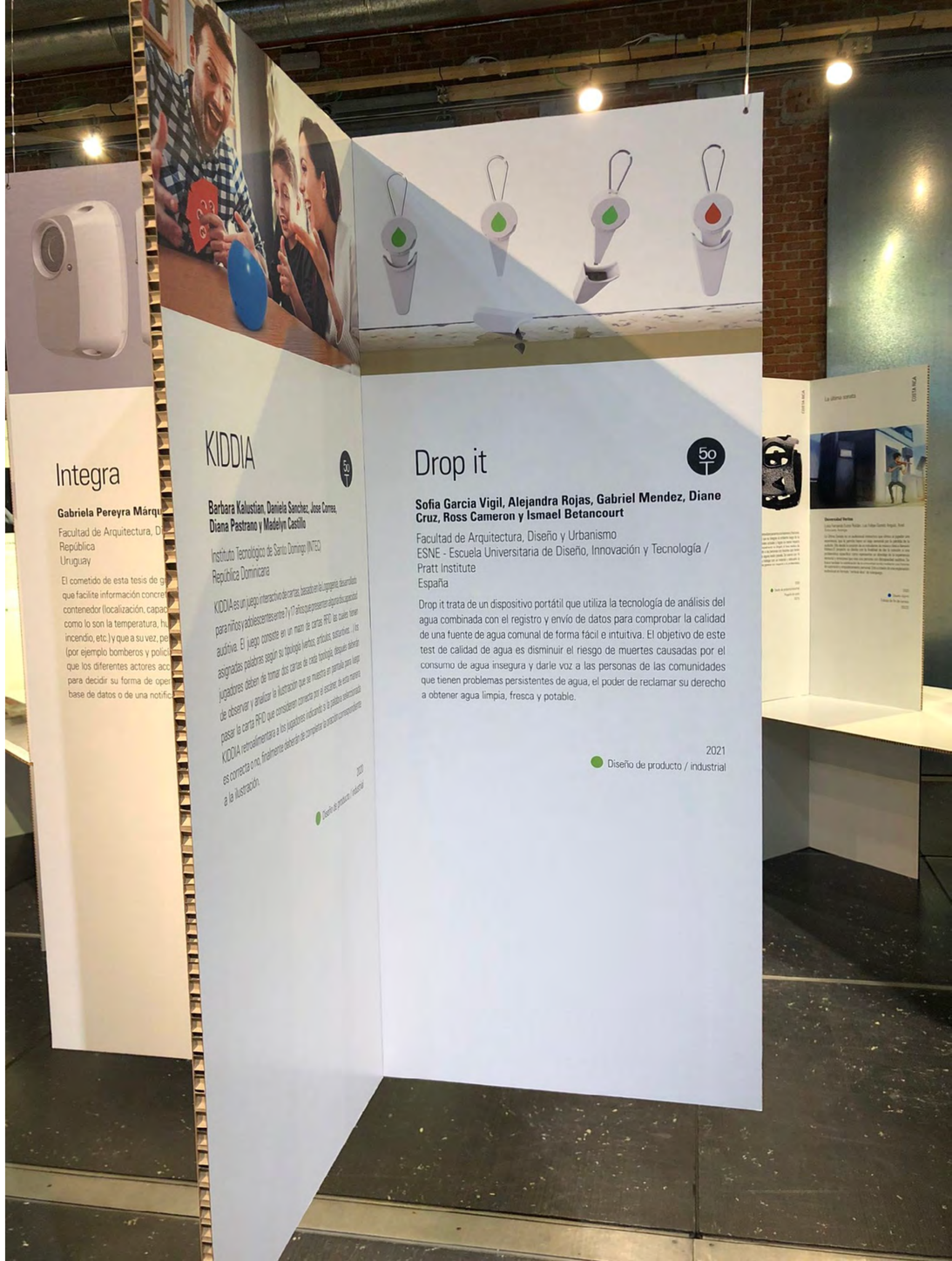
The overall goal of these markers and the entire DropIt project is to grow the capacity of a community to **understand, evaluate and address water contamination cheaply and effectively.**

Featured project, BID 2021

Finalist & featured in the iF World Design Guide

Though still in development by the team, sponsored and aided by Socent Labo of Spain, Pratt Institute, EAPD and ESNE, DropIt was selected as a finalist for the iF Design Award and featured in the iF World Design Guide. DropIt was also selected to appear as a featured design in the Bienal Iberoamericana Diseño 50 Talents design exhibition in 2021, exhibited publicly in Madrid, Spain.

The team hopes to further develop DropIt and bring it to actual production as soon as possible. We hope sincerely that DropIt will be able to aid communities all over the world, and especially in two of our team members' home, Puerto Rico.



03 NarCount

Over-application of Narcan, especially at the expense of necessary CPR, can lead to negative outcomes for the patient and a traumatizing experience for the person attempting resuscitation. NarCount is a simple timer that attaches to the bottom of a single dose of Narcan (Naloxone) nasal spray, used to treat individuals experiencing an opioid overdose. The timer is activated by “pushing” or administering the Narcan and is designed to aid the patient in correct use by taking the guesswork out of dosing intervals and encouraging CPR over multiple concurrent doses of Narcan.

Potential sponsors:

EMERGENT®

opiant

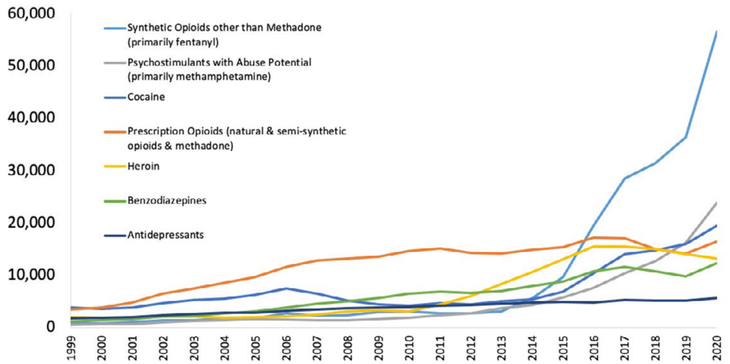
Opioids: an epidemic of death

Historic levels of addiction and overdose plague the US

Since the advent of the opioid crisis in the early 2000s, deaths from opioid (and other drug) overdoses have climbed steadily in the United States. Aside from awareness campaigns, treatment and recovery efforts, legislation and other measures, the introduction of Naloxone (brand name Narcan)—a medication that stops and reverses opioid overdose by binding to opioid receptors and blocking and reversing the effects of opioid drugs—has saved tens of thousands of lives.

Anyone can become addicted.
Anyone can overdose.

Figure 2. National Drug-Involved Overdose Deaths*, Number Among All Ages, 1999-2020



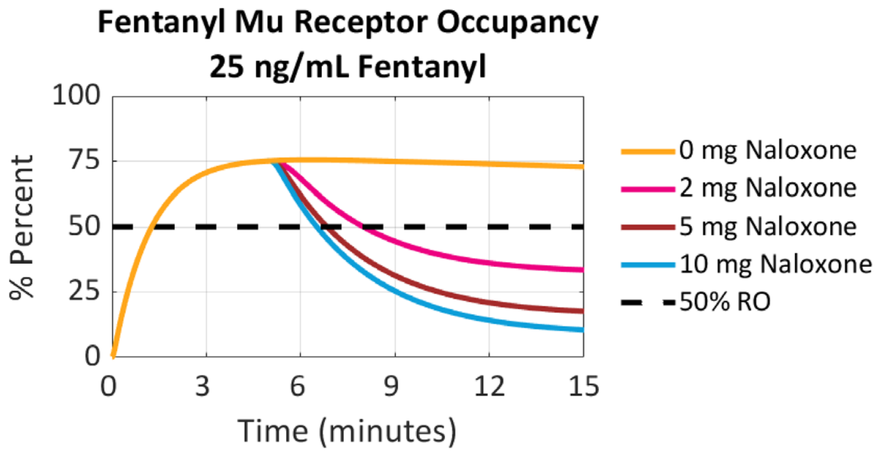
*Includes deaths with underlying causes of unintentional drug poisoning (X40–X44), suicide drug poisoning (X60–X64), homicide drug poisoning (X85), or drug poisoning of undetermined intent (Y10–Y14), as coded in the International Classification of Diseases, 10th Revision. Source: Centers for Disease Control and Prevention, National Center for Health Statistics. Multiple Cause of Death 1999-2020 on CDC WONDER Online Database, released 12/2021.

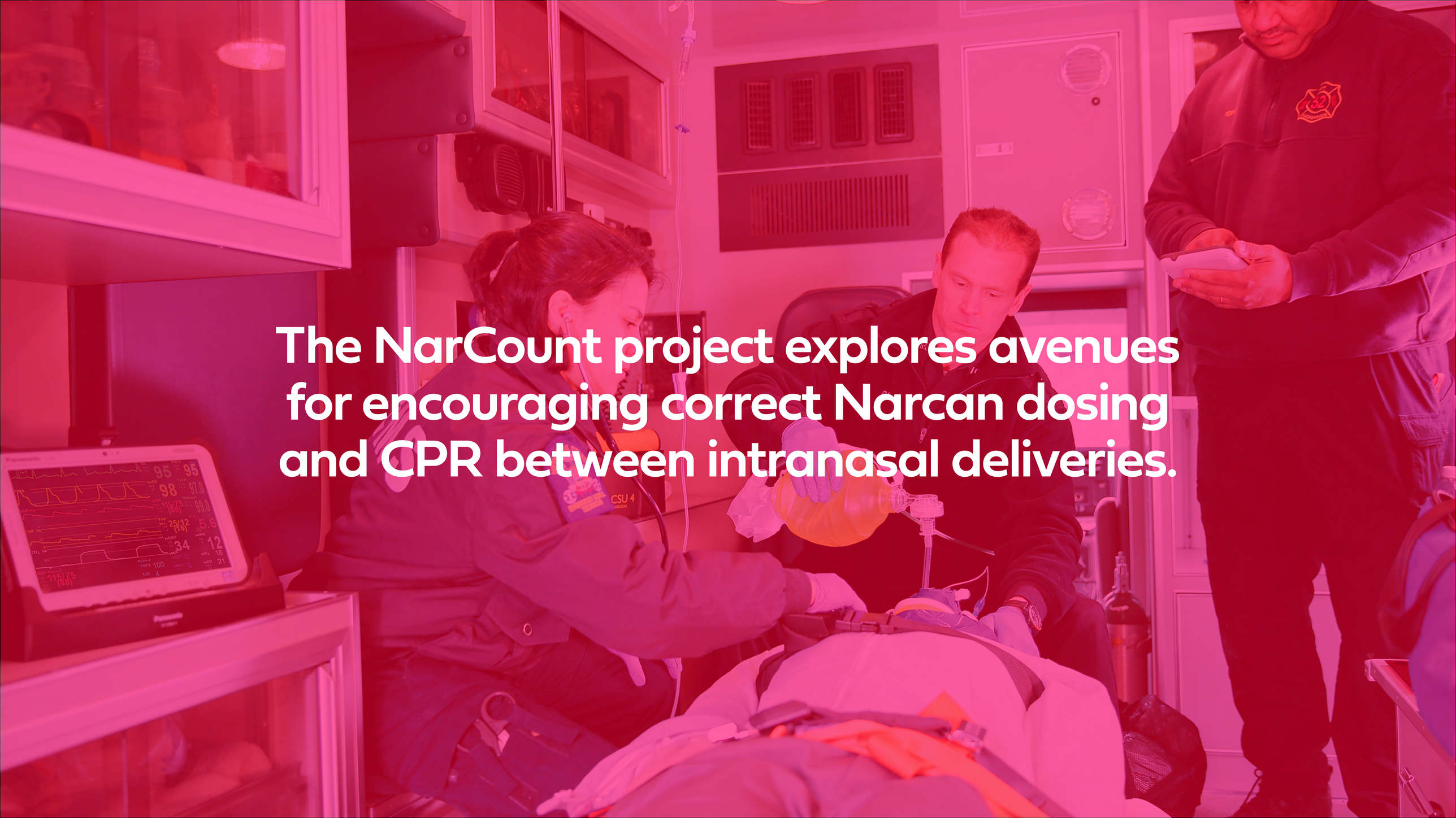
An imperfect solution

Educators say that rescuers rely too much on concurrent Narcan dosing and not enough on CPR & resuscitation. How can Narcan be correctly dosed without relying on phone timers or cumbersome tools?

Naloxone can save lives, but user error gets in the way

As the chart below indicates, Narcan is loses effectiveness at larger, single doses, and is more effective in smaller doses administered over time. During an overdose, the single most important intervention is to re-establish normal respiration for the patient and keep them breathing and their heart pumping. While doses of Narcan can be administered every 2-3 minutes, responders are encouraged to focus primarily on resuscitating the patient while the Narcan takes effect. An excess of Narcan in the system can also lead to immediate withdrawal effects in more seasoned addicts, which can cause its own set of severe symptoms that can often lead to health complications.

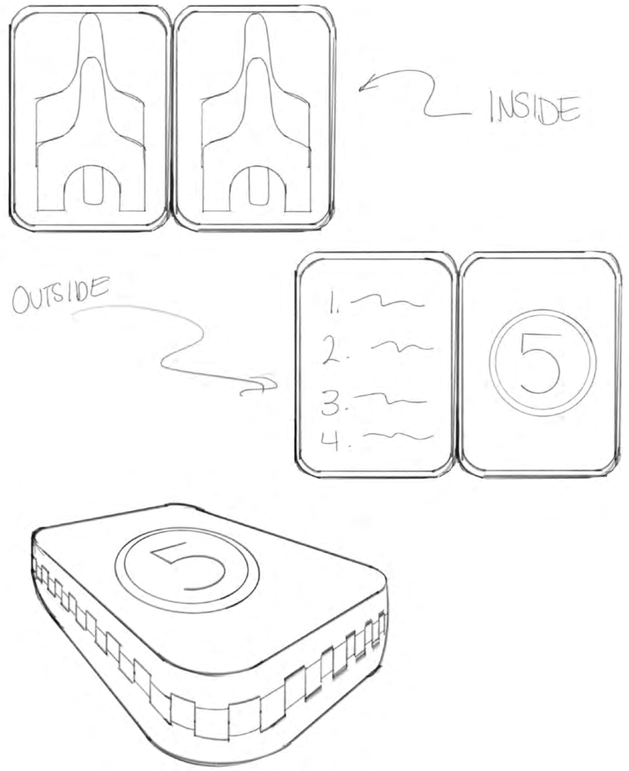


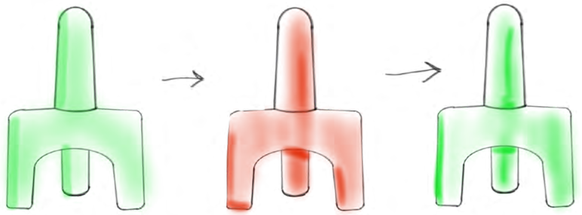


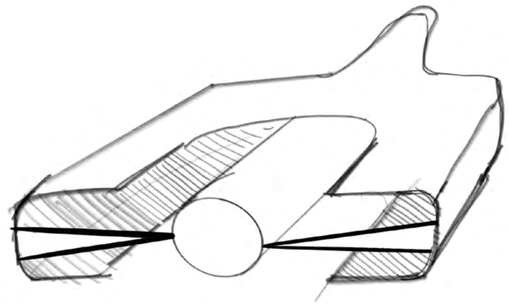
The NarCount project explores avenues for encouraging correct Narcan dosing and CPR between intranasal deliveries.

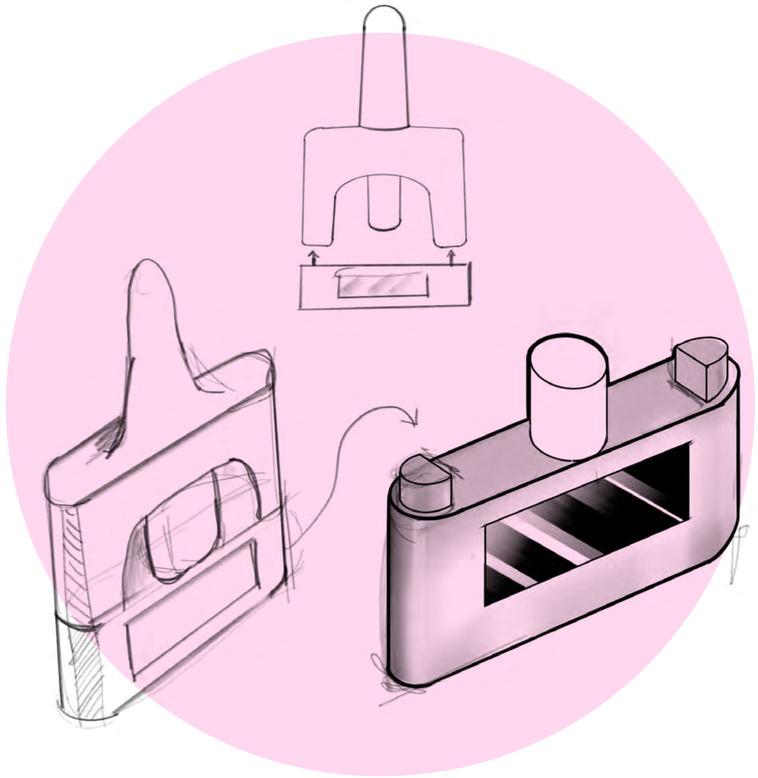
How can Narcan use be improved?

These sketches explore options such as a case for Narcan that includes a timer and a re-imagined color-changing body for the applicator itself. A **separate, small, attachable timer** was chosen for its feasibility and ease of production.



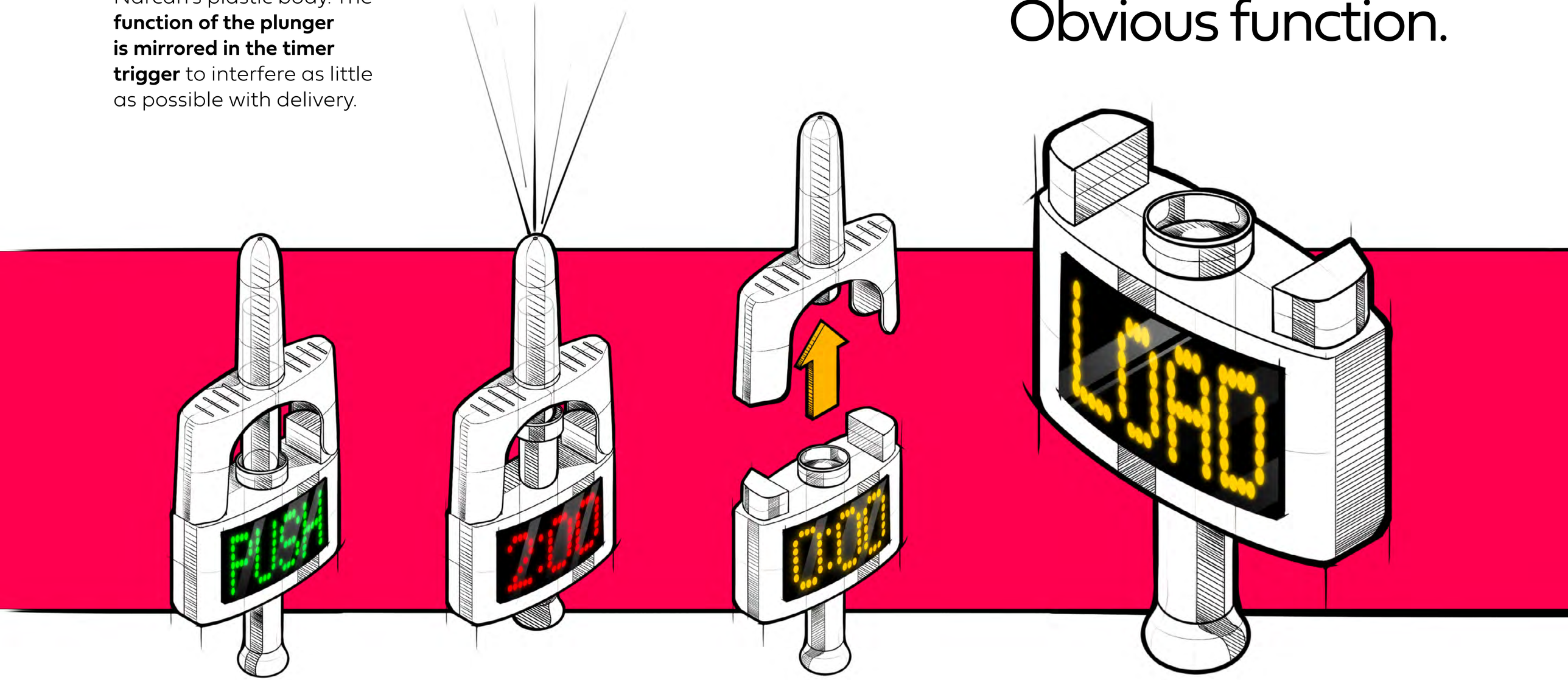




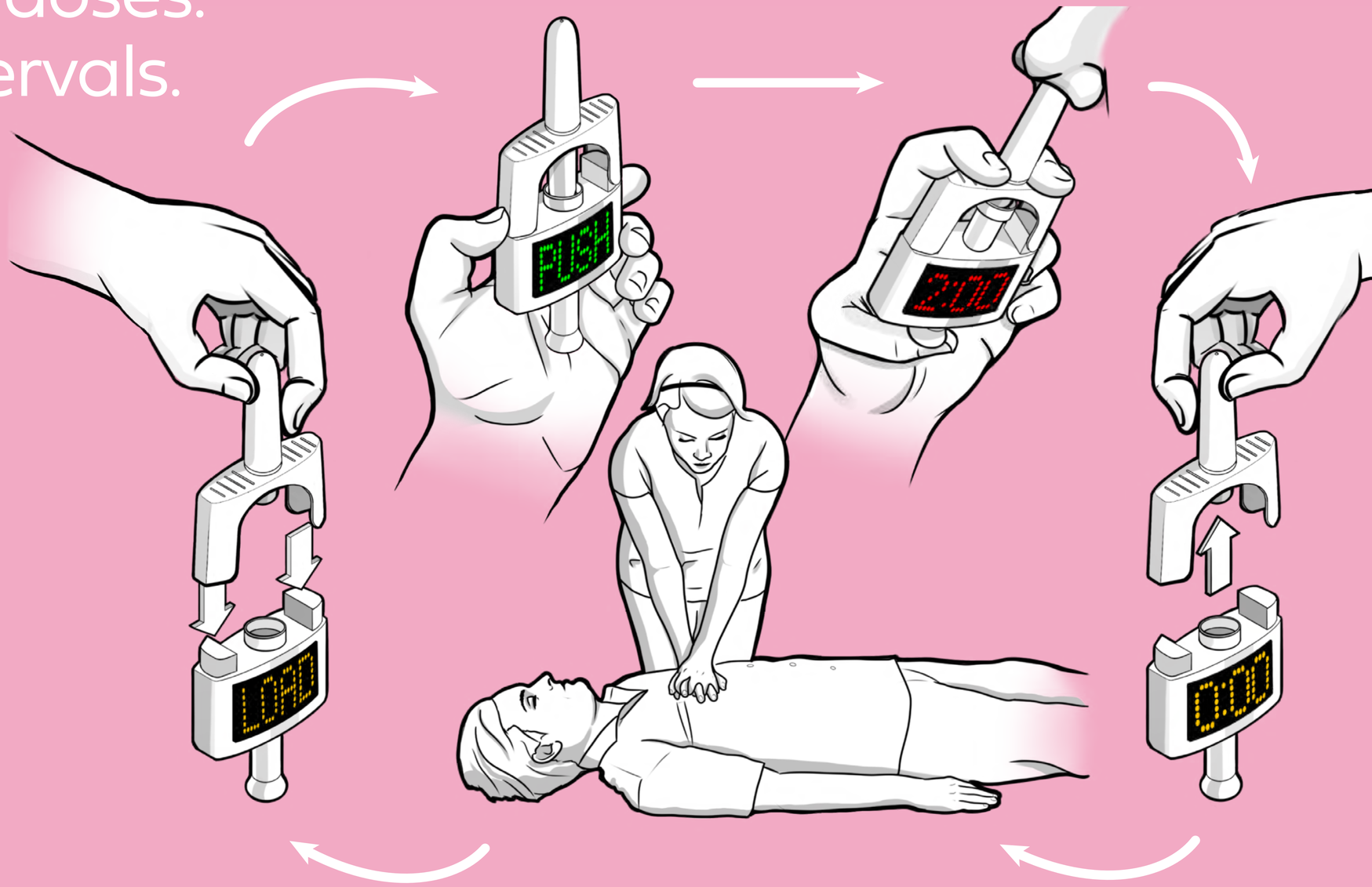


Continuous form. Obvious function.

The timer's profile closely matches that of the Narcan's plastic body. The **function of the plunger is mirrored in the timer trigger** to interfere as little as possible with delivery.



Precisely timed doses. Proper CPR intervals.



NarCount allows a rescuer to **accurately administer Narcan in correct intervals**, relying on the timer to indicate when another dose should be given so proper attention can be given to resuscitating the patient using CPR or ventilation with a bag ventilator.

Step 1

An individual 4mg dose is loaded onto the NarCount timer, fitting snugly onto the top mounts.

Step 2

Simple pressure-activated sensors on the exterior of the mounts trigger the device into a "ready" state.

Step 3

The Narcan is administered into the nostril of the overdose victim and the 2 minute timer begins. The plunger extension is locked in position until the time has elapsed.

Step 3 (cont'd)

The timer readout changes gradually from red to green over the course of the time span as a secondary indication that an additional dose is ready to be administered.

Step 4

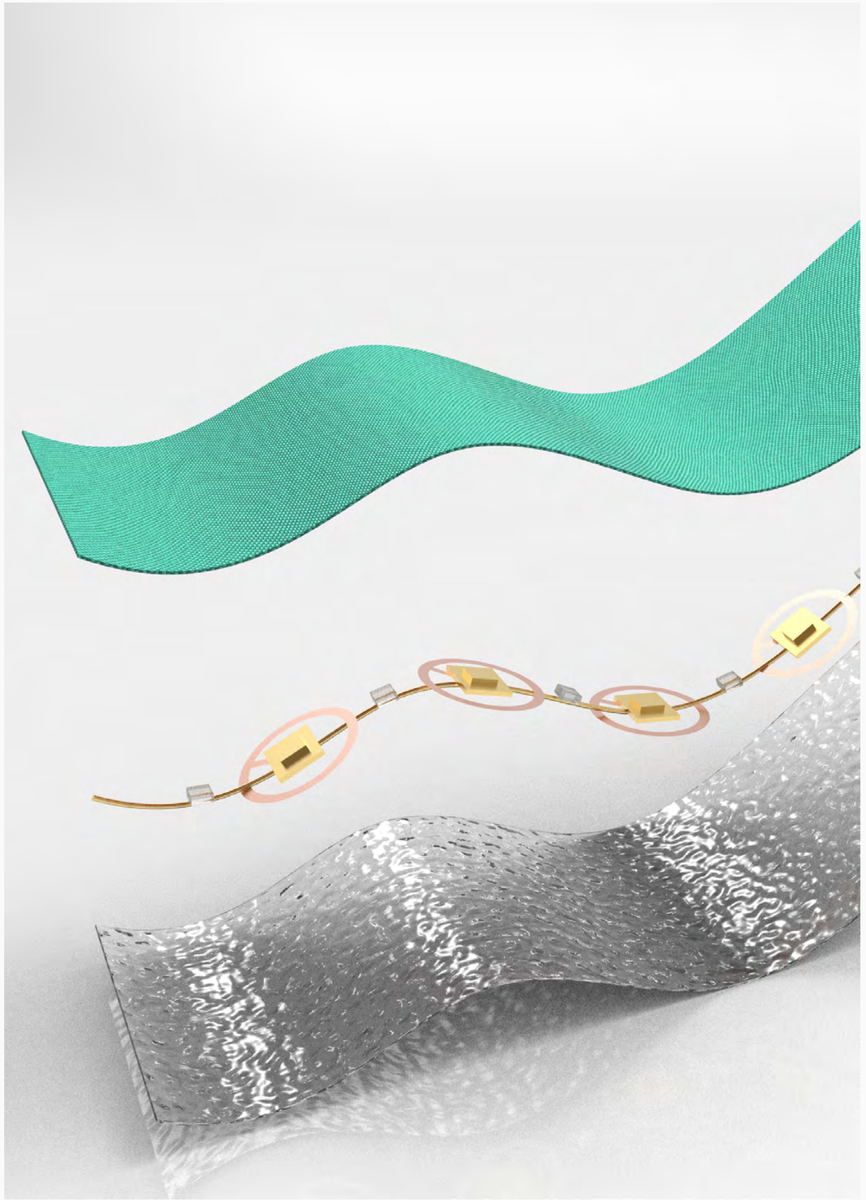
The plunger unlocks and the timer readout flashes "load" in yellow to indicate a new dose of Narcan needs to be loaded onto the mounts. The process is repeated until the victim is revived.

04 Minder

Minder is a series of body tapes designed to aid in prospective memory and alleviate habituation as it relates to our current ecosystem of audio-visual reminders, alerts and notifications. By combining strong sensory cues with emotional connections to the users with light, heat, vibration and constriction, Minder allows a user to customize alerts that have a stronger emotional impact, thereby allowing them to form stronger memory cues and create more effective reminders.

Potential producers:

fitbit GARMIN



Ignore, Snooze and Silence

Our omnipresent ecosystem of alerts and alarms can often lead to rapid habituation and loss of meaningful impact

Though reminders and alerts can be helpful to some, many people (especially those who struggle with prospective memory) find that the more alerts they have, the less effective they become. This is due to a process known as habituation, wherein a stimuli that is presented to the brain repeatedly becomes less effective over time as the individual becomes used to it. In many areas of life, this phenomenon can be a benefit, especially in the establishment of healthy habits and routines. When it comes to memory aids, however, it often leads us to ignore alerts, snooze alarms, and become blinded to our own efforts to circumvent forgetfulness.

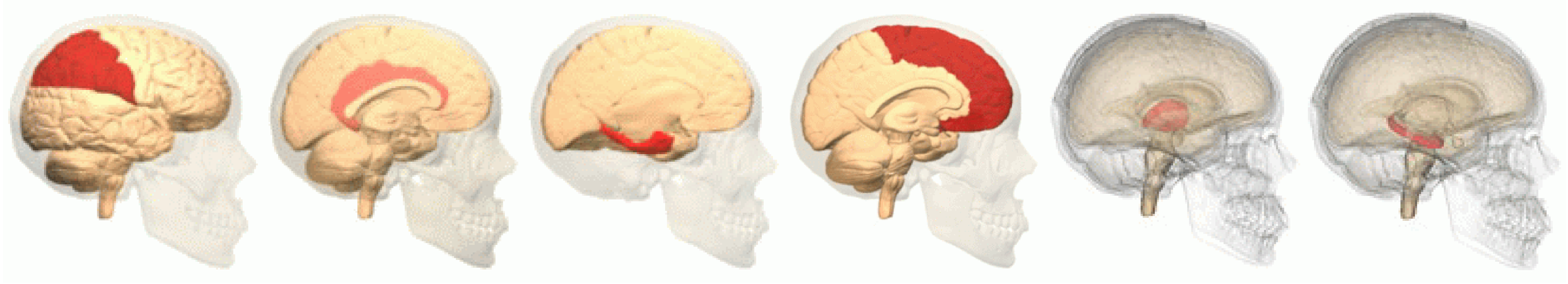
Why do the systems we utilize to remind us fail? What causes us to become so used to alerts that we ignore them as a matter of course?

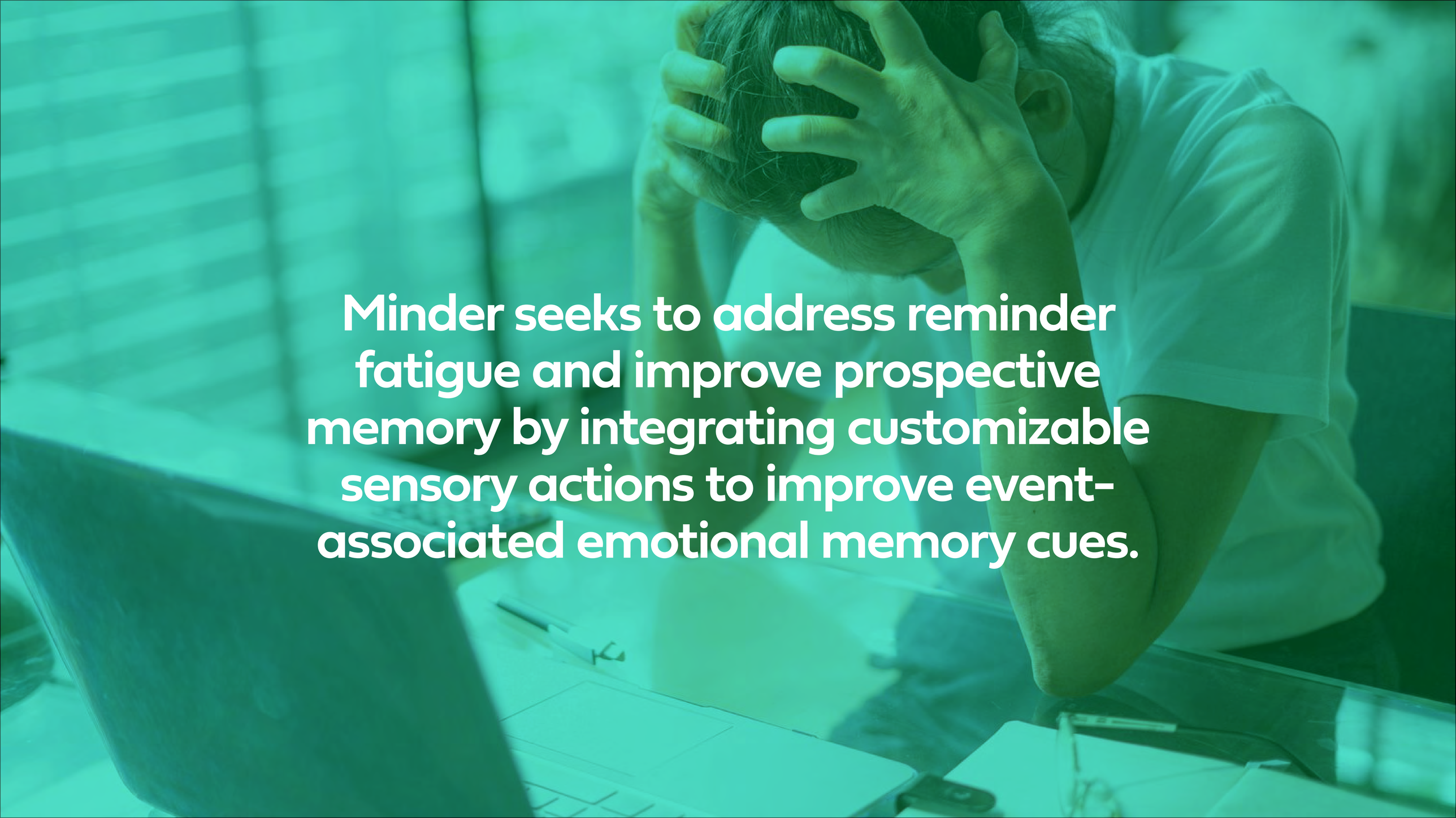
Prospective memory, brain hog

Many areas of the brain are used to process recall of the actions, tasks, events and to-dos in daily life

How can we effectively increase emotionally associated memory cue utilization in a system of alerts and reminders?

Prospective memory (essentially, memory for intentions, or, remembering to remember a previously planned action or task in relation to an action or task currently being carried out) involves many distinct regions of the brain and is tied to a multitude of external and internal stimuli. Prospective memory is crucial to our lives, especially in a technologically advancing society in which keeping appointments, sending communications at given times, and remembering what you are supposed to do are at the root of much of daily life. Those with prospective memory issues often experience difficulty with routine and consistency, keeping up with personal relationships, organization, efficient use of time, and other work- and life-related tasks. In less severe manifestations, prospective memory difficulties can lead to "forgetfulness," delay and frustration in daily life, along with a certain level of "resistance" to solutions designed to help, such as alarms, notifications, reminders and alerts in their standard forms.

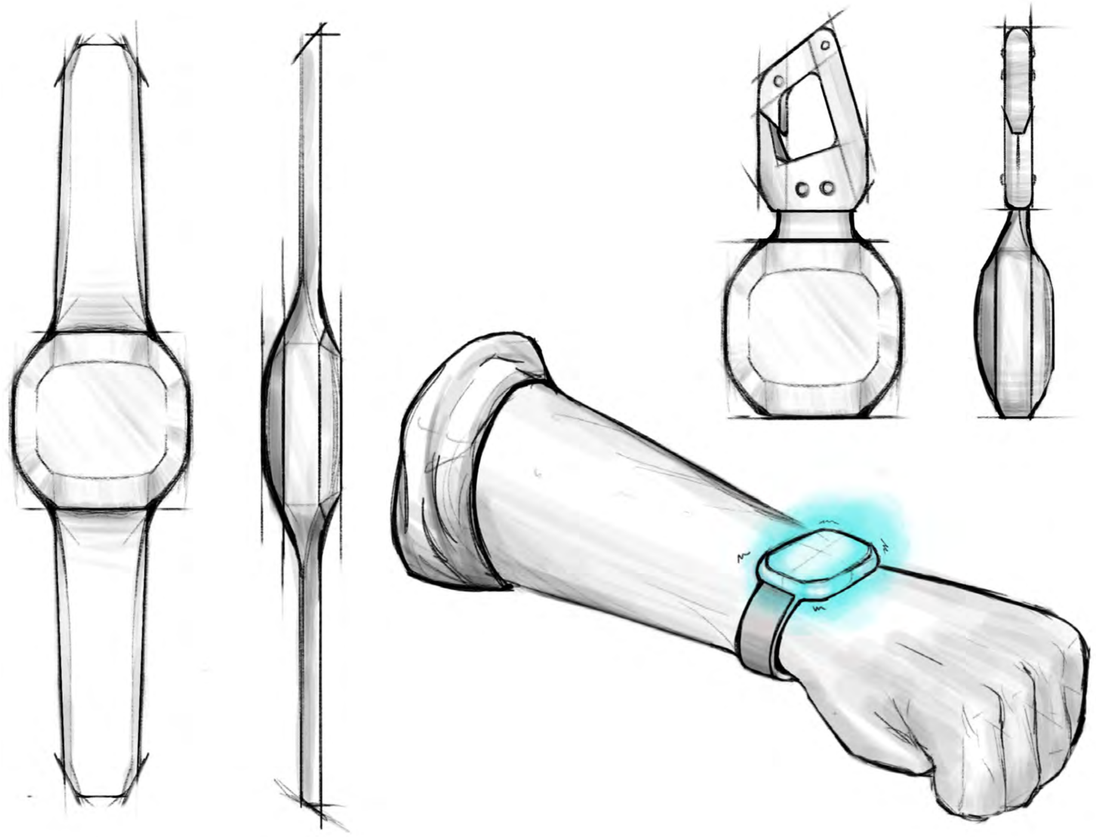


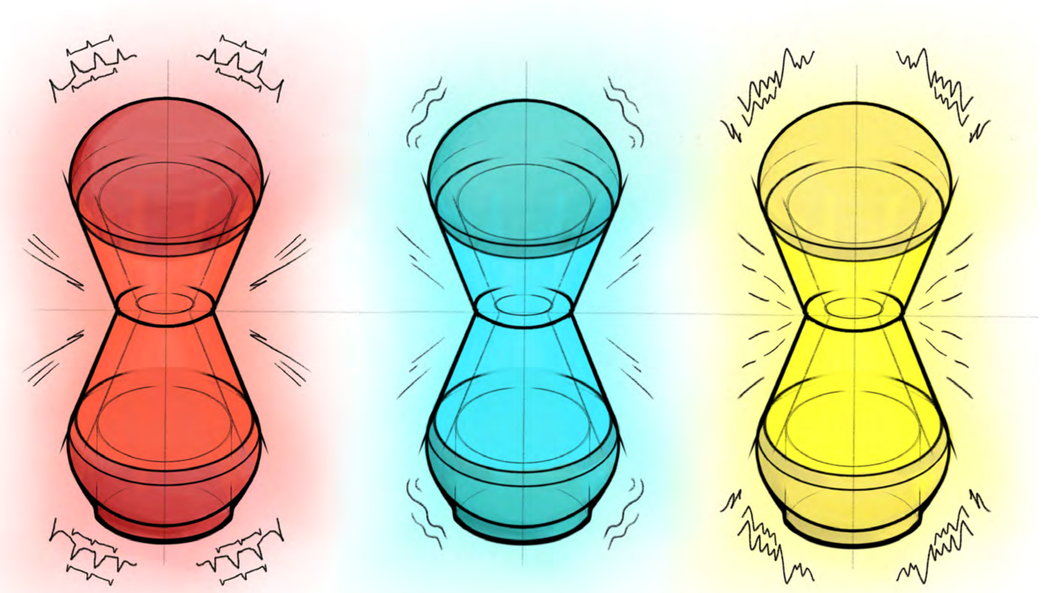


Minder seeks to address reminder fatigue and improve prospective memory by integrating customizable sensory actions to improve event-associated emotional memory cues.

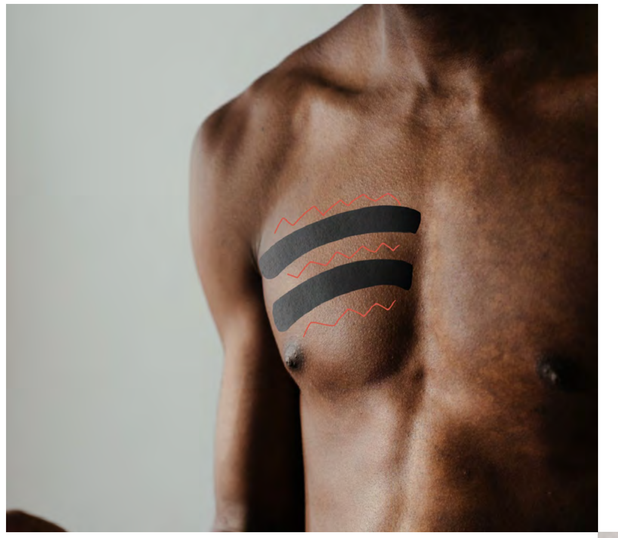
Beyond audiovisuals

Moving away from text-on-screen alerts





These early concept sketches seek a method for **bringing alerts away from the smart phone** (a significant contributing factor to reminder fatigue and habituation) and **in to our physical spaces.** Explorations of including sensory input also began at this stage, particularly the use of light, vibration and sound.



Bringing reminders to the body itself

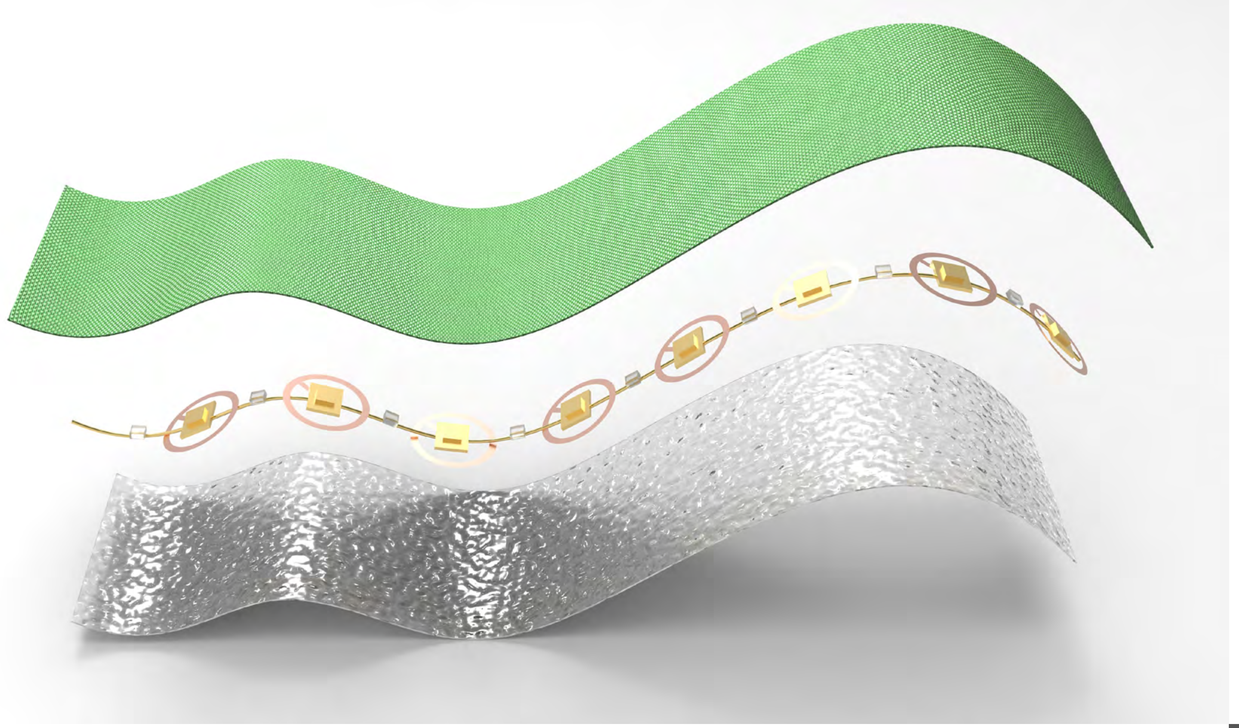
My research found that **prospective memory recall is most effective when the brain forms a strong event-associated emotional memory cue.** In other words, you remember best that which you have had a meaningful emotional reaction to. Because the most important and useful manifestations of prospective memory often lack emotional weight (e.g. every day routine, personal hygiene, chores, work tasks, etc.), **Minder presents a pathway for introducing emotionally meaningful sensory input during cue formation**, as predetermined by the user.

The Minder product suite **combines customizable biomechanical vibration-, pressure-, warmth- and light-based reminders** with a comfortable, breathable, stick-anywhere **body tape.** The tape and its associated app allow the user to experience a reminder in a meaningful place on the body, triggering and incorporating previous emotional-sensory associations that the user determines.

Prototyping & user testing

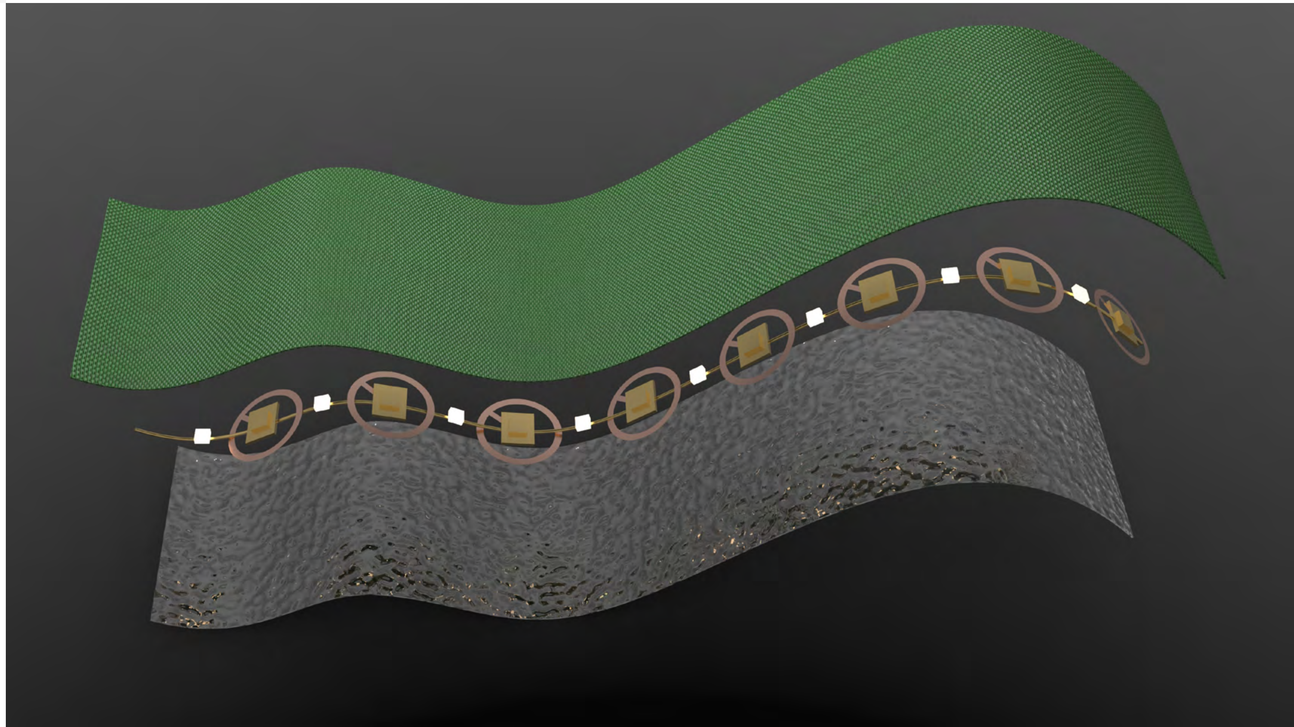
On-body explorations of kinesiology tape-based prototypes

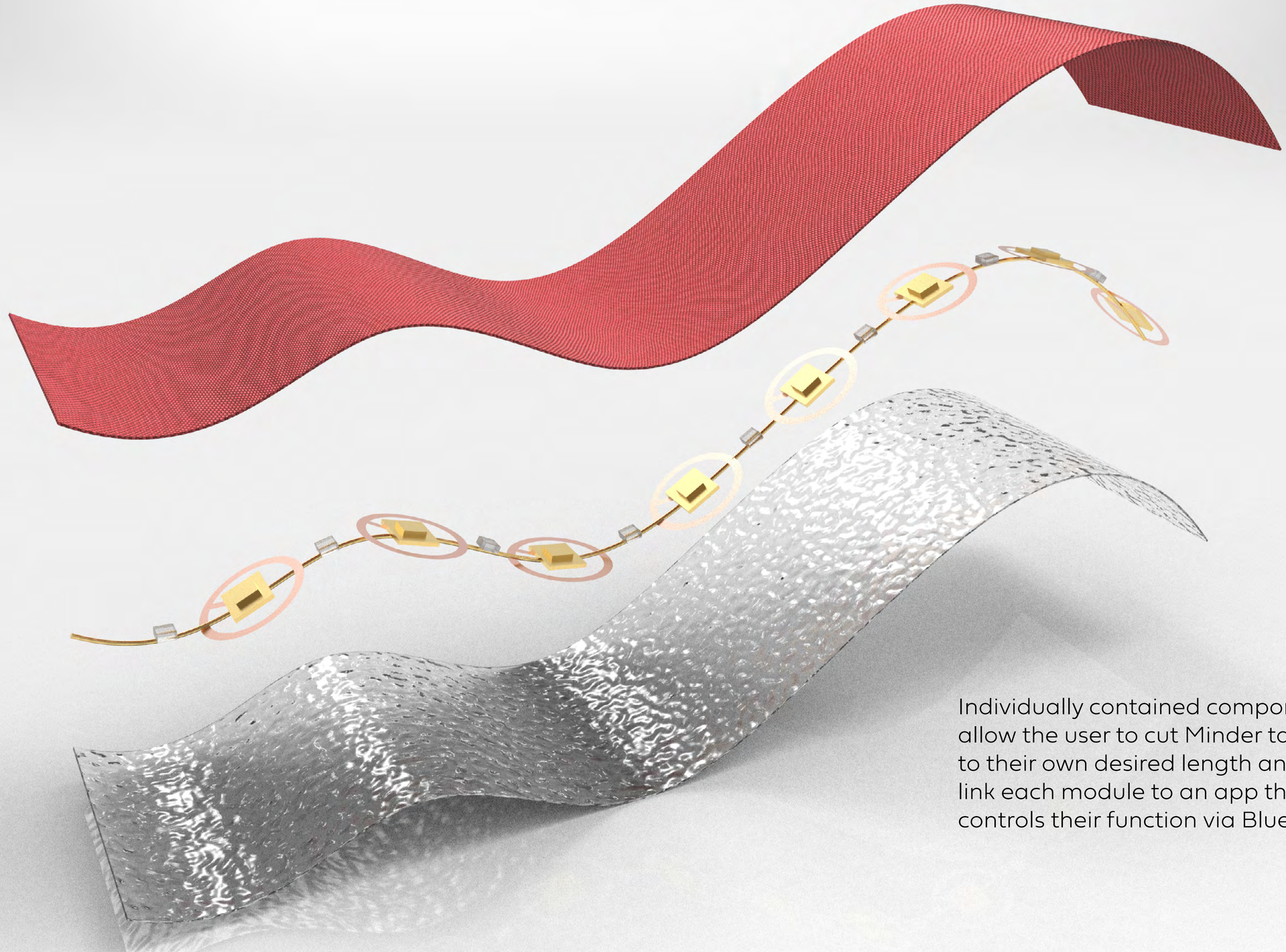
In-situ user testing was done to insure that a **body tape with** different sizes of **embedded components could be effective**, especially on different body and skin types.



Minder tapes contain a combination of vibration micro-motors, LEDS, heat-producing coils, and constricting wires paired with Bluetooth transponders and micro PCBs to produce light, heat, vibration and constriction stimuli.

Each tape section contains these elements and a micro-battery that is powered by utilizing the natural electrolysis that occurs within human sweat (which is largely saline. Various versions of all these technologies are emerging now, but have all been proven to be feasible in a medical context.





Individually contained components allow the user to cut Minder tape to their own desired length and link each module to an app that controls their function via Bluetooth.

05 LAYR

LAYR is a highly functional, carefully hand-crafted set of shoe brushes designed to enable the highest degree of care for those who are ready to get serious about caring for their shoes.

A re-imagining of a bespoke shoe caddy set, these brushes are created using exotic hardwoods, premium acrylic and a variety of specialty bristles. Layr brushes are for use on all types of shoes, though the set is designed with sneakers in mind. The LAYR project was sponsored by Braun Brush Co. of Albertson, NY, who provided bristles for the final prototypes.

In collaboration with:

braunbrush®

For die-hard sneaker freaks.

You *could* put them on a pedestal. Or you could **wear** them.

For those who love, obsess over and collect sneakers, proper shoe care can be difficult. Most readily available shoe care products on the market are exclusively geared towards the care and maintenance of dress shoes and are not suitable for sneakers. Not only are the polishes and creams included not fit for the multitude of materials (often colored) on a typical sneaker, but the soft brushes are often not sufficient for cleaning grime off of the multi-layered materials stitchings found on many sneakers. This leads many sneaker collectors and enthusiasts to keep their shoes on display or in boxes, for fear of ruining them by wearing them.

Why keep sneakers locked away and on display when, with the proper tools, they could be kept clean, beautiful, and able to be worn and enjoyed?

Inspired by the 1970s classics

How can a brush capture the bold color choices, minimal aesthetics and style with a nod to lightness and speed these sneakers are known for?

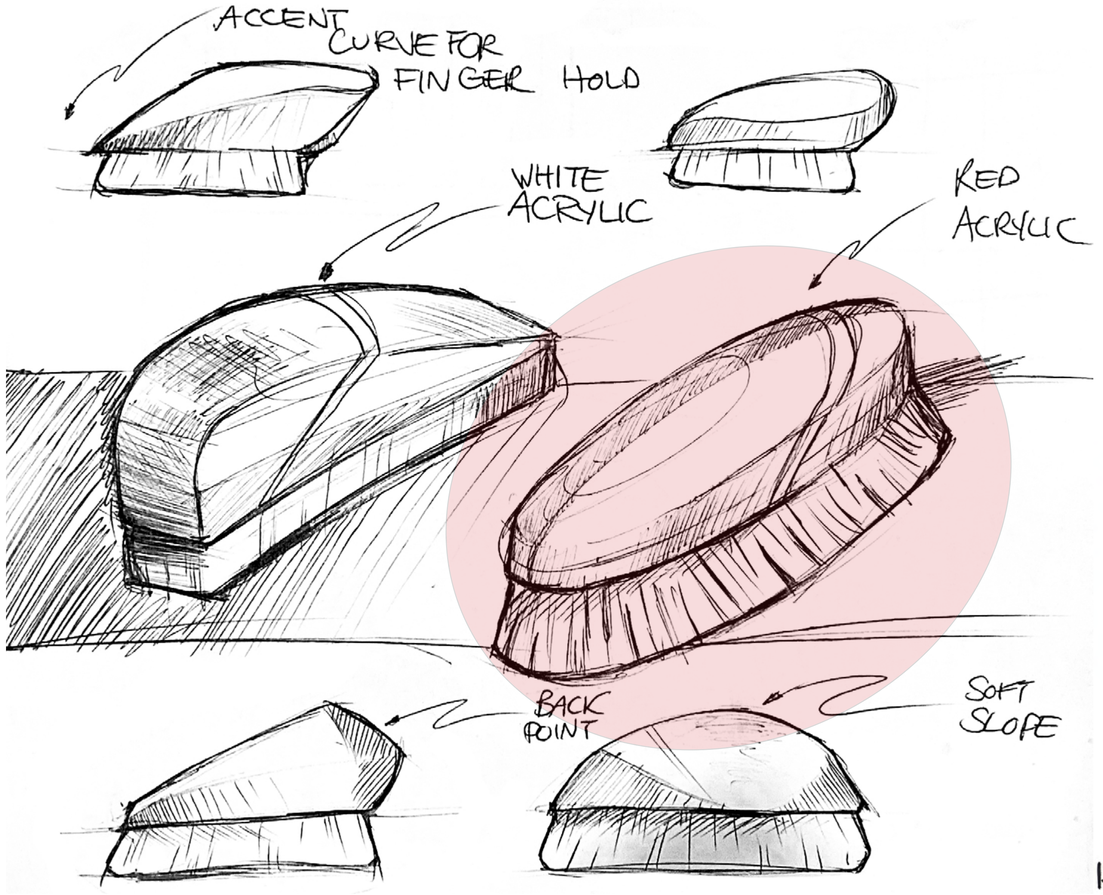
A look back on an era of clean lines and pure performance.

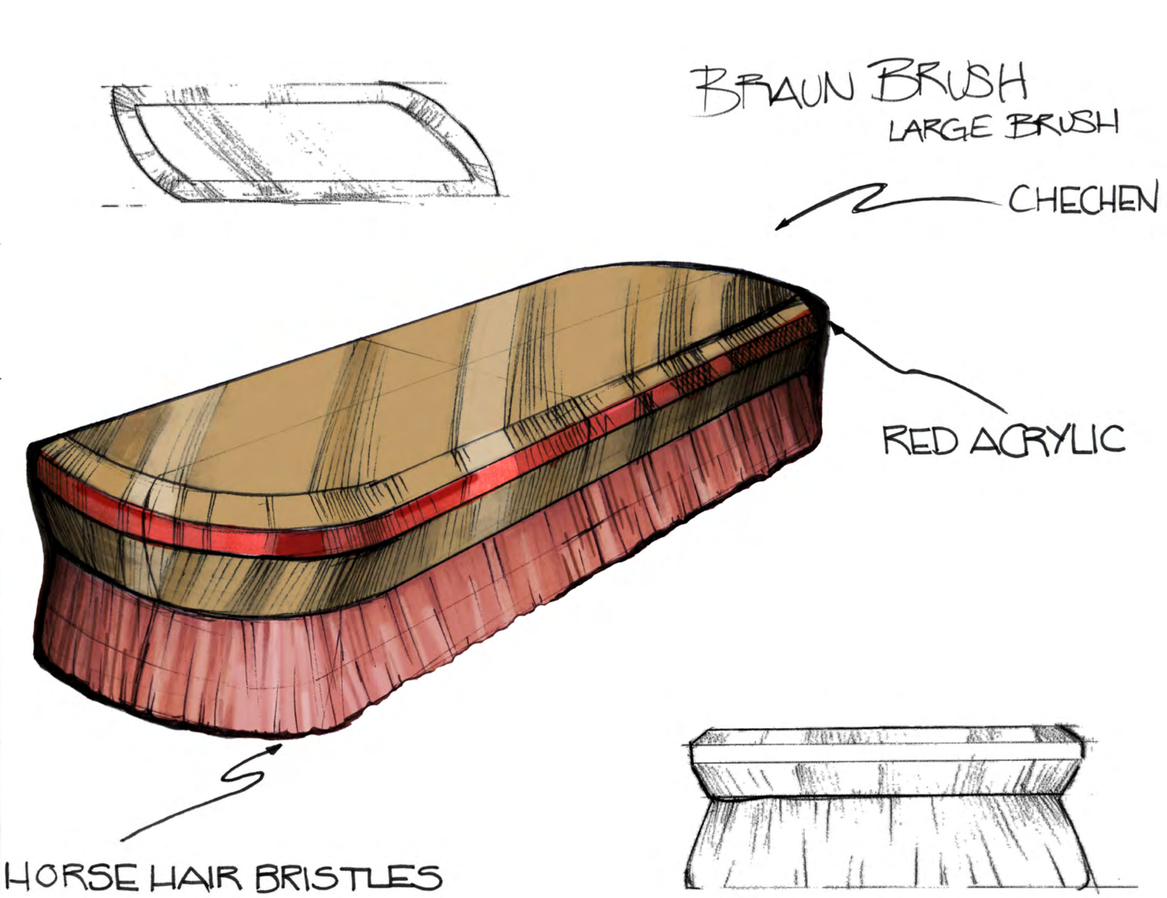
The brush forms and details present in the Layr brush set took heavy aesthetic inspiration from classic sneakers from popular brands of the 1970s and 80s, many of which are considered “standard sneakers” today. The curves of the body borrow heavily from the striping that appears on many of these shoes, and the marriage of several, simple materials inspired the combination of exotic hardwood and acrylic. Color combinations also reflect the bold primaries of this era of footwear.

LAYR is a bespoke sneaker brush set designed to reflect both the aesthetic of classic sneakers and the care and attention owners put in to their collections.

Concept sketching & form exploration

Simple, ergonomically-conscious handle shapes in 3 sizes





These concept renders were done to work out **shape and possible bristle length.** These renders include some of the exotic hardwoods that were used in the final model making process.

Brushes you'll actually want to use, for shoes you actually want to wear

Bespoke craftsmanship.
Premium materials.

For these models, **high-quality exotic hardwoods, premium 1/4" and 1/8" acrylic, craft finishes and production-quality bristles** were used to create high fidelity final models that feel incredible in the hand and will clean a shoe without shedding or staining.

The first mini detail bush is made from **Gaboon ebony, fluorescent green acrylic**, and stiff black-and-white **tampiko bristles.**

Mini detail brush number two is crafted from premium **Sapele mahogany**, super-thick translucent **white acrylic**, and slightly softer **red tampiko bristles.**

The medium brush is made of high-grade **Paduak wood** (in its natural color with no dye or stain), **canary yellow acrylic**, and a mixed **natural and synthetic fiber**, extra-stiff bristle

This brush is the workhorse of the group, allowing you to clean and shine a whole sneaker in a relatively short period of time. The accent-curved shape **feels completely natural in the hand** and allows you to exert forward force with ease.

The first large brush was created from a stunning piece of **Claro walnut, playful teal acrylic**, and top-quality, all natural **horse hair bristles.** The satin finish and satisfying shape make this brush an absolute joy to hold.

The second large brush was made from a wonderfully unique piece of **Chechen wood, primary red acrylic,** and firm but **soft red tampiko bristles**. Its significant heft adds substance to its motion.

06 Loon

Loon is a spoon rest that brings together ergonomics, function and biomimicry with a delicate and bright aesthetic that fits any kitchen décor. The form echoes the loon, mid-call. This water bird is famous for its soft, hauntingly beautiful call, incorporated into the design through accented gentle curves and an elegant elongated handle. Slipcast in both porcelain (clear glaze) and low-fire stoneware (yellow glaze), this small ceramic piece balances both delicacy and durability.

Potential producers:

LE CREUSET®

west elm

An evocation of avian elegance

The haunting call of the loon and its gentle S-curved neck inspired the form of this delicate kitchen accessory

Loons are a pervasive water bird that live in many areas in the United States, Canada and some parts of the arctic circle. Their eerie call has inspired folklore and myth for centuries, featuring in many indigenous American cultures. When swimming, they cut a graceful silhouette against the water. When calling, their necks are thrown back in a continuous curve with their body. These two shapes combined and simplified into a single shape are the primary form inspirations for Loon.

Simplifying natural beauty to marry aesthetics and function in the kitchen space

Loon is a simple, elegant spoon rest that keeps your counters clean and serves as a beautiful decorative element in any kitchen space.

Slipcasting process

(and those we lost along the way)


OFF
Lo
Lo
Hi
Hi
OFF
Lo
Hi
2
8
4
6
Med
Cooktop On
Bake
Broil
Convect
Keep Warm
AquaLift Self Clean
6:29
Start
Cancel
hold 3 sec
Temp/Time
Cook Time
Start Time
Clock
Timer Set/Off
Oven Light
Whirlpool
OFF
Lo
Hi
2
8
4
6
Med
OFF
Lo
Lo
Hi
Hi
Warm Zone On/Off
Hot Surface

Available in both natural clear-glazed porcelain and a vibrant, warm yellow, Loon fits in with the aesthetic of nearly any kitchen, works wonderfully and looks even better.

Made of durable glazed porcelain, Loon can be wiped clean, washed by hand or placed in the dishwasher. Its smooth, faceted surface ensures that no food residue remains on the surface after cleaning.

07

Pascal

The Pascal, a modern reinterpretation of the “Rascal-style” mobility scooter, is designed to give handicapped, disabled and mobility-impaired people a scooter option that places an equal emphasis on aesthetics, functionality and user friendliness. This project, designed as part of a General Motors sponsored transportation studio and using proprietary, cutting-edge electric motor technology from GM, was largely inspired by my own mother’s struggles with mobility.

In collaboration with:

general motors

A personal mobility story

Or, “why my mother refuses to use a mobility scooter”

After surviving surgery to remove a brain tumor, my mother was left with several lasting handicaps, including vision, balance and coordination impairments. She walks with a cane and has difficulty navigating her often topographically challenging environment. The concept for the Pascal was born primarily out of my desire to understand both my mother’s experience with mobility challenges and her unwillingness to use a mobility scooter. Through many interviews and “walkabouts” with my mother, I was able to gain clarity on the obstacles she struggles with and her resistance to acquiring a scooter.

What about the current market for mobility scooters drives users away toward less effective, more labor-intensive options such as wheel chairs, walkers and canes?

The weird, the bad and the ugly

What kind of mobility vehicle options would appeal to a broader, more style-conscious group of users? What “geriatric” elements can be removed from current offerings?

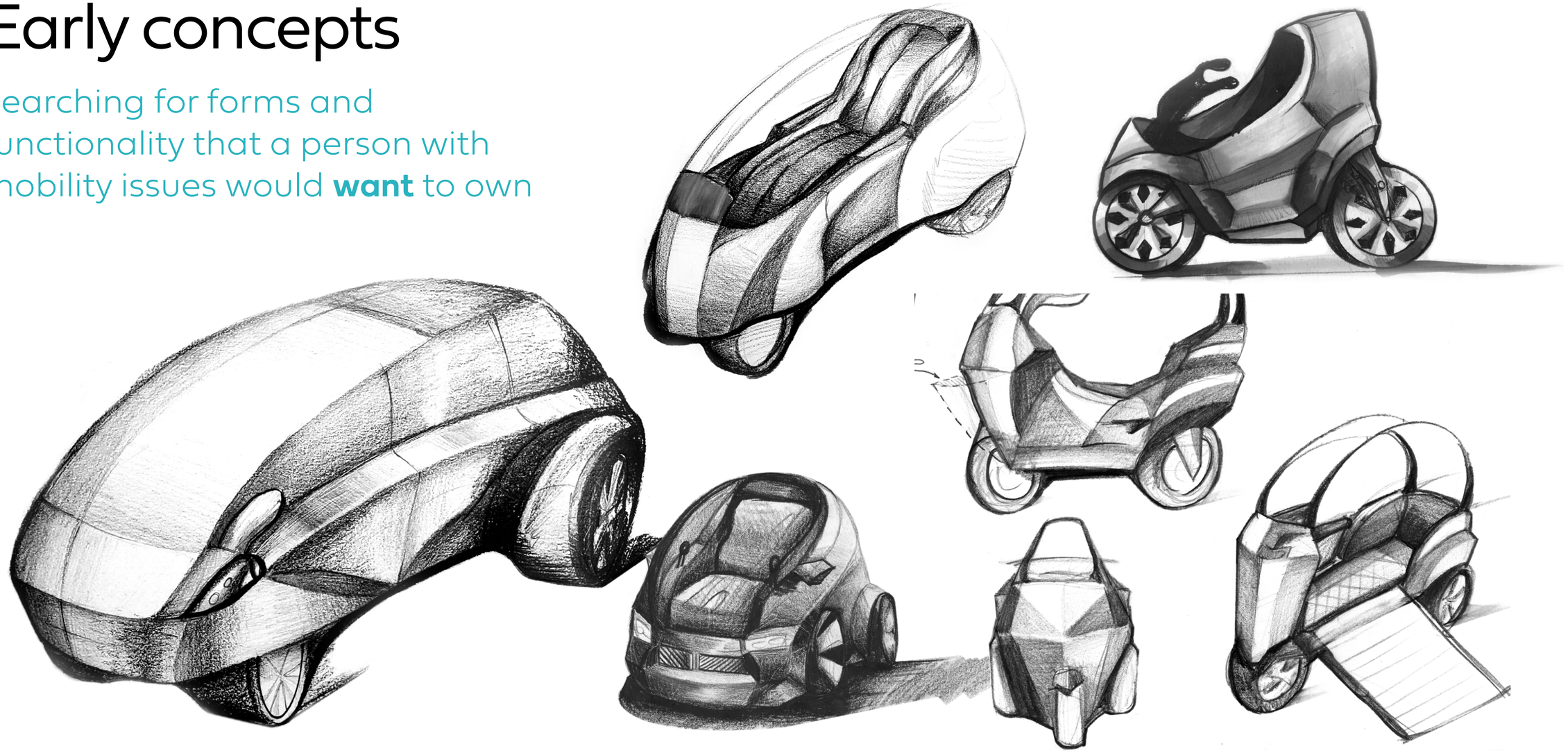
Consumers complain that the majority of scooter offerings on the market lack aesthetics and style

Thorough market research was conducted and hundreds of online reviews were synthesized into a primary list of complaints about today’s mobility scooter offerings. Lack of useful features, storage, ease of entry/exit, ergonomics, and a poor turn radius were the primary complaints shared by many users. Topping the list of complaints was a distinct lack of aesthetics, style and color options. In the words of one user, “these scooters are just plain ugly.” Additionally, most scooters that attempt a higher degree of style end up tied exclusively to the aesthetics of 1940s and 50s automobiles. Though many who use them are seniors, this indicates a complete discounting of the many thousands of younger people with mobility impairments.

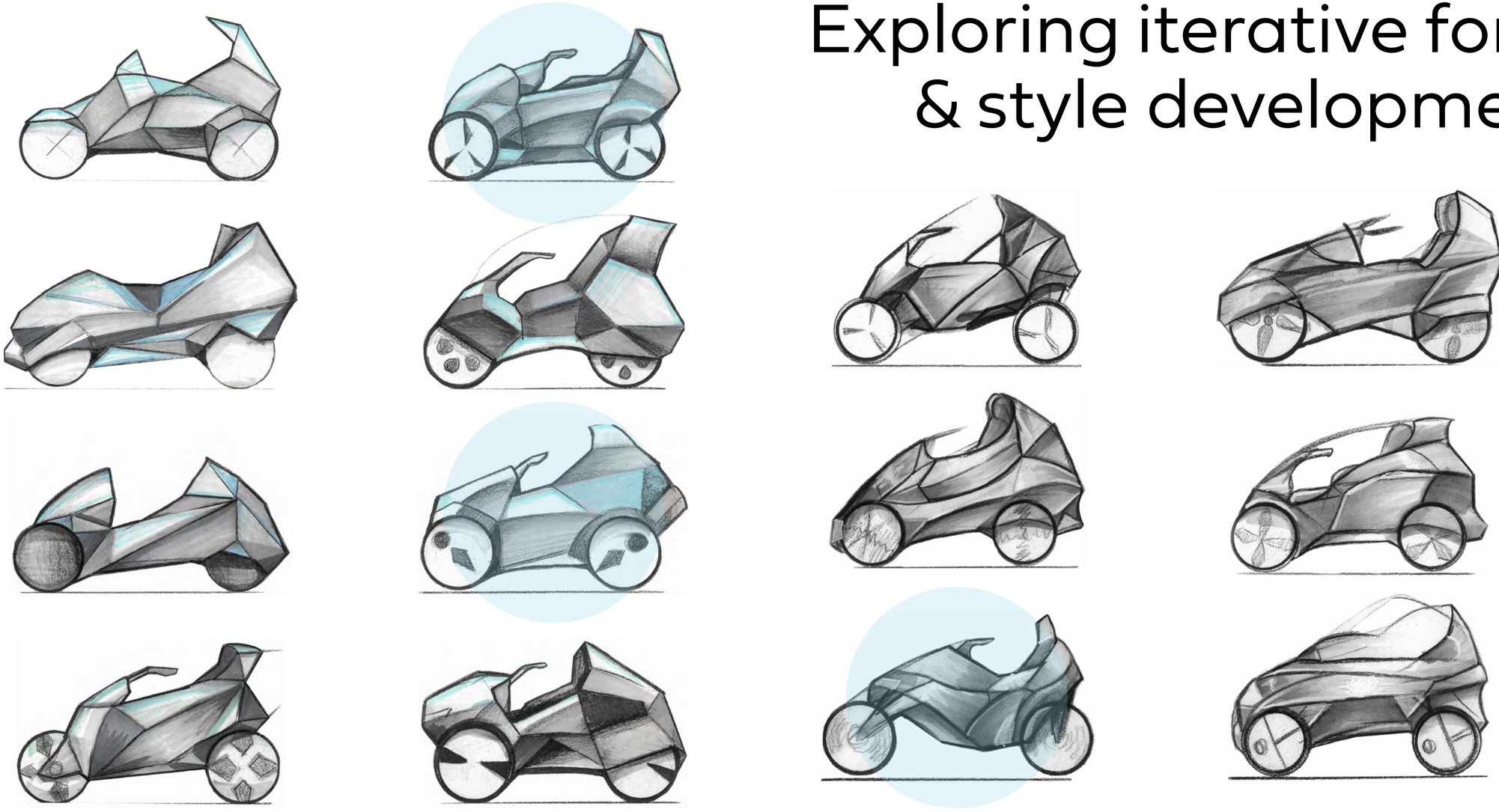
The Pascal turns a mundane medical device on its head and creates a personal vehicle that can be driven with confidence, shown off and cherished. The Pascal is a tool that the mobility-impaired can use to reclaim agency and replace shame and frustration with unapologetic self-expression.

Early concepts

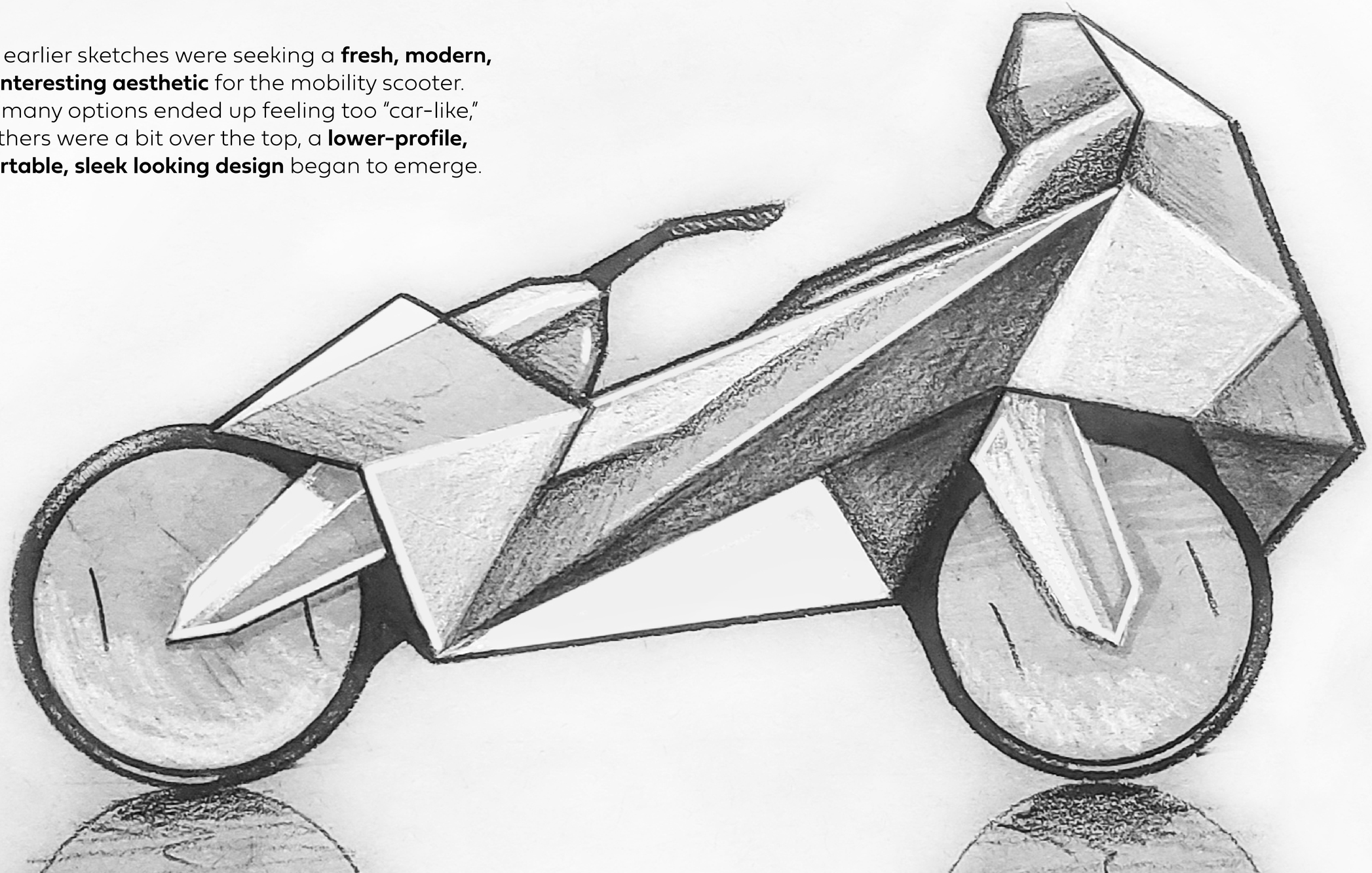
Searching for forms and functionality that a person with mobility issues would **want** to own



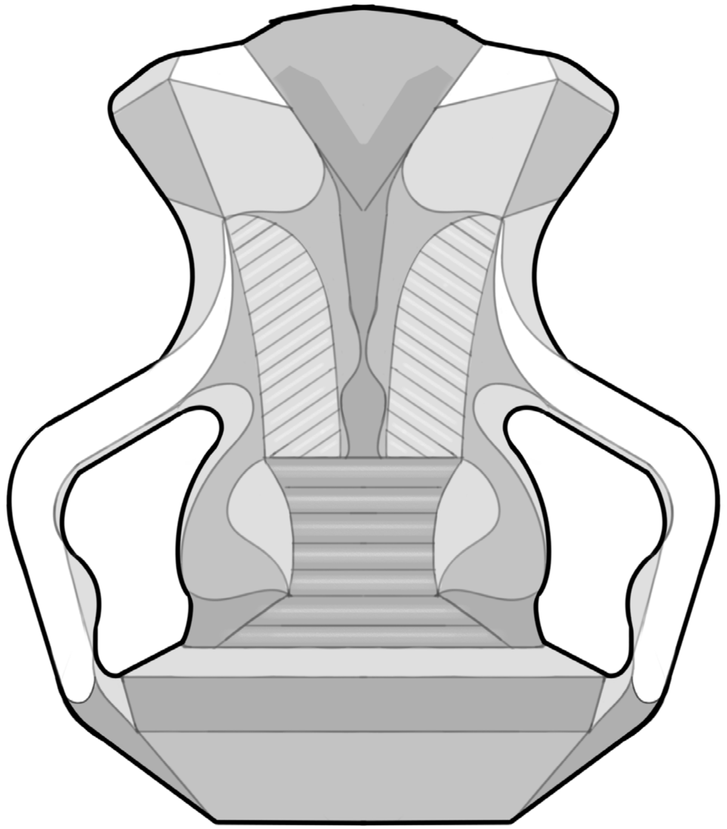
Exploring iterative form & style development



These earlier sketches were seeking a **fresh, modern, more interesting aesthetic** for the mobility scooter. While many options ended up feeling too "car-like," and others were a bit over the top, a **lower-profile, comfortable, sleek looking design** began to emerge.



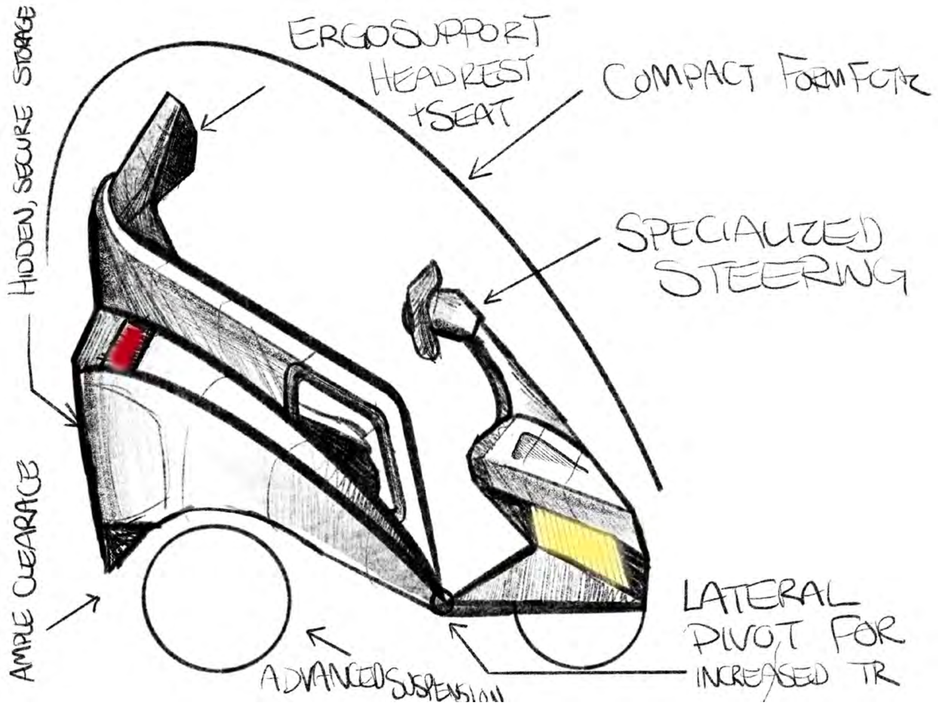
Useful features & ergonomics

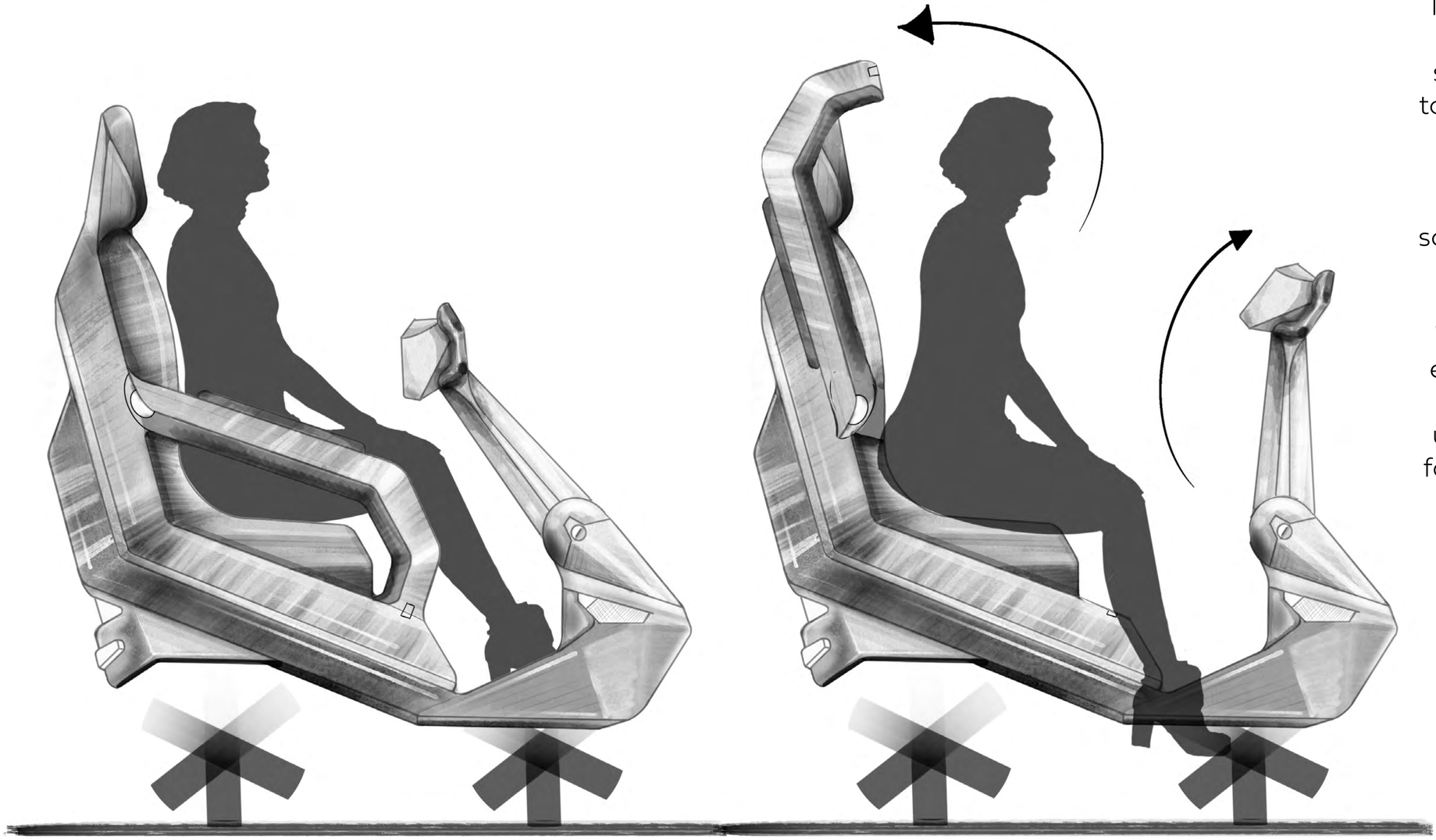


The **seat was designed with peak ergonomics in mind**, as many disabled and handicapped users have to spend long hours in their scooter seats, with many users spending all their waking hours seated.

Pascal's seat features a breathable fabric covering, comfortable memory foam cushions, options for climate control, and a **high degree of adjustability to suit a user's particular needs.**

Pascal's features include cane storage, hidden "trunk" storage, a laterally pivoting front end for a tighter turn radius, advanced suspension, intuitive controls to prevent accidents, and horns and lights that work indoors and out.





The arms and steering column of the Pascal scooter pivot upwards to allow easy entry and exit from the vehicle, especially for those that move from the scooter to a wheelchair or other mobility-assisting device. When not lifted, these elements securely lock in place to prevent a user from accidentally falling out during turns or when navigating rougher terrain.

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