Filflo

hydrate smarter.

Filflo

Innovation Proposal

table of contents

introduction

LG approached Innovation Space and Giant Squid asking to create a product-service system specifically for the Latino/a American community, a fast-growing market that they have yet to successfully target. As immigration continues, Latino/a Americans have become a more substantial percentage of the US population in terms of buying power. LG and Giant Squid see a growing opportunity to target Hispanics in the home appliance and entertainment market, as they have yet to be subject to specific and strategic targeting efforts from electronics companies. We plan to utilize our expertise in business, design, and engineering to take advantage of the opportunity and create an innovative product solution that will meet the Latino/a market's needs in the home electronics area.

GIANT SQUID

+

LG
Life's Good

Mark Milhollon

Mark is the team's Industrial Designer. He currently works at a cool company downtown where he does solidworks all day. He hopes to pursue a career in shoe or car design. Mark enjoys any and all hipster activities, including drinking cold-pressed coffee and riding fixed geared bikes.

Vid Micevic

No one actually knows what Vid does because he is so elusive and mysterious. Vid is the team's civil engineer, but really pursues a career in traveling around the world helping everyone he meets. Vid loves Trello and somehow knows everyone at the school, probably through ASU Changemaker.

Adlaai Stelung

Adlaai is a Finance major and the team's Business student. He enjoys traveling, learning about new cultures, and is currently working at a local tech startup in Mesa. Adlaai hopes to continue his involvement with socially-focused startup ventures.

Kelley Kemp

Kelley is the team's Graphic Designer. As an Arizona native, Kelley enjoys hiking & biking and needs constant sunshine to survive. She likes drawing and painting in her free time and hopes to pursue a career in illustration or editorial design.

"African American and **Latino parents** were more likely to give their children bottled water; minority children were exclusively given bottled water **3 times more often than non-Latino** white children (24% vs 8%)... associated with the belief that **bottled water is safer, cleaner**, better tasting, or more convenient..."

Perceptions About Water and Increased Use of Bottled Water in Minority Children

Arch Pediatr Adolesc Med. (2011)

We conducted additional interviews to get an insight on the problem; why do consumers use plastic water bottles?. After arriving at Costco, we surveyed Hispanic shoppers throughout the store about their household water preferences.

DO YOU USE PLASTIC WATER BOTTLES?

The majority of people interviewed, ranging from small families with babies or younger kids, to elderly couples used plastic water bottles on a daily basis.

IF YES, WHY?

"They're more convenient"
"Grab and go"
"I don't like the taste of tapwater"
"We can take them to school"

IF NO, WHY NOT?

"We have a Brita-like filter"
"We fill the 5 gallon containers weekly"
"We have Nalgene-like bottles"
"My family never finishes all the water in bottles, wasteful."

To some shoppers, if time permitted, we pitched our product-service system. Would they use something like this if it came out in the marketplace?

The family above said they would be more than glad to make a switch to a product like Filflo. "The grab and go aspect of the plastic water bottle is accomplished by this, so yes"

Archetype 1: Elderly Couple

Daily Water Bottle Usage: Low
Access to Appliances: Low, might already
have all they need.
Economic Standing: middleclass
# of People in Household: 2
Size of Kitchen: small
Size of Fridge: small
Other Psychographics: Least assimilated to
American culture. Not adopters of new technology.
Value the clean connotation of bottled water.

Archetype 2: Large, On-the-Go Family

Daily Water Bottle Usage: High
Access to Appliances: High. Shop at Costco
or other large store, have a range of appliances.
Might be shopping for new appliances.
Economic Standing: middleclass,
# of People l in Household: 5-9
Size of Kitchen: large
Size of Fridge: large, might have two
Other Psychographics: Always busy and on the go.
Many different ages living in the house.
Value efficiency in their every day activities.

Archetype 3: Small, Modern Active Family

Daily Water Bottle Usage:
Medium
Access to Appliances: High. Shop
at Costco or other large store,
have a range of appliances. Might
be shopping for new appliances.
Economic Standing: middleclass,
starting a new family
# of People in Household: 3-5
Size of Kitchen: small - medium
Size of Fridge: small - medium
Other Psychographics: Busy
lifestyle leads them to value
efficiency. The most
assimilated into American
culture. Most aware of
environmental issues / early
adopters of new technologies.

Filflo is a water bottle filling and cleaning system that easily fits in the fridge, and comes already equipped with reusable water bottles. It has a unique, compact design that allows for easy placement into refrigerators without obstructing excessive space. The system is created to allow individuals to place an empty water bottle into the unit and receive, utilizing UV light technology, a clean, filled bottle almost instantly. The water bottles provided with the system are made of sharklet material, a material that resembles shark skin which impedes bacteria growth, assuring the cleanliness of the water. The automated filling and cleaning system is designed to imitate the "grab-and-go" appeal of the disposable water bottle, and, along with the sustainably made bottles, Filflo aims to reduce the waste and costs associated with disposable plastic water bottles. This innovative solution reduces time and effort required for filling and cleaning water bottles, making drinking water a more pleasurable experience while also helping reduce plastic waste.

product
innovation

Personality	Form	Color	Texture	Materials	Details
Fun Playful	Simple Boxy	Variety of options Uni-colored	Undulating pattern	Metal Plastic	Molded textures
Elegant Clean	Organic Simple	Clear White	Smooth Filter holes	Glass Plastic	Proportions Branding
Neutral Interactive	Cylindrical	Clear White	Smooth Filter holes	Plastic	Bottle Caps
Fun Natural	Organic	Natural colors	Natural	Plastic Cork Binchotan Fabric	Natural materials
Precise Reliable	Crisp Pillowed	White Metallic	Smooth Vent holes	Metal	Holes Chrome Icons

18

Precise Elegance
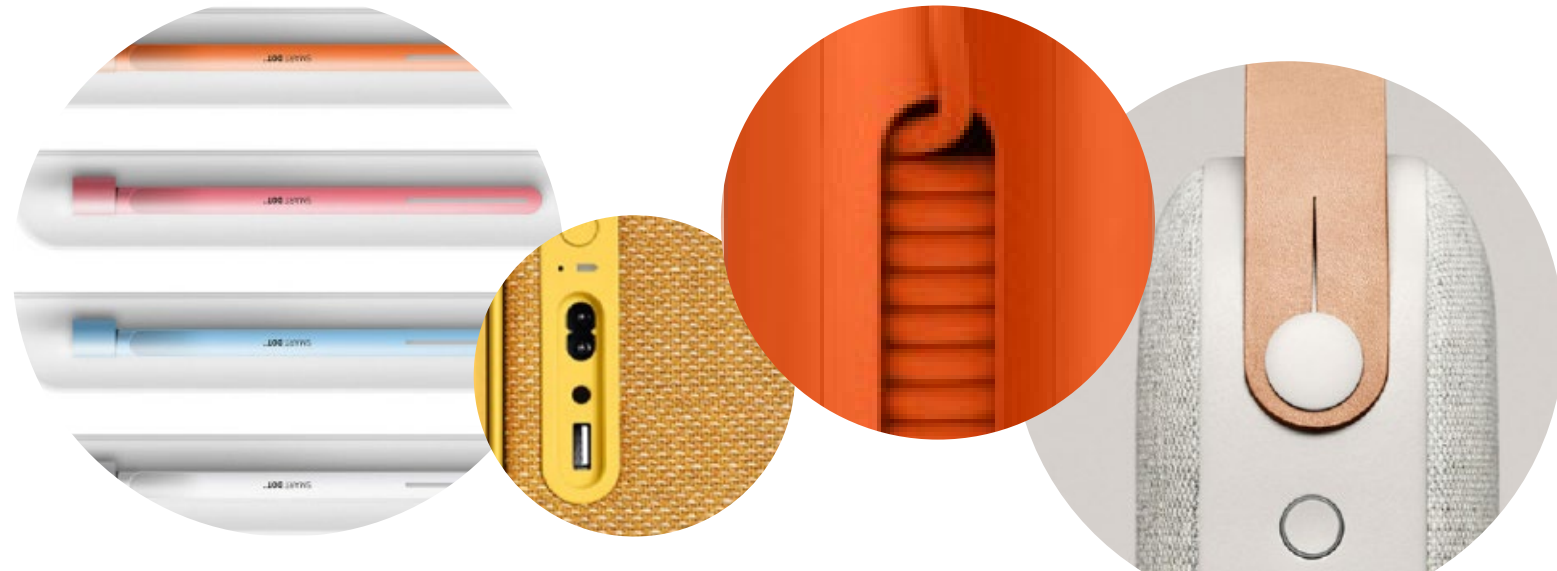
Simple Fun

Honest Enjoyment

23
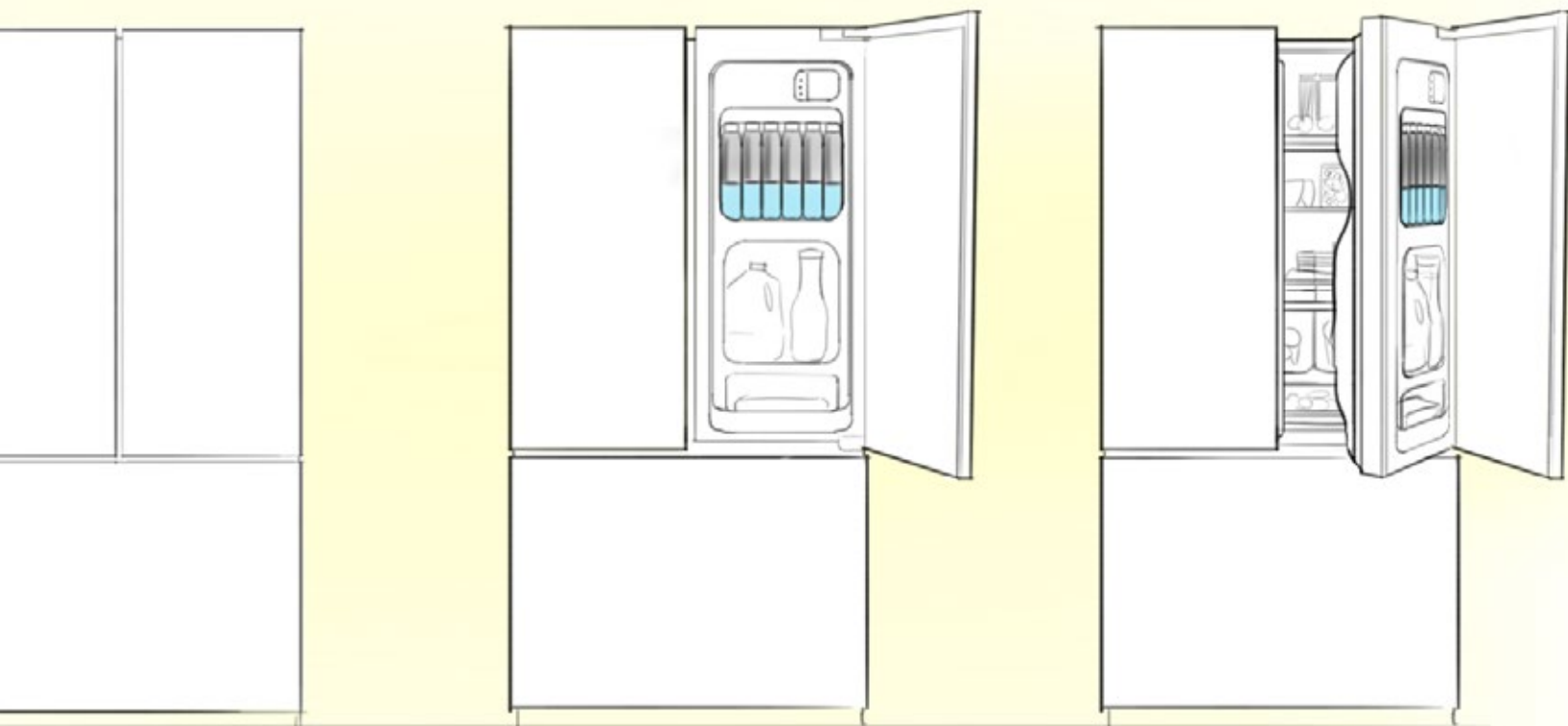
There is a silicone pump built into the lid of the bottle to allow the user to fill the bottle back up with air if they had previously deflated it for portability.
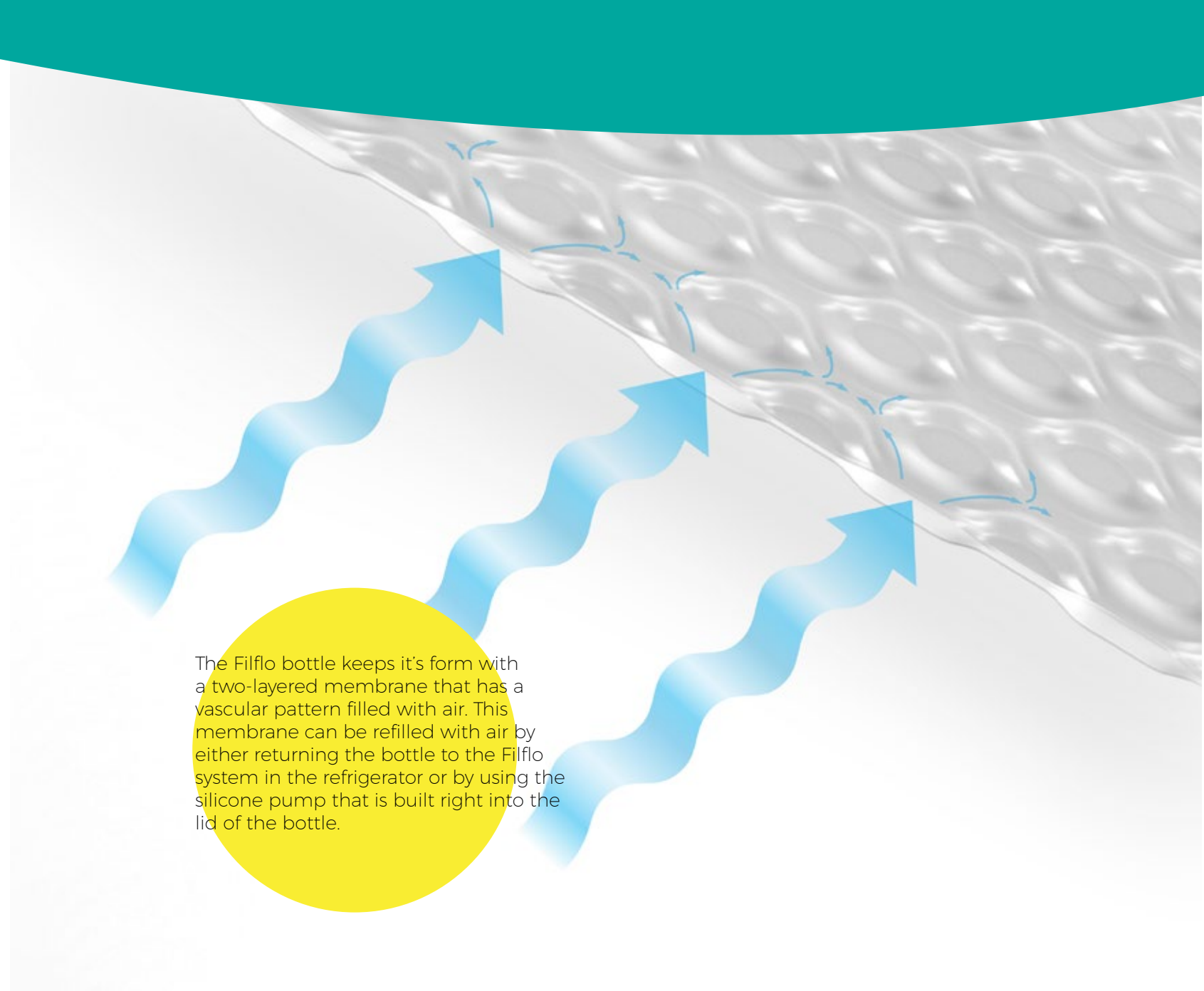
The Filflo bottle keeps it's form with a two-layered membrane that has a vascular pattern filled with air. This membrane can be refilled with air by either returning the bottle to the Filflo system in the refrigerator or by using the silicone pump that is built right into the lid of the bottle.

1

2

3

4

5

6

7

8

repeat!

29
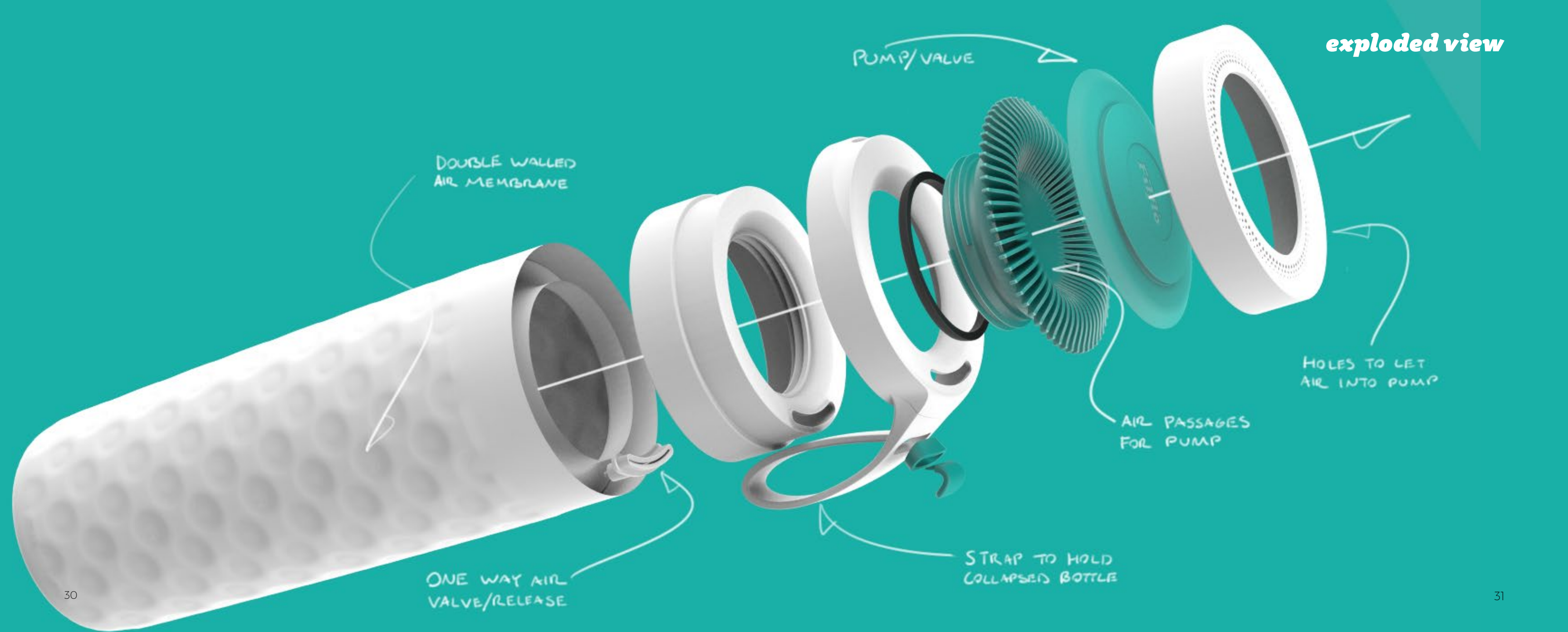
PUMP/VALVE

DOUBLE WALLED
AIR MEMBRANE

ONE WAY AIR
VALVE/RELEASE

STRAP TO HOLD
COLLAPSED BOTTLE

AIR PASSAGES
FOR PUMP

HOLES TO LET
AIR INTO PUMP

technology
innovation

Specification	Requirement	Changes	Demand/Wish	Responsibility	Source
Overall	Refill bottles safely and consistently		W	Team	Standard
		Geometry			
Door System	Width: 16" Height: 20" Thickness: 8"		D D W	Mark Adlaai Vid	Standard Standard Standard
Bottle	Height: 7.5" Diameter: 3"		D W	Adlaai Kelley	Standard Team
		Kinematics			
Door System	Flow Rate < 0.3 gallons per minute		D	Vid	Standard
		Forces			
Door System	Withstand forces of 1000lbs		D	Vid	Team
Bottles	Withstand forces of 500lbs		W	Mark	Team
		Energy			
Door	Operational < 1.6 degrees Celsius temperature Consume < 50 watt hours/day		D D	Kelley Mark	Standard Standard
Bottle Door System	Maintain material properties in <1.6 degrees Celsius		D	Adlaai	Standard

Specification	Requirement	Changes	Demand/Wish	Responsibility	Source
		Materials			
Door Sysytem	Use 75% recycled polythethylene		W	Vid	Team
Bottle	Use 100% recycled polyproplene		D	Adlaai	Team
		Safety			
Door System	> 1" separation between outer door 0% exposure of electrical wire		D D	Adlaai Vid	Team NEC
		Maintenance			
Door System	Ensure 0% leakage when filling		D	Mark	Standard
Bottle	UV light exposure > 40,000 uwsec/cm2		D	Vid	Standard
		Ergonomics			
Door System	>.5in space between bottle and ground Ensure 8" separation between cap holder and filling station		W D	Kelley Mark	Team Standard
		Signals			
Door System	Weight sensor bottle stoppage within 0.1 sec delay		W	Vid	Team

CONFIGURATION BLOCK BOTTLE DIAGRAM

- – – – electricity
- ——— mechanical movement
- · · · · · · software/data transfer
- ——— water transfer
- – – – air transfer
- ——— light energy
- ——— system boundary

fridge power supply

filtered fridge water supply

air compressor

entrance user interface
hand — attach

cleaning mechanism
empty bottle — UV Light

filling mechanism
sensor
software
hose
flow counter
nozzle
valve

enclosure
insulation
plastic shell

storage
sensor light
shelf
glass
user eyes

pressure mechanism
software — sensor — full bottle
valve — pressure nozzle — pressure hose

exit user interface
unclip — ready bottle
hand

CONFIGURATION BLOCK CAP DIAGRAM

- – – – electricity
- ——— contact between materials
- · · · · · · software/data transfer
- ——— water transfer
- – – – air transfer
- ——— static support
- ——— system boundary

holding apparatus
undershelf
holder molds that fit cap
removable mesh tray

user interface
hand

user interface
hand

Filflo

```
                          Filflo
        ┌──────────┬──────────┬──────────┐
    transport   clean      refill      store
                bottle
        │          │          │          │
  collect bottle  rinse   transport   hold
                          water in  constant
                  dry                 temp
  secure bottle        disinfect  hold water  discharge
                                              bottle
                  collect grey  dispense   ensure no
  index bottle    water         water      spillage
                           activate UV
```
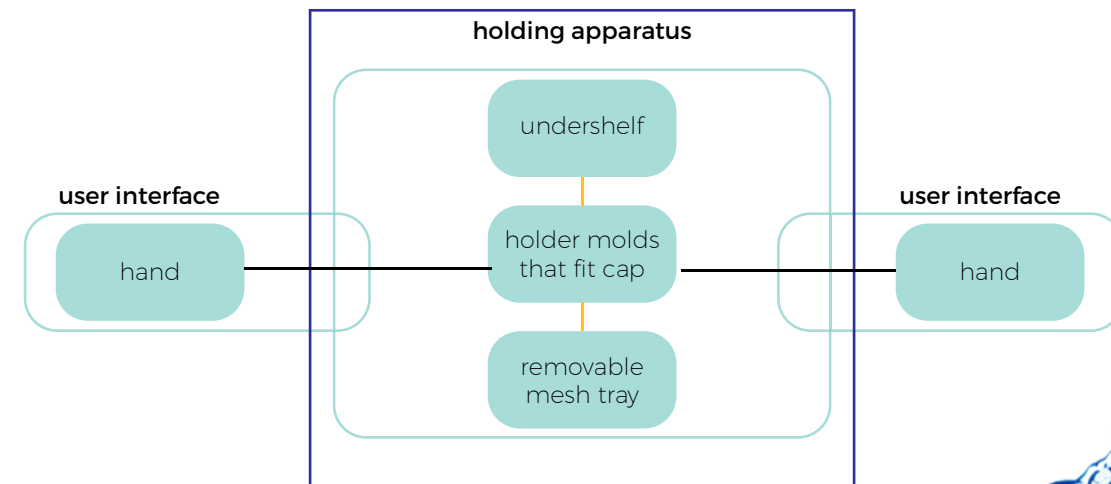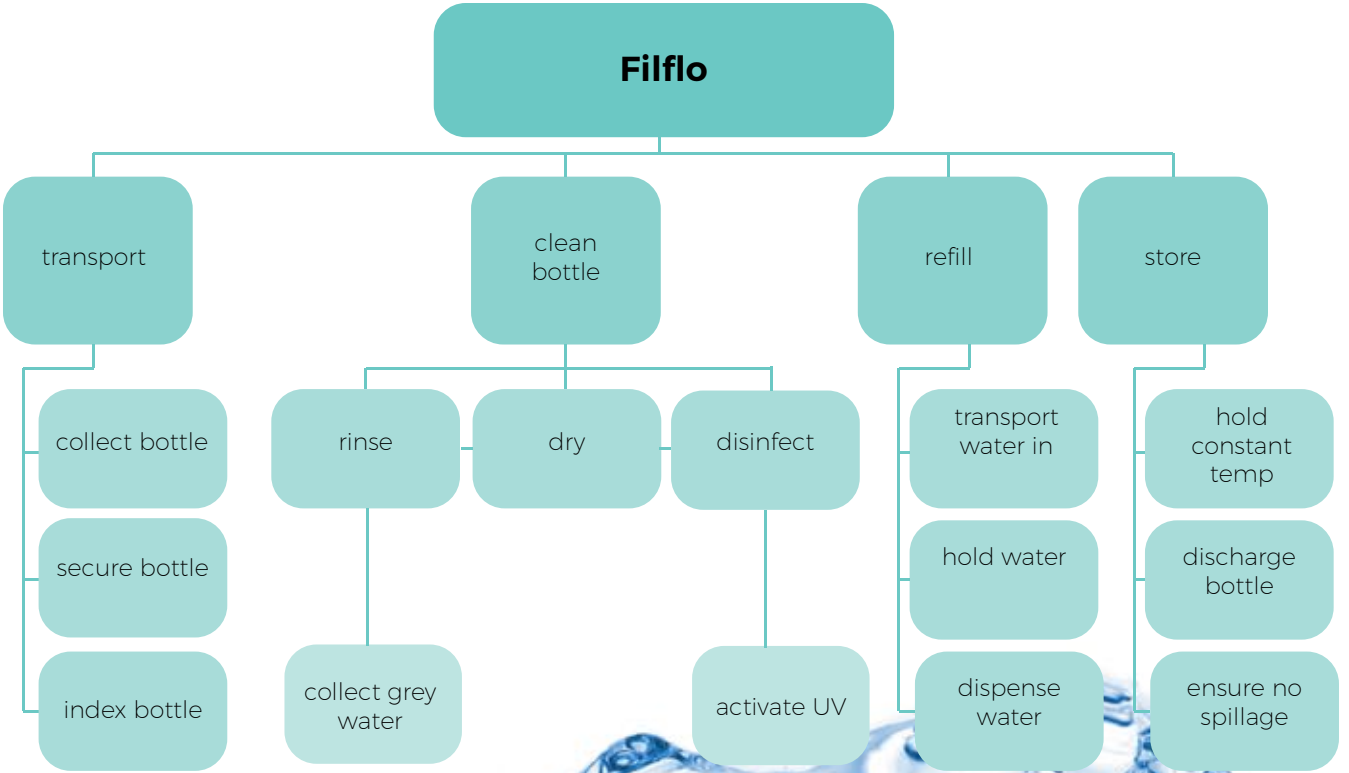
Component	Material	Weight/Size	Manufacturing Process	Price	Quantity	Total
Sharklet Material	Plastic	2"x1"	Thermal Set Plastic	$20.00	1	$20.00
Bottle Material	Plastic	1lb	Blow Molding	$10.00	7	$70.00
Cap Material	Plastic	0.25 lbs	Injection Moldings	$0.50	7	$3.50
Bottle Pump	Latex	.1lbs	Thermal Set Plastic	$0.25	7	$1.75
Water Hose	Polypropelene	2 lbs	(Drawing process)	$0.50	7	$3.50
Water Funnel Guide	Plastic	3 lbs	Injection Moldings	$5.00	1	$5.00
Water Inlet Valve	Metal Brass	0.25 lbs	Machining	$4.00	7	$28.00
Microcontroller	Electronics	0.25 lbs	In booklet	$20.00	1	$20.00
Weight Sensor	Electronics	0.25 lbs	In booklet	$5.00	7	$35.00
System Shell	Plastic	5 lbs	Injection Molding	$18.77	1	$18.77
UV Bulb	Glass (UV-LED)	0.25 lbs	Blow Molding	$7.79	7	$54.53
Water Tank	Polypropelene	0.25 lbs	Injection Molding	$5.00	1	$5.00
Switchover Relay	Electronic	0.1 lbs	In Booklet	$1.25	7	$1.75
Insulation	Polyurethane	2 lbs	Thermal Set Plastic	$13.00	1	$13.00

Total $286.80

	Product Lifetime: 10 years * 8760 hours/ year = 87600 hours		System Boundaries: Refridgerator, on the go hours	Functional Unit (default: impacts/ hour): Impacts/ hour	
Bill of Materials	Amount	Unit x	Okala Factor Millipoints	Unit =	Okala Impact Millipoints
		MATERIAL			
Bottle	Sharklet (polythylene)	2	lb	1.5	/lb	3
	Polypropylene Recycled	7	lb	1.3	/lb	9.1
	Cap (poleyt. Terepthalate, bottle gr)	2	lb	2	/lb	4
	Hand Pump (certified rubber)	0.8	lb	1.6	/lb	1.28
System	Water Hose (Polypropelene)	2.3	lb	1.9	/lb	4.37
	Water Funnel Guide (polyethylene)	3	lb	1.5	/lb	4.5
	Water Inlet Valve (Brass)	1.6	lb	29	/lb	46.4
	Microcontoller	0.25	lb	320	/lb	80
	Weight Sensor (secondary aluminum)	2.8	lb	0.55	/lb	1.54
	LED	1	lb	160	/lb	160
	System Shell (polythethylene)	5	lb	1.5	/lb	7.5
	UV Bulb (glass)	0.6	lb	0.56	/lb	0.336
	Water Tank (polythylene)	3.5	lb	1.5	/lb	5.25
	Switchover Relay	1.3	lb	85	/lb	110.5
	Insulation (polyurethane)	4	lb	3.1	/lb	12.4
		MANUFACTURING			
Bottle	Thermal Set Plastic	2	lb	1.4	/lb	2.8
	Blow Molding	7	lb	0.68	/lb	4.76
	Injection Molding	2	lb	0.72	/lb	1.44
System	Film Extrusion	2.3	lb	0.31	/lb	0.713
	Injection Molding	11.5	lb	0.72	/lb	8.28
	Brass CNC turning	1.6	lb	31	/lb	49.6
	Steel Extrusion	3.05	lb	1.1	/lb	3.355
	Blow Molding	0.6	lb	0.68	/lb	0.408
	Thermal Set Plastic	3.2	lb	1.4	/lb	4.48
		DISPOSAL			
Bottle	Thermal Set Plastic	2	lb	0.61	/lb	1.22
	Polypropylene Recycled	7	lb	0.26	/lb	1.82
System	Electronic circuitry	0.25	lb	3.6	/lb	0.9
	Polythethlene	8.5	lb	0.3	/lb	2.55
	Brass	1.6	lb	0.51	/lb	0.816

	Filflo	Dasani
Material	437.776	1.66
Manufacturing	75.836	1.124
Disposal	7.306	0.652

	Filflo	Dasani
Total Impact per Unit	0.006	3.436

Okala Impact Per Unit

Okala Millipoints — LCA Stage: Materials, Manufacturing, Disposal

Okala Impact Per Unit

Okala Millipoints — Water Companies: Filflo, Dasani
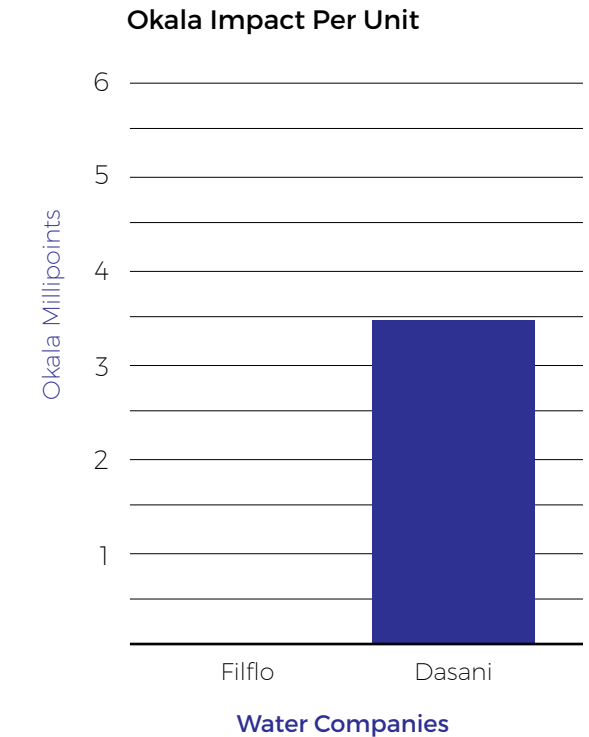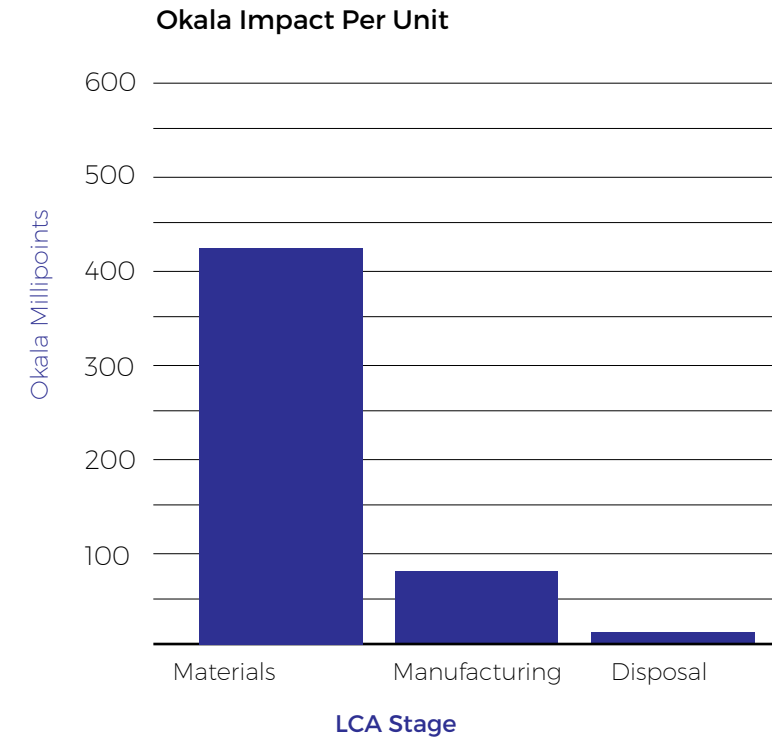
service
innovation

Pre-Sales
Instructions/Introduction to product
FAQ
Online website (all stages)

During Sales
Customer service
Online Help Desk
Shipping/Delivery
Installation

After Sales
Warranty
Customer service via phone, online chat and in-person
Repair/Maintenance
Online tutorials

End-of-Life
Buyback program
Recycling
Upcycling

brand
innovation

BRITA®

classic, stable, fresh

smooth, rounded, comes to rounded points on certain edges, flat top on products

plastic, charcoal filter

logo is shades of blues and black. products are, shades of greys, black, and white.

serifed font, all caps for logo simple classic sans serif for website combined with a younger, funkier font for headings

hydros®

funky, playful, young, refreshing

smooth, rounded, grooves are tactile and allow ease of opening, strap on side for carrying

plastic, rubber, charcoal filter

logo is two tone black and blue. products are green, blue, pink or orange with black, clear, white.

lowercase sans serif for logo, mark is incorporated into logo.
website is all in thin modern sans serif

ZEROWATER.

new, tech-y, masculine,

shape can get a little angular but still the standard round and smooth shape

plastic, charcoal filter

logo is black with blue and light grey. products are white, black, and light blue.

all caps sans serif for logo, mark is incorporated into logo. website is all in thin modern sans serif

bobble
make water better.™

artsy, different, new-age, hipster, elite

smooth, rounded, comes to rounded points on certain edges

plastic, rubber, charcoal filter

logo is black and blue. product is clear with colored tops.

sans serif font, all lowercase for logo. simple thin sans serif for website

aquaovo

artsy, different, new-age, hipster, elite

smooth, rounded, comes to rounded points on certain edges

stainless steel, wood, porcelain

logo is black and white. product is white, white and silver.

funky sans serif font, all lowercase for logo. simple thin sans serif for website

PUR

new, simple, friendly, approachable

shape can get a little angular but still the standard round and smooth shape

plastic, metal

logo is dark blue with shades of blue accents. products are silver, white or black.

all caps sans serif for logo, mark is incorporated into logo.
website is all in thin modern sans serif

Through the brand benchmarking analysis, we were able to see patterns emerge in this market as well as spot places for innovation. Almost all of the water companies identify themselves with a blue color for their brand and logo. We wanted to add a punch of purple for something unexpected, as well as some other complementing colors to add a bit of Latino/a flair. Logos tended to be outdated for many of the companies, using fonts and styles that were popular in the earlier 2000's. I wanted a modern font that was still approachable. As for the name of the product, we aimed for something strong and memorable that was likewise easy to pronounce.

Primary Typeface:
Monserrat

Ultra Light	**Semibold**
Light	**Bold**
Regular	**Extrabold**

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890!&?

Title Typeface:
Plume Ad Italic

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890!&?

Type Combo Example
Ladipiscing elit. Proin efficitur lacus eget
pretium tincidunt. Nullam vehicula ut
libero sit amet tincidunt. Duis placerat
lectus quis libero tristique, sed viverra nisi
euismod. Sed sapien dolor, scelerisque et
nulla quis, accumsan laoreet.

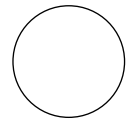## Color Palette

Primary Colors
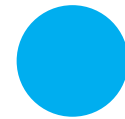
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#2e3192
100 100 0 0

#fffff
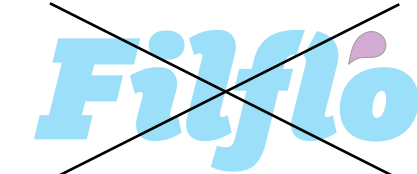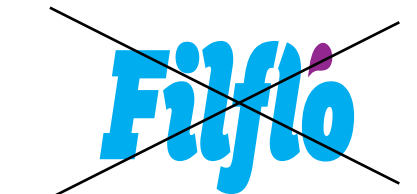0 0 0 0

#f9ed32
5 0 90 0

normal

one color

on a dark background

do not use non-brand colors

do not change opacity

do not squash or stretch
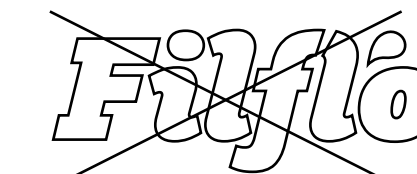
do not outline

The Filflo brand commits itself to you. We know how busy you are. It seems there aren't enough hours in the day! We know you drink water, and we know you want it as fresh, clean and quick as possible. By making an everyday task in your life simpler and more enjoyable, our ultimate goal is reached; to help to environment while we help you with your busy day. Our brand is fresh, new, fun, family-friendly, modern and a soon-to-be home staple.

Filflo

hydrate smarter.

Filflo

siempre la opción
más inteligente

Primarily geared towards kids, this app would allow parents to monitor the number of bottles used and filled by kids throughout the day. Parent's can receive instant feedback when kids fill or replace a bottle, enabling them to keep track of the amount of water their children are drinking in a day. This app would also give parents the option to send reminders to their kids phones as well.

This app will give parents and kids interactive possibilities as well as feedback and real-life applications. Parents can see how much money they're saved by using this system, calculated by the number of bottles filled. Kids can learn about their role in reducing their environmental impact. There is also a potential for gamefication, where kids can advance different "levels" according to how many bottles they use. This would create initiative for kids to use by creating rewards and goals for them to work towards.
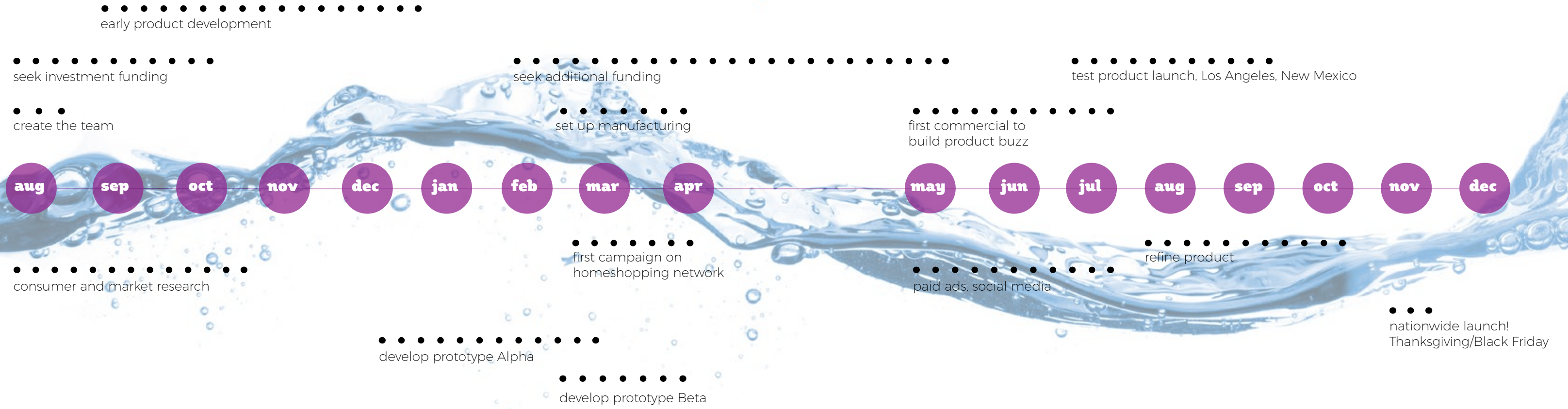
AUDIENCE MESSAGING MATRIX

Audience/Stakeholder	Message/Benefit	Channel
65+ women	this product will give you fresh, good tasting, clean water	tv commercials on Latino/a channels
large families	this product is a cost-efficient investment	tv commercials; on home entertainment, sports, and movie channels, billboards at shopping malls
purchasers like Costco	this product is a great investment and will attract customers	tradeshows
school kids 12-18	this product is the newest, coolest thing out there	commercials on educational, cartoon, music, and sports channels, Youtube

early product development

seek investment funding

seek additional funding

test product launch, Los Angeles, New Mexico

create the team

set up manufacturing

first commercial to
build product buzz

aug **sep** **oct** **nov** **dec** **jan** **feb** **mar** **apr** **may** **jun** **jul** **aug** **sep** **oct** **nov** **dec**

consumer and market research

first campaign on
homeshopping network

refine product

paid ads, social media

develop prototype Alpha

develop prototype Beta

nationwide launch!
Thanksgiving/Black Friday

business
model
innovation

Key Partners
LG Suppliers and
Distribution Partners
Hispanic Media Channels
Community
Hispanic Environmental
Organizations
Home Shopping Networks

Key Activities
Research and development
Prototyping and testing
Intellectual Property
Protection
Relationship Building With
Partners

Key Resources
Capital
Materials
Labor
Logistics/Transport
Intellectual Property

Value Propositions
Automated, convenient
water filling and cleaning
Cost and plastic waste
savings (over plastic bottles)

Customer Relationships
Limited interaction
Initial in-store taste tests
Online support
Warranty

Channels
(Marketing)
Home Shopping Networks
Youtube, Facebook, and
other Social Media
Taste-tests

(Distribution)
Big-box Retailer
E-commerce

Customer Segments
Hispanics
Young Professionals
Families

Cost Structure
Cost Drivers:

R&D Prototyping
Manufacturing (operations)
Customer Acquisition (sales & marketing)

Revenue Streams
(Product)
Big-box
E-commerce
New/extra bottles

(Service)
Warranty`

CLAIMS TABLE

Claim	Support
Filflo saves consumers money in the long run	In a conservative calculation, we assume that a family of 4 drinks one bottle of water each, per day. Thus, they spend (at a cost of $0.25 per bottle) $365 per year on water bottles. The Filflo system pricing will be around that price, hence the price will be recouped with just a year of use even with conservative estimates.
Filflo reduces plastic waste from water bottles over time	Some materials in the Fiflo system will be made of plastic; however, the overall plastic waste will be reduced with the expectation that users will utilize Filflo for several years and avoid disposable bottle use. Using the same assumptions above (4 bottles/family/day), if each 16.9oz bottle weighs about 18 grams when empty, Filflo effectively saves 6570 grams (or 232 ounces) of plastic waste per year per family.
Filflo provides clean water almost instantaneously	Filflo utilizes two methods for ensuring cleanliness and sanitation. First, the sharklet material that will be used for the bottles has been shown to reduce MRSA bacteria by 94% according to a study. Secondly, the Filflo system will have UV light sanitizing which can kill up to 99.9% of germs as shown in some studies.
Filflo is made with ethically-sourced materials	The materials that Filflo will use will not be conflict resources. Additionally, the product will be created in safe facilities by workers who are treated well and paid fair wages to work legal hours. Also, Filflo will be conscious and respectful of the environment during the production and manufacture of products, mitigating emissions/waste when possible

Cash Flow Statement (Profits and Losses)

Year 1

	Feb 17	Mar 17	Apr 17	May 17	Jun 17	Jul 17	Aug 17	Sep 17	Oct 17	Nov 17	Dec 17	Jan 18	Total
Revenues	0	$24,960	$24,000	$26,000	$27,000	$28,000	$28,000	$29,000	$30,000	$31,000	$35,000	$34,000	$316,960
Costs	-$235,475	-$15,360	-$16,640	-$17,280	-$17,920	-$17,920	-$18,560	-$19,200	-$19,840	-$22,400	-$21,760	-$21,760	-$444,115
Net Cash Flow	-$235,475	$9,600	$7,360	$8,720	$9,080	$10,080	$9,440	$9,800	$10,160	$8,600	$13,240	$12,240	-$127,155

Year 2

	Feb 18	Mar 18	Apr 18	May 18	Jun 18	Jul 18	Aug 18	Sep 18	Oct 18	Nov 18	Dec 18	Jan 19	Total
Revenues	$34,000	$35,360	$36,400	$36,400	$36,400	$36,400	$36,400	$36,400	$37,440	$37,440	$37,440	$43,680	$409,760
Costs	-$22,630	-$22,630	-$22,630	-$23,296	-$23,296	-$23,296	-$23,296	-$23,296	-$23,296	-$23,961.6	-$23,961.6	-$23,962	-$279,552
Net Cash Flow	$11,370	$12,730	$13,770	$13,104	$13,104	$13,104	$13,104	$13,104	$14,144	$13,478.4	$13,478.4	$19,718	$130,208

YEAR 1: we begin sales using HSN but phase out of that method as Filflo gains popularity. We will begin by mainly targeting the South West region of the US. Brita 2014 Sales = ~$3.5M
Estimate: Will reach 1% of Brita's sales ($350k) by end of year 1

YEAR 2: we attempt to garner a larger % of sales from online methods and continue our expansion to more states in the US In this year and the next we will continue to increase sales from online methods, as many Hispanic consumers utilize mobile and online shopping mediums
Estimate: A 20% growth in sales ($350k -> $420k)

YEAR 3: we plan our expansion to cover a majority of the US
Estimate: A 35% growth in sales ($420k -> $570k)

Sales Forecast

Year 1

Revenue Stream	Mar 17	Apr 17	May 17	Jun 17	Jul 17	Aug 17	Sep 17	Oct 17	Nov 17	Dec 17	Jan 18	Feb 18	Total
Home Shopping Network	$9,600	$9,600	$5,200	$2,700	$0	$0	$0	$0	$0	$0	$0	$0	$27,100
Retail	$14,400	$14,400	$20,800	$21,600	$22,400	$22,400	$23,200	$22,500	$23,250	$24,500	$25,500	$23,800	$258,750
Online	$0	$0	$0	$2,700	$5,600	$5,600	$5,800	$7,500	$7,750	$10,500	$8,500	$10,200	$64,150
Warranty	$960	$960	$1,040	$1,080	$1,120	$1,120	$1,160	$1,200	$1,240	$1,400	$1,360	$1,360	$14,000

Year 2 / Year 3

Revenue Stream	Q1 Jan 18 - Mar 18	Q2 Apr 18 - Jun 18	Q3 Jul 18 - Sep 18	Q4 Oct 18 - Dec 18	Total	Revenue Stream	Q1 Jan 19 - Mar 19	Q2 Apr 19 - Jun 19	Q3 Jul 19 - Sep 19	Q4 Oct 19 - Dec 19	Total
Retail	$74,460	$73,500	$71,400	$70,200	$289,560	Retail	$79,380	$82,350	$90,000	$92,220	$343,950
Online	$27,540	$31,500	$33,600	$37,800	$130,440	Online	$46,620	$52,650	$60,000	$66,780	$226,050
Warranty	$4,080	$4,200	$4,200	$4,320	$16,800	Warranty	$5,040	$5,400	$6,000	$6,360	$22,800
Total	$106,080	$109,200	$109,200	$112,320	$436,800	Total	$131,040	$140,400	$156,000	$165,360	$592,800

innovation
through
sustainability

Nature is locally attuned and responsive without fail. By leverages cyclic processes, nature take advantage of phenomena that repeat themselves. Life takes advantage of these cycles in order to have a better chance at survival and to reduce their need for energy and materials.

How can we leverage cyclical processes for Filflo? Cyclical processes involve predictable change in which life thrives, like the seasons and the tides. Filflo as a brand must see predictable changes in the consumer lifestyle and environment and leverage them to create marketing and sales opportunities. Just like species use the natural changing of seasons to integrate new things into the environment, Filflo can use these predictable fluctuations in consumer culture to introduce new products, initiatives, activities, loyalties and programs into the market.

We as a species consume resources without thinking about consequences. In the Hispanic community plastic water bottles are constantly consumed, as they consistently use them to drink water throughout the day. How can we create awareness through our product as users interact with it throughout the day?

Nature uses feedback loops as the process of engaging in cyclic information flows to modify a reaction appropriately. For example, the presence of a predator within the landscape reduces the amount of prey, which in turn will reduce the amount of predators and so forth, maintaining a stable balance.

Creating a feedback loop for Filflo will be a way of keeping users informed as well as initiate change within a household and hopefully larger scale after awhile. Through the smart bottle count app (page 58) a feedback loop is created; Filflo gives kids and parents instant feedback and goals to work towards, creating awareness as well as initiative for more use, which in turn spurs more feedback and creates more goals.

How does nature adapt to changing conditions? By using multiple forms to meet functional needs. The vascular structure that allows the bottle to change between its full and compact state was designed by mimicking part of the biology in penises that allow them to expand and contract in size.

Two cylinder-shaped chambers called the corpora cavernosa run the length of the penis. There is a maze of blood vessels, tissue, and open pockets. The arteries relax and open up to let more blood to flow in; at the same time, the veins close up. Once blood is in the penis, pressure traps it within the corpora cavernosa, allowing it to expand and how its shape. When the inflow of blood stops and the veins open, your penis becomes soft.

The Filflo bottle keeps it's form with a two-layered membrane that has a vascular pattern filled with air. This membrane can be refilled with air by either returning the bottle to the Filflo system in the refrigerator or by using the silicone pump that is built right into the lid of the bottle.

How have different species in nature evolved to survive in their surroundings?

Turtles have shells that function as protection for them. Made from bone-covered by hard plates called scutes, the shell makes it difficult for the predators to access their soft tissue for food. Many land turtles can draw their legs, tail and head into their shells, leaving only a hard, oddly shaped shell in reach of predators.

Just as turtles use their shell for protection. Filflo uses the hard cap to protect the membrane from damage when it is deflated.
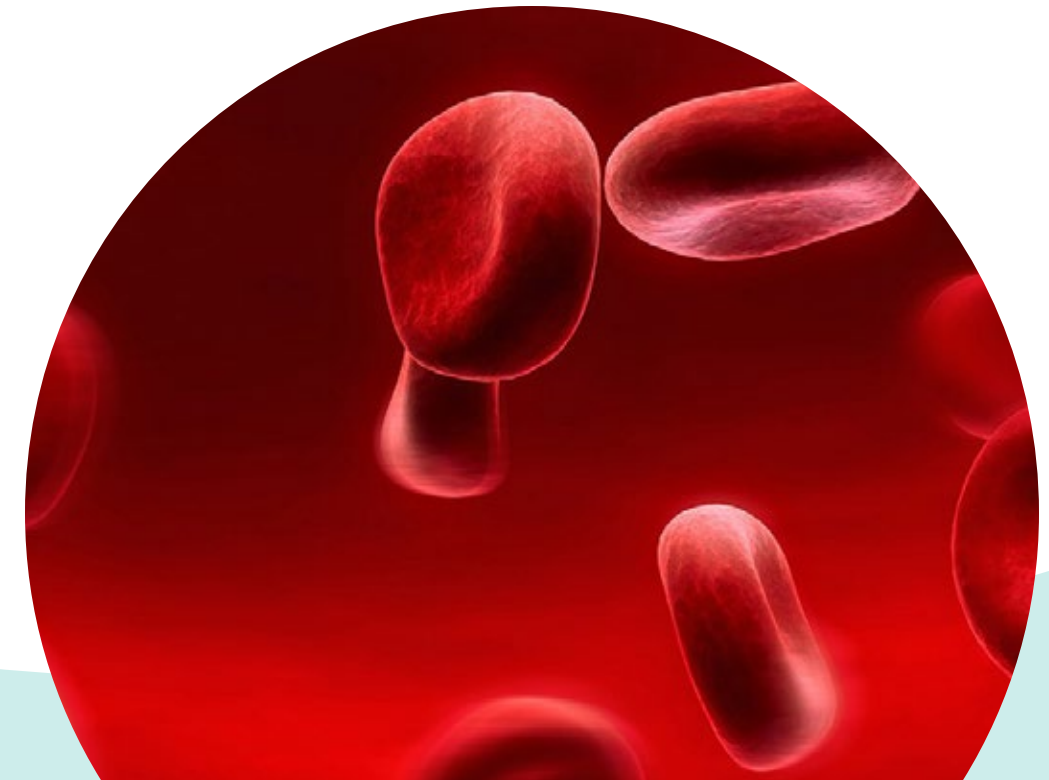
An important function of our transportation system is creating an effective way to attach the bottle to the system. Essentially, attaching the bottle firmly with damaging the bottle, with an easy method of attachment and removal. We need to fit the form of the bottle to fit the functions that it needs to perform.

In nature, the flowerpiercer bird has an effective beak to take honey out of the flower, the shape of the beak being the crucial for the bird's survival in the wild. The upper half of its beak is notched along its edge and hooked at the end. The Flowerpiercer bird lands on or beside a tubular flower and snags it with the hook of its beak. This holds the flower steady while the other side of the beak stabs the flower and the birds tongue flicks inside to steal the honey.

This unique shape of the beak can be used to grab a hold of the bottle. Since the machine has a whole transportation assembly, there must be a way to securely hold the bottle in place without breaking the bottle. The fragility of the Flowerpiecer's beak to grasp a hold of the flower while getting the nectar is exactly the fragile strength that is needed for the hold of the FilFlo bottle.

Nature always has an integrated use for many different organisms and processes. Furthermore, with the combining modular and nested components, nature is able to fit multiple units within each other progressively from simple to complex. For example, the cells in an organism have different little parts but when those parts come together these cells are able to control flow of blood and the expansion of air in the chest to form the a complex organism.

Using this multi-functional life principle in nature, we explored solutions to make either the nozzle of the water fill have multi-functional subsystems or even the neck of the water bottle have a sub-system that triggers an automated stop to water flow. We looked to have the neck of the bottle and the water refill nozzle have multiple functions.

Due to growing expectation of instantaneous support for customers, Filflo needs to respond quickly to feedback. How does nature solve this?

Leaves of the sensitive plant, mimosa pudica, protect themselves from predators and environmental conditions by folding in response to touch. When the leaf is touched, it quickly folds its leaflets and droops downward. The folds of different leaves are interconnected and compatible with each other, and the whole structure can be folded and unfolded from a single or multiple driving points.

As with the mimosa pudica, it is essential for Filflo to have quick responses to "threats", threats in this case referring to customer feedback. FIlflo depends on the sales and, consequently, customer's satisfaction for "survival". Therefore, Filflo will implement open avenues and means for customer service and feedback, so that customers can be heard and receive support when they need. There will be online FAQs, chat support, and phone support. Additionally, Filflo will offer a filter-on-demand replacement program, where customers can ship their old filters and receive a new one in the mail when the time comes for replacement. Implementing an accessible feedback system and quick responses to feedback provided, as with the mimosa pudica, is essential as customer needs are constantly changing and lack of a response can pose a major threat.

Customers needs are consistently changing (e.g. household size changes), and Filflo must adapt to them or potentially lose customers. How does nature deal with "outgrowing" or a change in the current situation?

Unlike snails and mussels, hermit crabs cannot grow their own shell, and must therefore search periodically for empty snail shells to switch into as they grow. Hermit crabs have developed systems for quickly and efficiently finding the perfect shell, where they trade with each other as they outgrow their previous shell.

Like hermit crabs, people are changing and growing constantly. Therefore, Filflo will need to adjust to the changes in its customers, and find them new "shells". Thus, Filflo bottles will implement customizable water bottles, and, as part of the buyback program, customers can send back their old caps and customize new ones every few years, in attempts to make their transition into a new "shell" smooth. As an example, a child can order a customized cartoon design on their bottle when they are young, but continue to replace and customize bottles as he grows. The bottles that sent back would be recycled into making new bottles, thus creating a closed-loop system.

conclusion
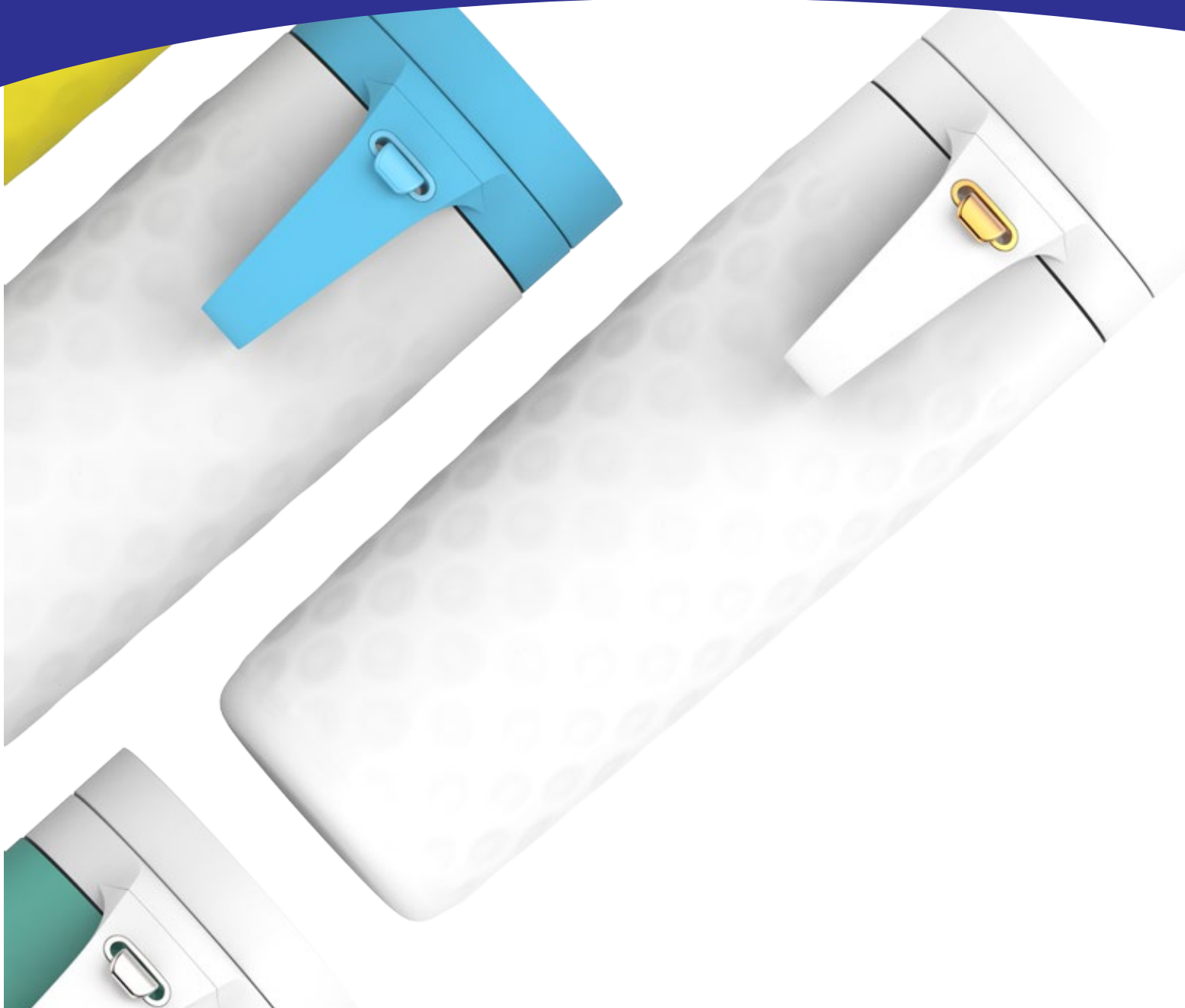
This product solution is bigger than the physical model and components of the brand. We aim to address a global issue that is becoming increasingly imperative to solve. This problem that, although most heavily present in the Latino/a population in the US, is also a global crisis. The amount of plastic waste generated by today's population must be lessened if we as a species are to continue to exist on this planet.

We hope that this product solution can enable the everyday person to start making an environmental change, however small it may be. If we can begin teach our children to eliminate plastic waste in their lifestyle, we are on our way to creating generations that will have awareness and care for our earth. By creating a product that allows for people to reduce their carbon footprint, we have achieved not only our goals for the semester, but our goals for the environment.

Finally, we would like to thank everyone that helped make this project possible, as well as Innovation Space and LG.