

JACK**THRUN**
INDUSTRIAL DESIGN 2017

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INDUSTRIAL DESIGN

CONTACT

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School Address:
339 Probasco Street
Cincinnati, OH 45220

EDUCATION

U OF CINCINNATI | DAAP

Industrial Design
Class of 2019 (BS)

GPA: 3.725
Dean's List 2014 - Present

MOUNT OLIVE HS

Flanders, New Jersey
Class of 2014

Student Athlete
Honor Roll

SKILLS

DIGITAL

Photoshop, Illustrator, InDesign, Alias,
SolidWorks, Keyshot, Inventor, Premiere
Pro, FinalCut Pro, HTML + CSS, Word,
Excel, PowerPoint, Outlook

ANALOG

Foam modeling, pattern making, mold
making, CNC machining, brainstorming,
sketching, digital sketching, wood shop,
metal shop

DESIGN EXPERIENCE

GARMIN

Industrial Design Intern
May 2017 - Aug 2017

Designed a conceptual action camera for Garmin's Virb lineup. The design process included research, ideation sketching, illustrator ideation, concept sketching, 3D modeling, 3D printing and prototyping, and concluded with presenting to Garmin management.

CATALYST PDG

Industrial Design Intern
Aug 2016 - Dec 2016

One of three designers on a small product development team. Contributed to projects through sketching, Solid-works surface modeling, and rapid ideation. I also operated injection molding presses and helped out with various manufacturing efforts.

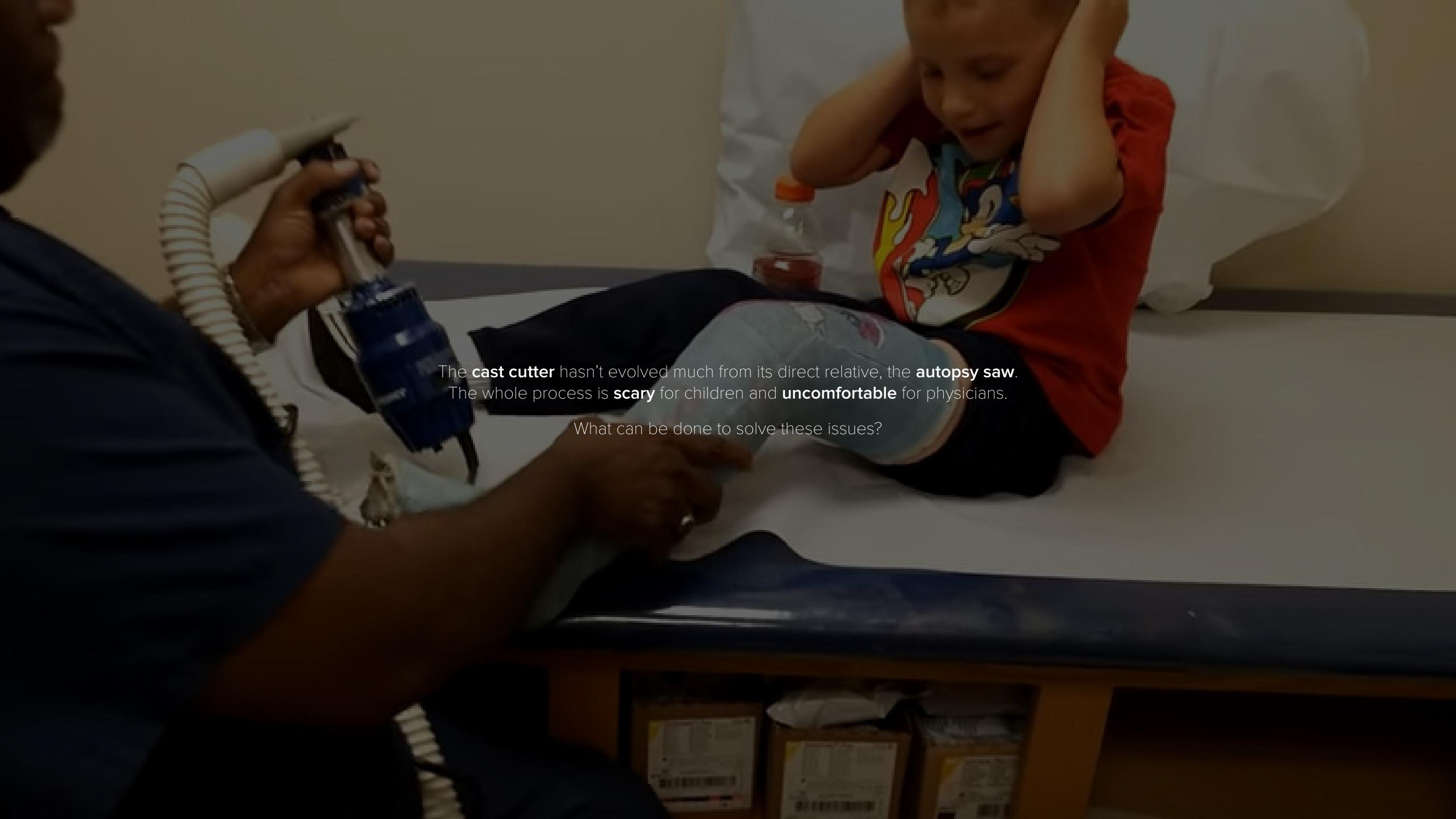
FARM DESIGN

Industrial Design Intern
Jan 2016 - Apr 2016

Contributed to projects for several clients and was responsible for brainstorming, sketching (digitally and traditionally), 3D modeling, rendering, Photoshop UI storyboarding, and volumetric foam modeling for internal component layouts and architectures.

PHILIPS
Healthcare



A young child is lying in a hospital bed, looking down at their arm which is being cut by a cast cutter. A medical professional's hands are visible, holding the cutter. The child is wearing a white t-shirt with a colorful graphic.

The **cast cutter** hasn't evolved much from its direct relative, the **autopsy saw**.

The whole process is **scary** for children and **uncomfortable** for physicians.

What can be done to solve these issues?

WHAT'S WRONG?

Between the loud noise and the huge, exposed blade, getting a cast off can become any child's worst nightmare. I set out to pinpoint problematic areas that need attention.



- 1** **Dust Collection**
The cast vac is loud, untidy, and cumbersome.

- 4** **Scale**
It is difficult to maneuver into the optimal cutting position.

- 2** **Blade**
Huge, completely exposed, and difficult changing process.

- 5** **Power Switch**
Rear location requires two hands to power on.

- 3** **Exposed Finger**
Constant contact with fiber-glass casts results in blisters.

- 6** **Vacuum Hose**
Vacuum hose attachment is unwieldy and gets in the way.

FIRST PERSON INSIGHT

Advocare Orthopedics was nice enough to host me for a day and let me shadow some of the physicians. One of the PA's was brave enough to let me cut a cast off of her to give me first hand, user experience.



Pain Point

For a safe cast removal, doctors use their **index finger as a depth gauge** for better control while cutting.

Clutter

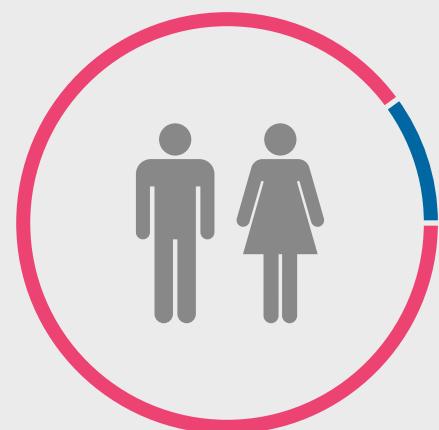
When removing so many casts a day, it is **easier to just leave the hose out** instead of constantly stowing it away.

Pro Hack

Before rotating to a fresh edge, use a **Sharpie to indicate the dull side of the blade**.

USER RESEARCH

It was important to get feedback from the physicians and the physician's assistants who actually use this tool so a survey was sent out to many orthopedic offices in order to see who is using this tool, how often, and what's most important to them as the user.



Gender

Female	90%
Male	10%



Casts Removed per Day

1-10 a week	40%
1-5 a day	10%
5-10 a day	40%
10-15 a day	0%
15+	10%



Vacuum Effectiveness

Very Weak	0%
Weak	0%
Average	70%
Strong	30%
Very Strong	0%



Canister Disposal

2-3 weeks	0%
1-2 months	0%
3-4 months	40%
6-12 months	20%
Not Sure	40%



Important to User

Ergonomics	4.70
Weight	2.70
Depth Control	3.10
Vacuum	2.90
Speed Control	1.60

DESIGN GOALS

After verifying the perceived problems with the physicians through the use of a survey and a visit to a local orthopedic office, I decided to focus my design on these five goals.



Comfortable

In order to increase efficiency and comfort for the physician, excellent ergonomics are a must for the cast cutter.



Easy / Intuitive

The blade changing process should be easy and intuitive. Mid-cut blade rotation also needs to be considered.



Maneuverable

The current system is very unwieldy. The cast cutter should accommodate various optimal cutting angles and positions.



Approachable

The cast cutter should be friendly and approachable to minimize the fear pediatric patients often experience.



Safe

Safety (and the perception of) needs to be highly considered as cast removals are often very scary for pediatric patients.

WHY PHILIPS?

It's an exciting design challenge to imagine what the first Philips Cast Cutter could be like by merging the sophisticated, precise design language of their consumer products with the softer, more approachable aesthetic of their medical devices.



Approachable / Precise

Precise parting lines and hard edges break up the soft and subtle form.



Isolated UI

The UI sits undisturbed on a segmented panel in order to call attention.

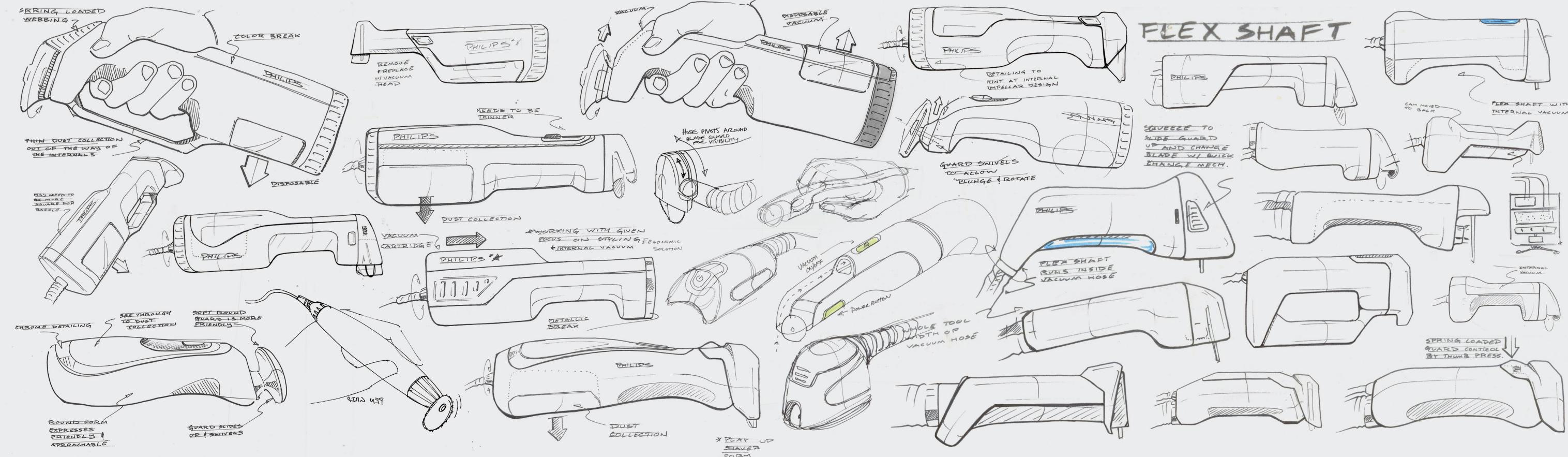


Touch Points

The desaturated yellow calls attention to the areas of interaction in a soft and approachable manner.

IDEATION_01

The ideation phase began with exploration of overall form as well as different ways to remove a cast in order to address the issues of scale and maneuverability.

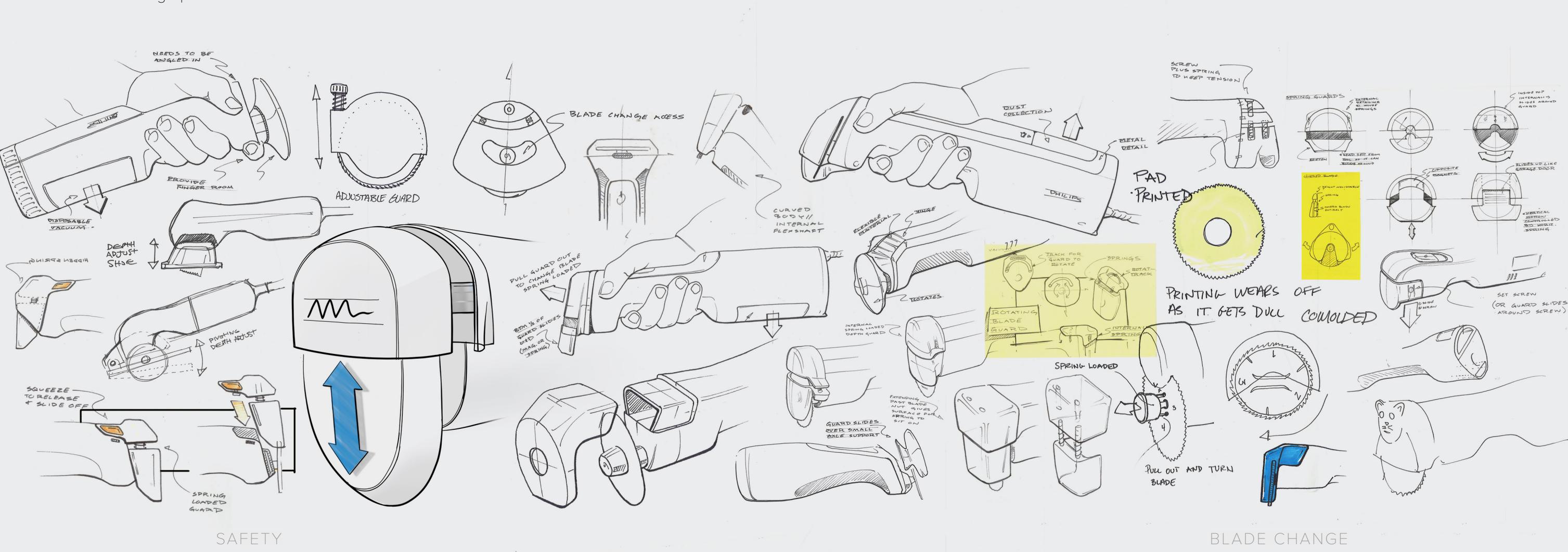


SCALE / ERGONOMICS

DUST COLLECTION / MANEUVERABILITY

IDEATION_02

Throughout the ideation phase, important details regarding safety were explored as well as how to make the blade change process more intuitive.



INTERNAL COMPONENT EXPLORATION

Three foam models were roughed out in order to visualize how different internal architectures affect the form in terms of scale and maneuverability.



Standard *(With internal Vacuum)*

- + Quiet
- + Increased maneuverability
- + Familiar

Linear

- + Slim blade guard profile
- Increased length
- Decreased maneuverability

Flex Shaft

- + Increased maneuverability
- + Lighter weight
- Loud vacuum / thick hose

* More in-depth down selection process available in process book.

REFINED FOAM MODELS

With a more focused form direction in mind, the design was brought into CAD. With a more refined form milled out, I was then able to fine tune the details such as the sizing of the grip area and button location.



Model No. 1 is the preliminary exploration in an attempt to achieve an **aesthetic** form.

Model No. 2 is modeled directly around the internal components resulting in a **slimmer, more ergonomic design**.

Model No. 3 fine tunes the **grip area** and begins to explore **button placement**.

PART BREAK UP EXPLORATION

After a final form was achieved, it was time to focus on the details. During the refinement stage, parting lines, vacuum canister location, logo placement, and the careful use of Philips' yellow were all explored.



UI EXPLORATION

Taking inspiration from Philips consumer products, a variety of UI concepts were explored.



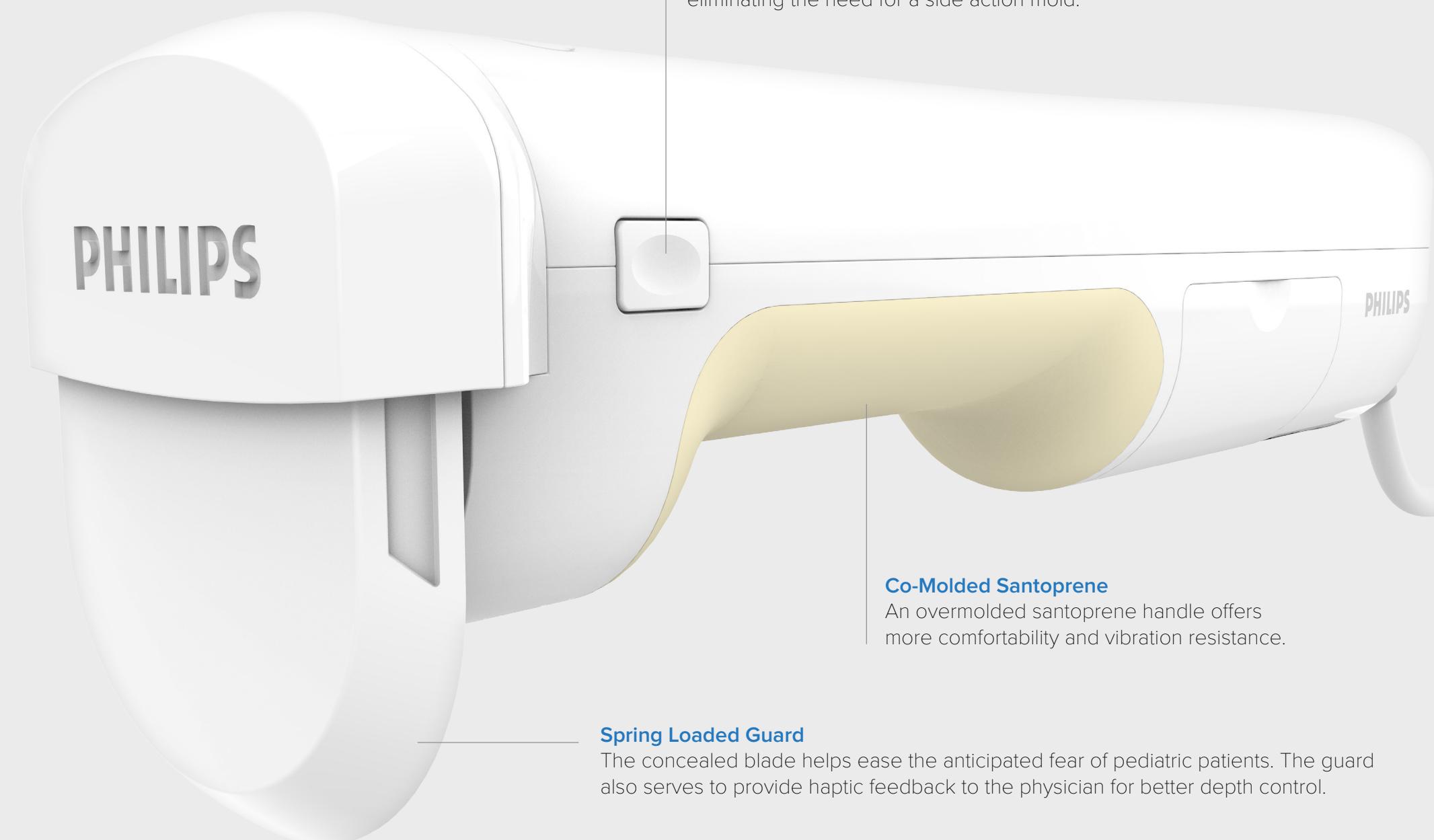
FINAL WHITE-MODEL

The final white-model resolves overall form and ergonomic issues as well as design features including the spring loaded quick release blade guard, a 360° swivel cord and the location of the internal vacuum.



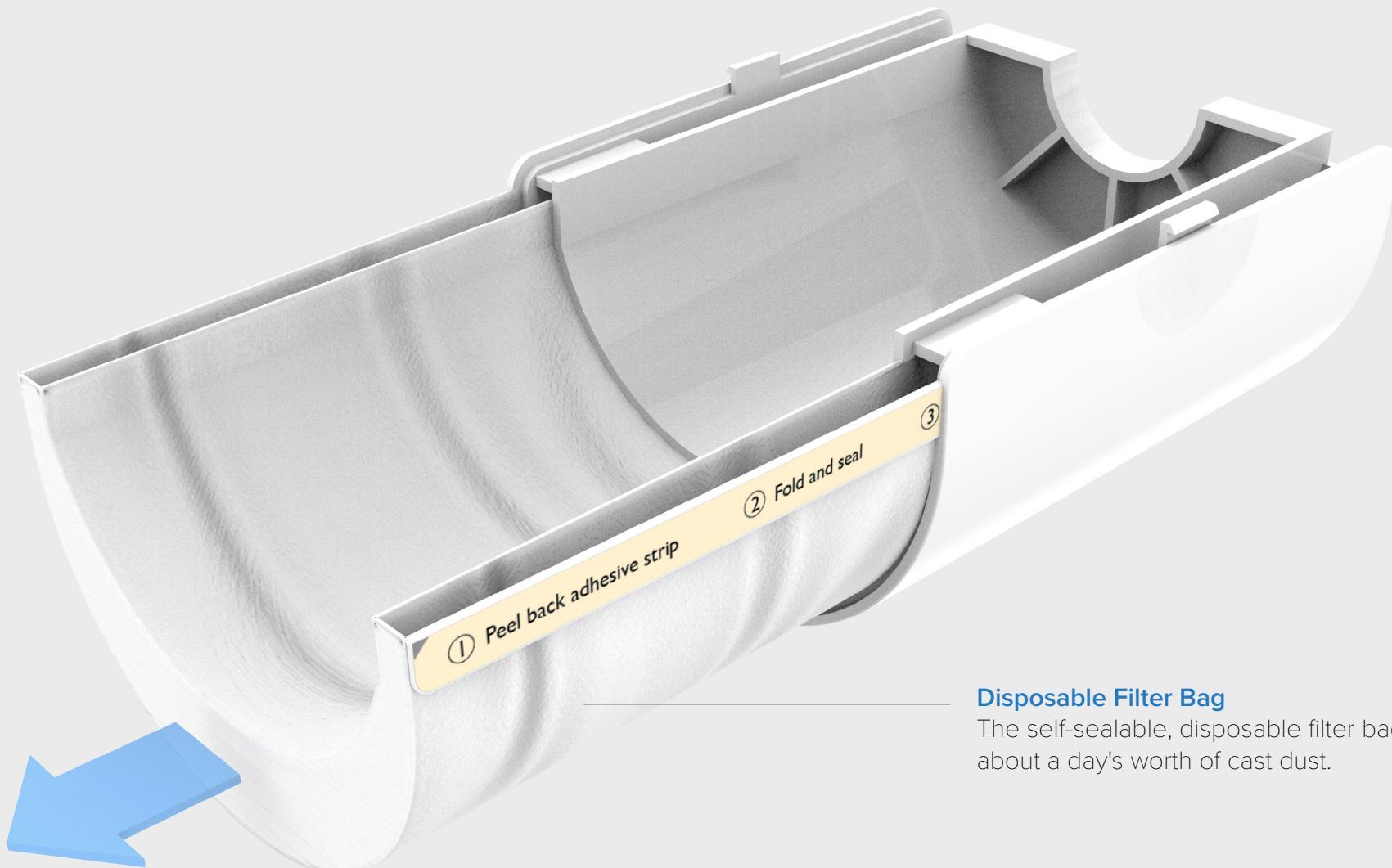
FINAL DESIGN

The final design utilizes the Philips yellow to indicate primary touch points. An otherwise simple and clean form provides an approachable appearance appropriate not only for children, but adult patients as well.



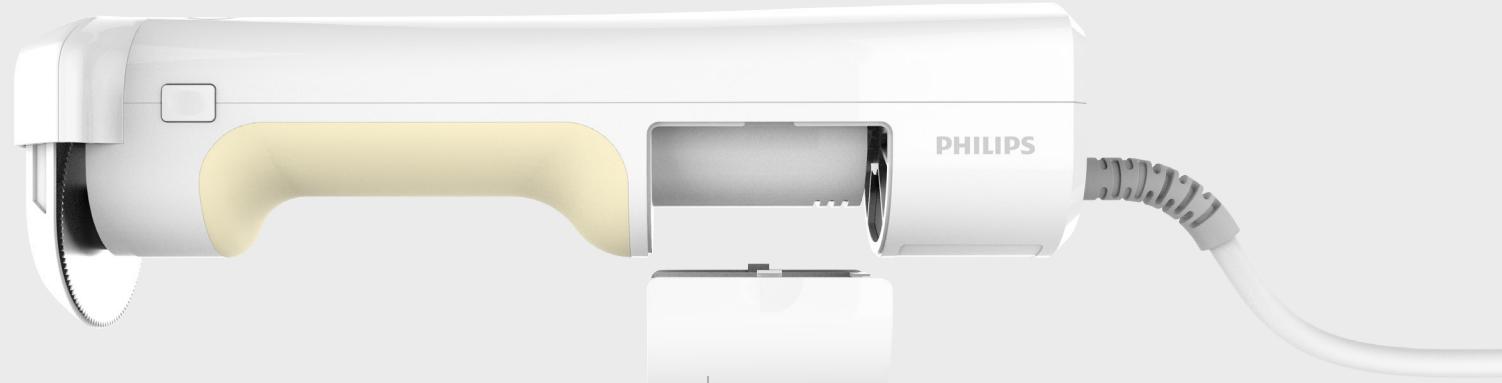
INTERNAL DUST COLLECTION

Children are often more scared of the noise than the blade itself. An internal vacuum heavily reduces the noise of the cast removal process by eliminating the shop vac style dust collection.



Disposable Filter Bag

The self-sealable, disposable filter bag can hold about a day's worth of cast dust.

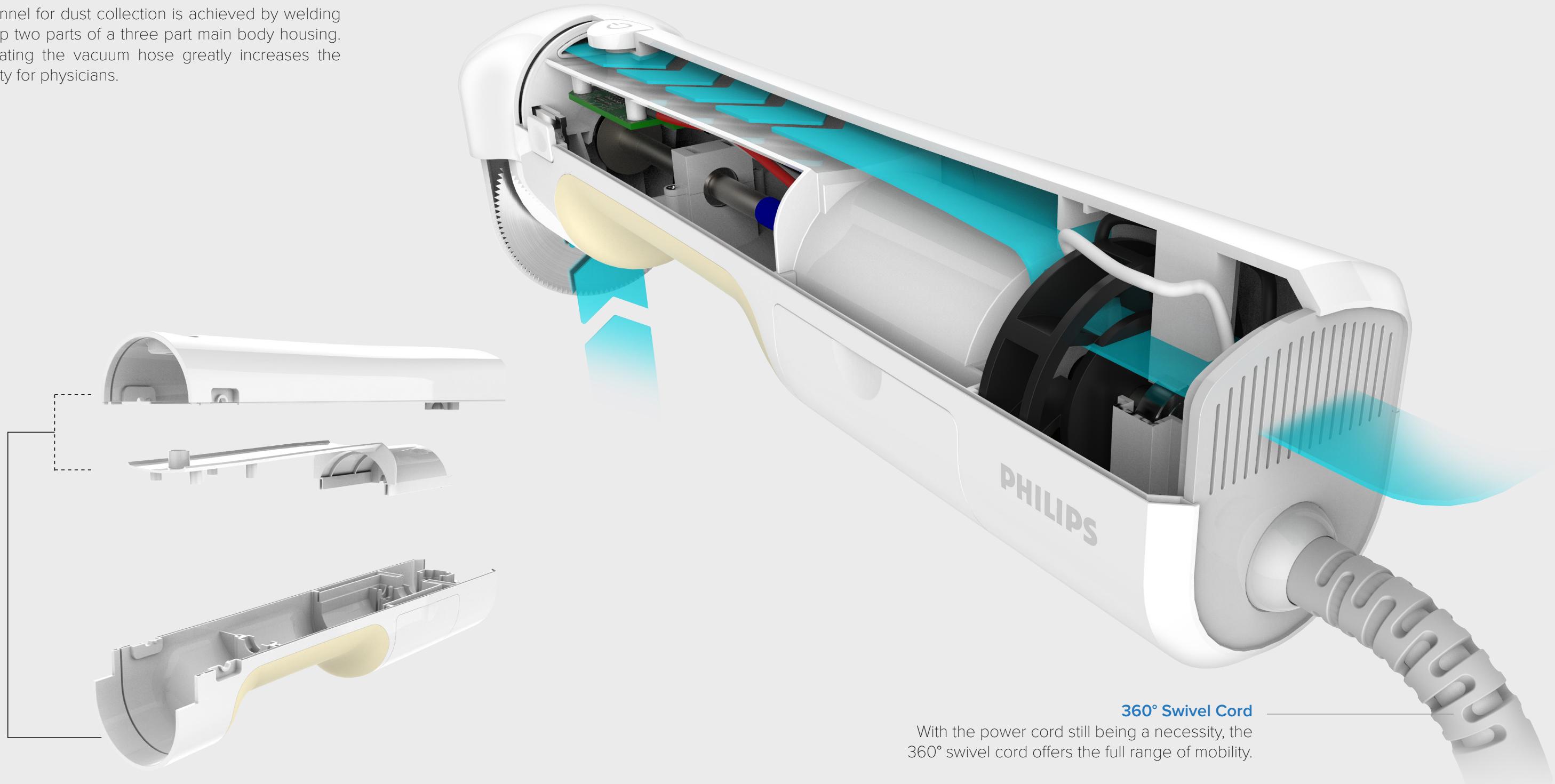


Vac Bag Housing

Using simple snap features, the vac bag housing is easily attached and removed from the cutter.

AIR FLOW / PART BREAK UP

A channel for dust collection is achieved by welding the top two parts of a three part main body housing. Eliminating the vacuum hose greatly increases the mobility for physicians.

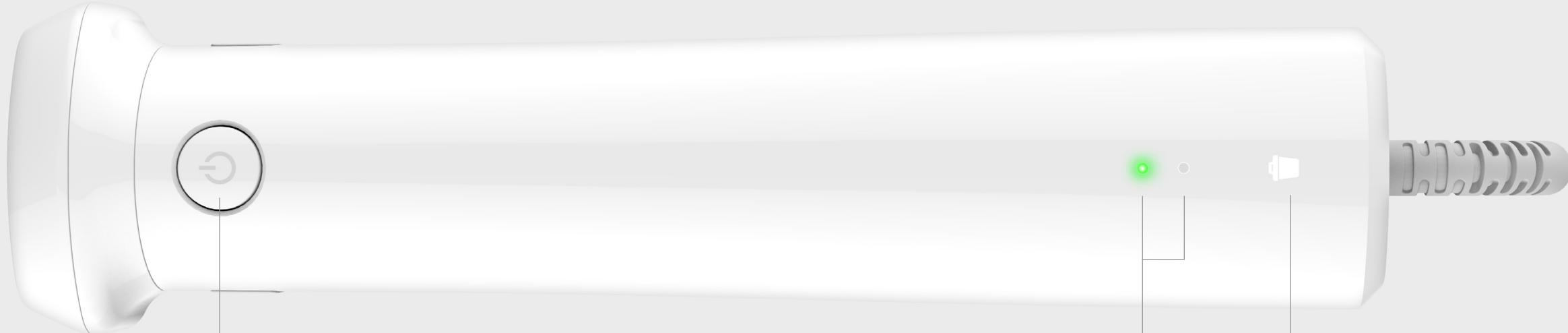


360° Swivel Cord

With the power cord still being a necessity, the 360° swivel cord offers the full range of mobility.

DEAD FRONT UI

Inspired by Philips consumer products, the top surface of the cast cutter contains nothing more than the UI. The LEDs sit below the surface providing a dead front look when the indicators are not illuminated.



Dual Speed Power Button

One Click: Normal speed
Two Clicks: Fast speed

Power Level Indication

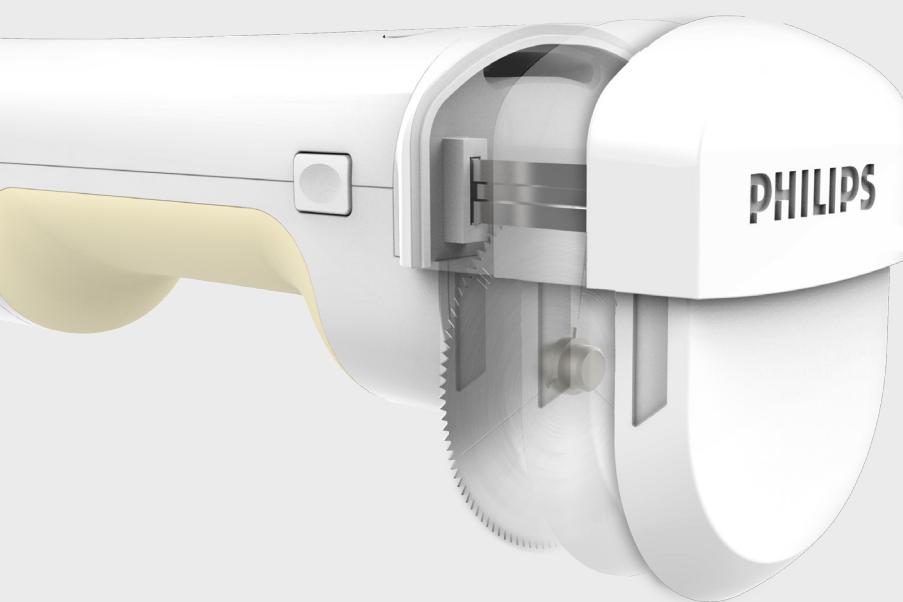
Icons are out of the way yet still able to be viewed when needed.

Canister Full Indication

Solid: Approaching max capacity
Blinking: Dispose and replace filter

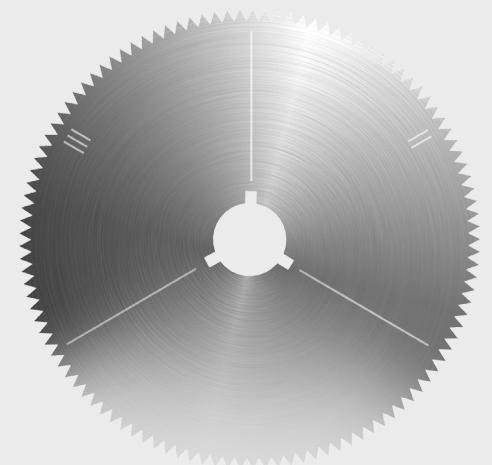
INTUITIVE BLADE CHANGE

Gone are the days of using a Sharpie to determine the used side of a blade! Through the use of spring loaded blade clamps and a pad printed blade, the intuitive, toolless, three step blade change process is quick and accommodates mid cut blade changing.



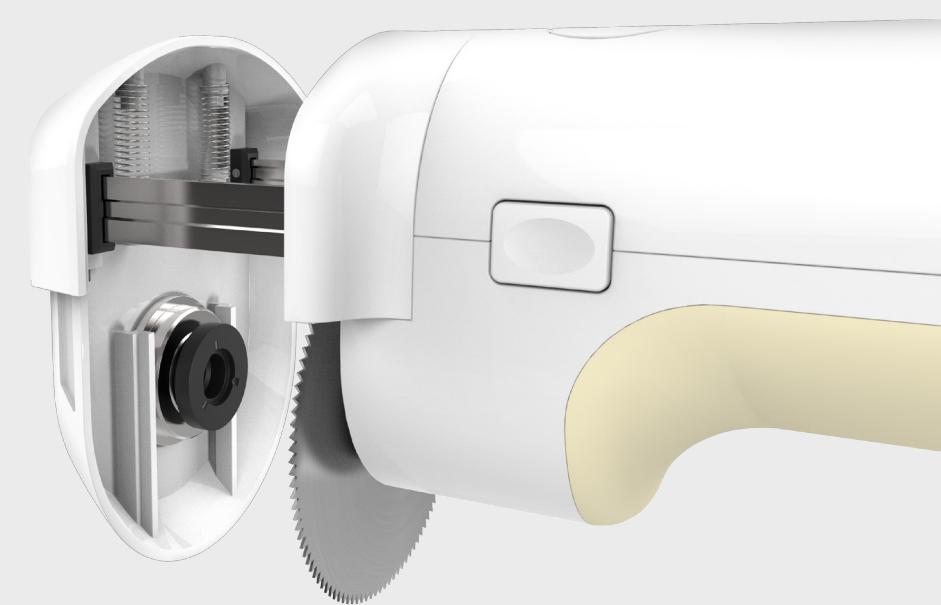
OPEN GUARD

When the two side buttons are depressed, the guard springs open. Simply remove the blade for replacement. **No tools required!**



ROTATE FOR FRESH EDGE

As the blade cuts through the cast, the **pad printed indicator gets abraded**. When the blade gets dull, rotate to an edge that is still marked.



CLOSE GUARD

Place the blade on the shaft and **close the guard to clamp the blade in place**. The guard is free to move up and down while the blade oscillates.



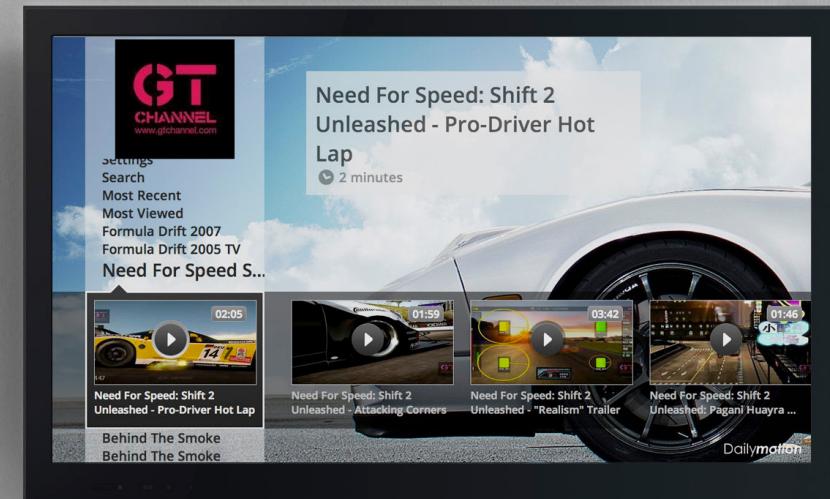
Introducing the first ever Philips Cast Cutter.

Bridging the gap between consumer and medical products, Philips' first ever cast cutter reduces the fear for children and improves the user experience for physicians. Its soft and subtle form combined with sharp detailing and attention to detail is where precision meets approachable.

innovation you



PHILIPS



WHO IS MAGIC LEAP?



Magic Leap is an American start up company that is working on technology for **augmented reality** that projects a digital light field into the user's eye using silicon photonics. While a list of companies including Google and Alibaba are investing millions of dollars, Magic Leap has yet to released a product to market.

*This project has no affiliation with the company.

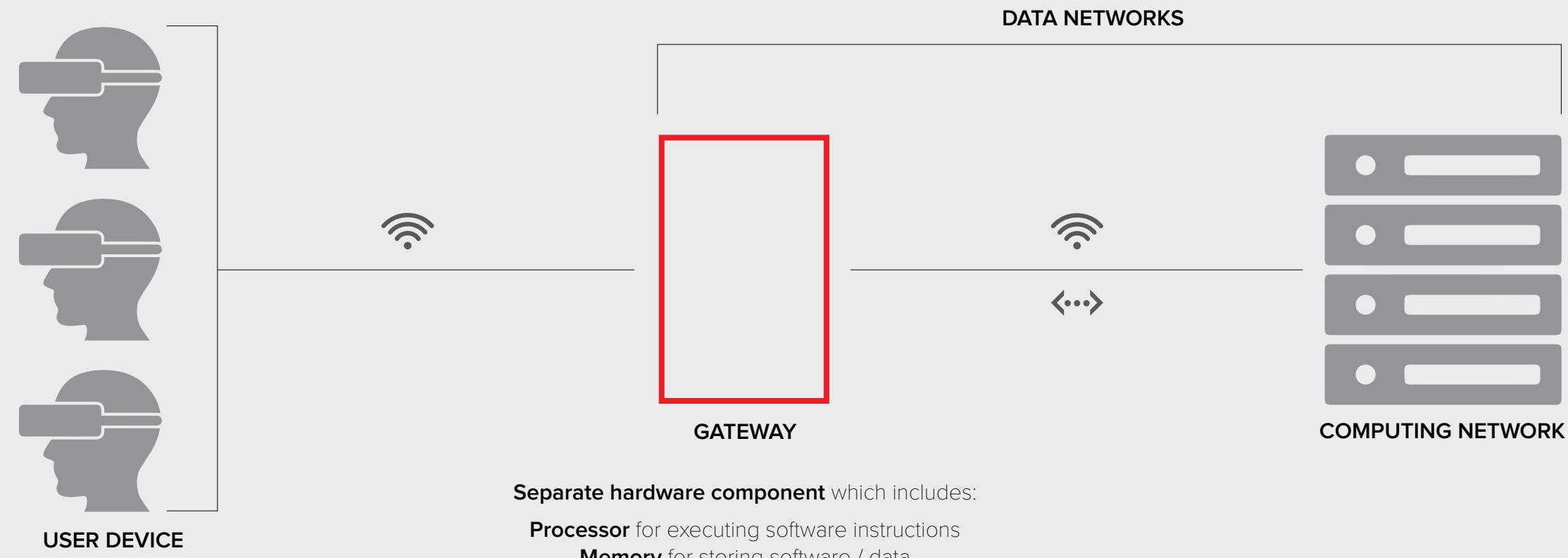
WHAT IS AUGMENTED REALITY?

Augmented reality is a form of mixed reality that lives between the realms of the real world and virtual reality. AR superimposes graphics, audio, and other digital elements over a real-world environment in real time.



HOW IT WORKS / AREA FOR EXPLORATION

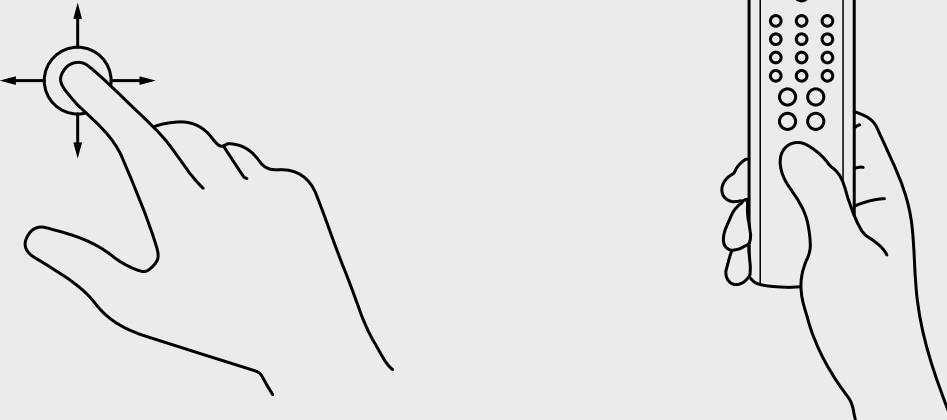
There are many speculations about what the glasses may look like but none about the gateway hardware. I decided it would be fun to explore how this unit could provide function to the user aside from just being a data dump and middle man between the user and the servers.



PROBLEM STATEMENT

It may take a while for people to be fully comfortable with total **gesture controlled navigation**. It is not wrong to believe **physical buttons** are here to stay for quite a while longer because of the haptic feedback they provide users.

How can we **ease the transition of augmented reality into the home entertainment space** while maintaining the utilization of its technology?



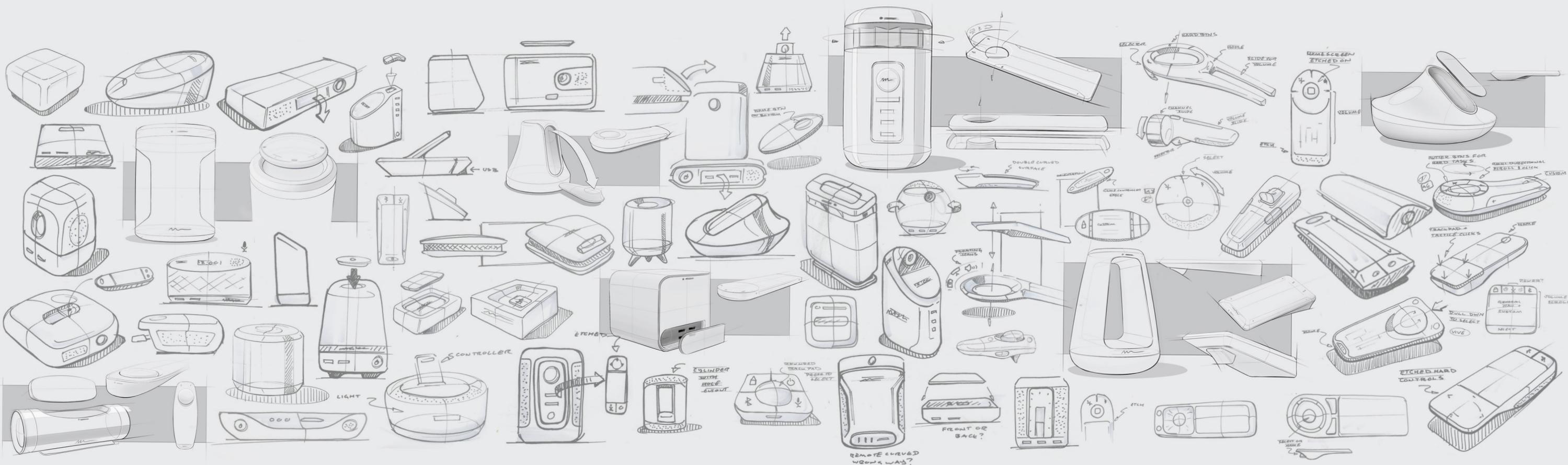
AESTHETIC INSPO

A soft color palette creates a more approachable aesthetic appropriate for home use. The use of primitive forms combined with soft edges and precise detailing will lend itself to be a more dynamic yet approachable product.

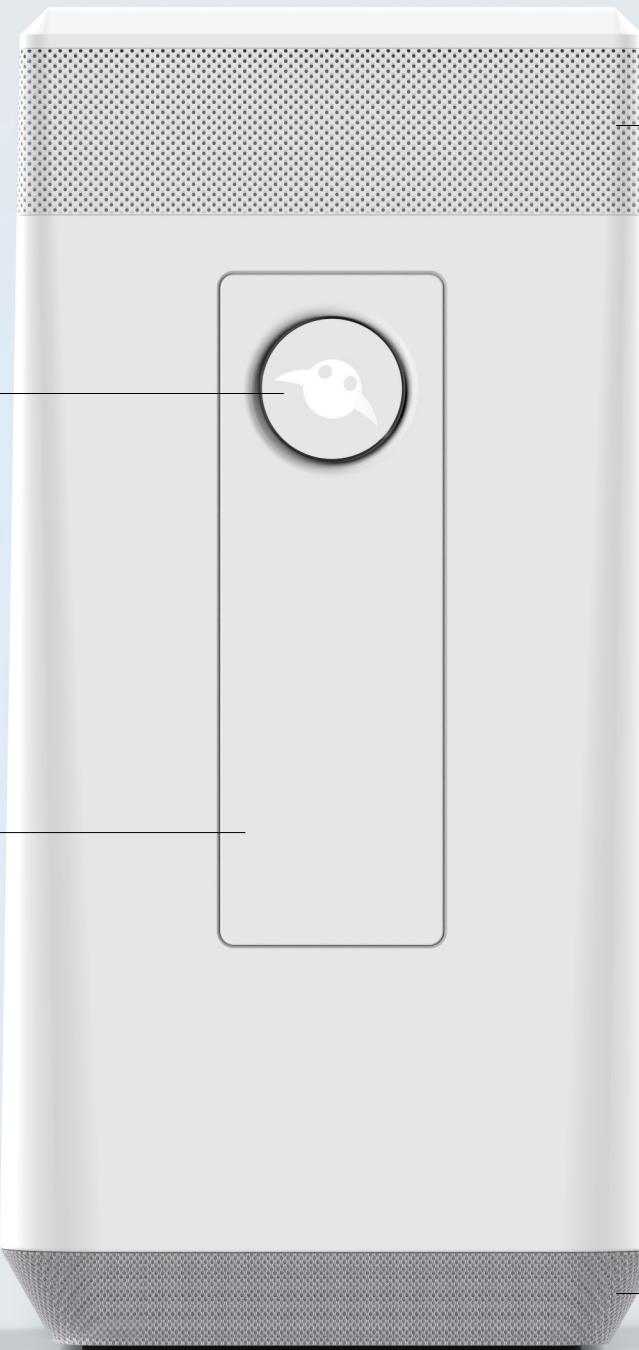


BROAD IDEATION

Throughout the ideation phase I focused on primitive forms that could be brought to life with precise detailing. I also explored forms for the remote control that could utilize the technology of Magic Leap in a unique way.



ML HOME ENTERTAINMENT HUB



Remote Control Release Button

Allows the front surface of the remote to sit flush with the unit as well as provide a branding opportunity.

Remote Control

The remote control helps ease the transition into a total gestural controlled world.

Outtake Vents

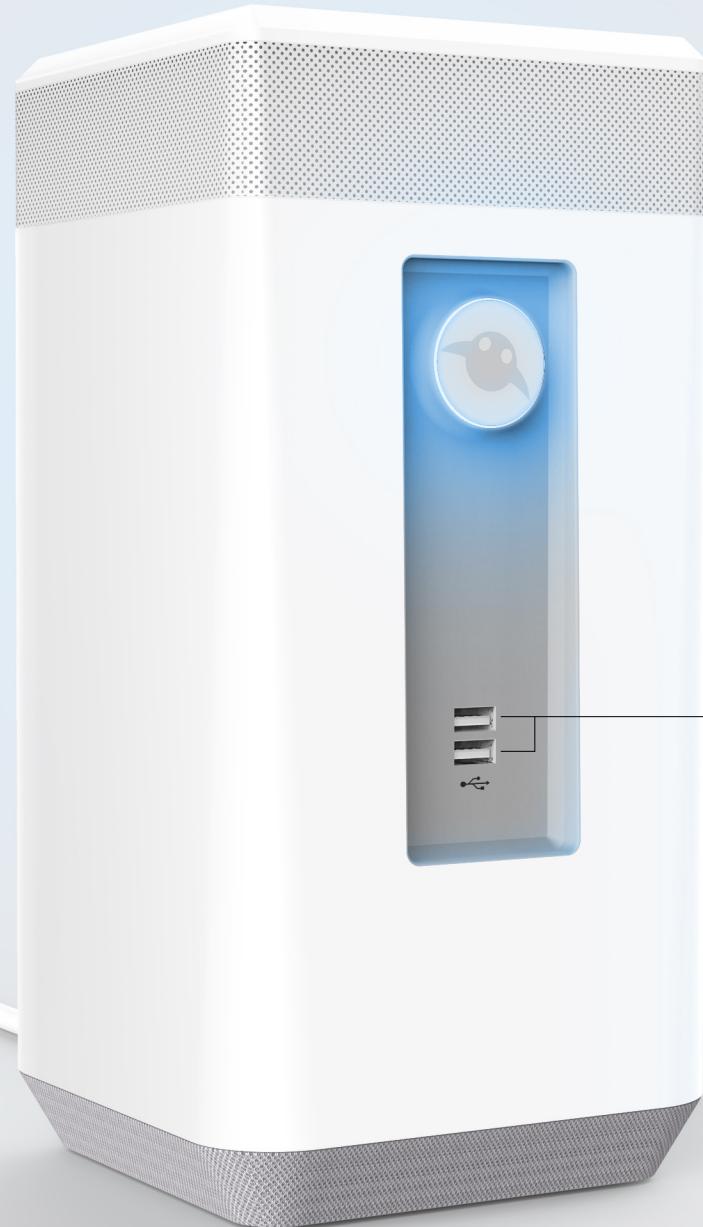
A clean perforation pattern adds interest to the form without distracting from its simplicity.

Intake Vents

The use of fabric for the intake vents provides a more homey feel.

REMOTE CONTROL RELEASE

To keep the front surface clean and flush, there are no finger dimples to aid in the removal of the remote. Instead, a simple push on the central button unlatches the remote from its home position.



USB Ports

Data files will be downloaded online, but two USB ports are available for faster transfer of files when needed.



GLASSES OFF

Without the Magic Leap glasses, the remote control is a clean, undisturbed glass surface.



GLASSES ON

When the user is wearing the glasses, control icons are projected onto the surface of the remote. Haptic touch technology provides the sensation of hard buttons on the smooth glass surface.







A dynamic action shot of a man with long dark hair, shirtless, paddling a white kayak. He is looking upwards, likely at a wave he is about to ride. A massive, turbulent wave is crashing over him, sending up a massive spray of white water. In the foreground, the edge of another kayak is visible, showing a person's legs and feet. The background shows a bright, hazy sky over the ocean.

VIRBMOJO

Action camera for the active millennial.

DESIGN BRIEF

The action camera market is expected to grow 14% annually over the next 4 years.
Garmin is continuing to invest in the camera market and find new products to serve our customers needs.
With the popularity of social media, more people are looking for ways to share their experiences.

["Design the next generation Garmin action camera."](#)

BADASS

Action cameras were originally created for extreme sports and truly badass athletes.



GARMIN® > GoPro®
Be a HERO. The GoPro logo consists of the word "GoPro" in a bold, sans-serif font, followed by a registered trademark symbol. Below the word "GoPro" is the tagline "Be a HERO." in a smaller, italicized font. To the right of the tagline are five colored squares: blue, red, yellow, green, and white.

(SLIGHTLY LESS) BADASS

Action cameras have grown by appealing to ordinary consumers. In particular, Active Millennials.



GARMIN®



GoPro®
Be a HERO. 



EXPLORE.
EXPERIENCE.
SHARE.



PRODUCT INSPIRATION

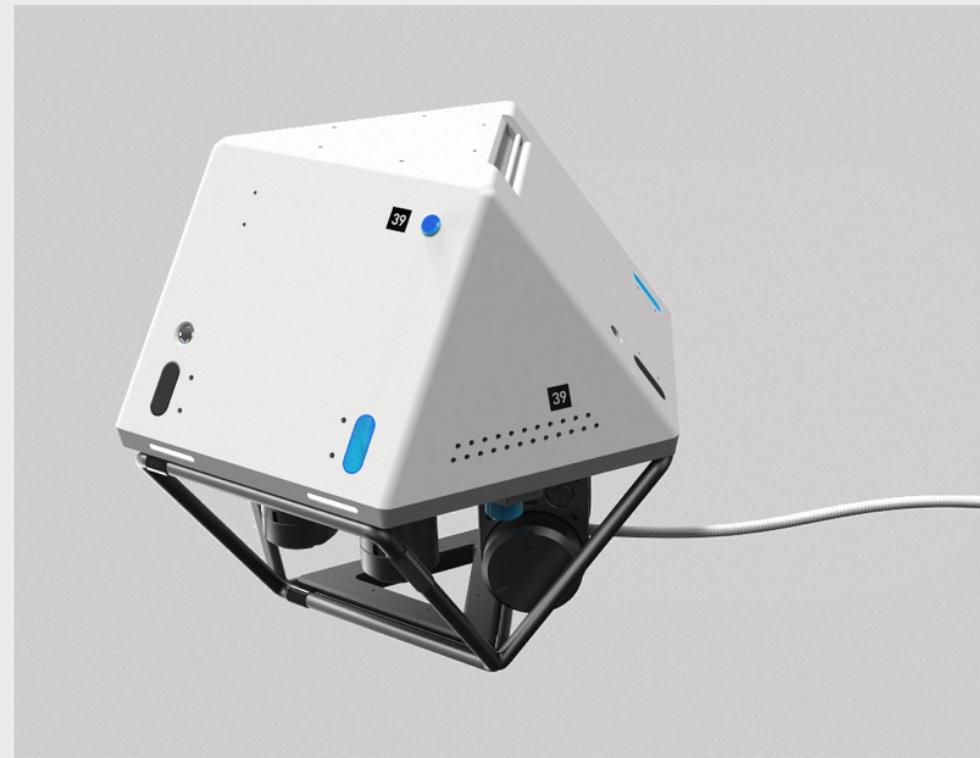
A soft, simple form with interesting surface changes and attention to detail coupled with a light color pallet with pops of an accent color allows a product to feel approachable yet sophisticated and appeal to the millennial consumer.



FORM



DETAIL



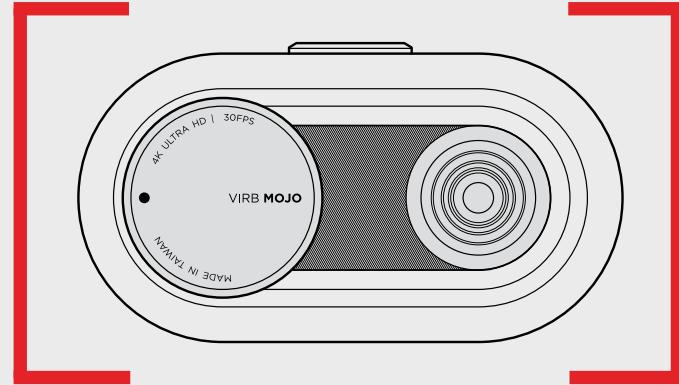
CMF

AESTHETIC TARGET

I was challenged with creating a new icon for the action camera. Something that Garmin could own. I focused on a form somewhere between the Ultra 30 and the X. Not too friendly but not too serious.



VIRB**ULTRA 30**



VIRB**MOJO**



VIRB**X**



VIRB**360**

SKETCH DEVELOPMENT

With most action cameras being rectilinear forms, the pill shape seems to carry its own personality. It's fun, unique, and not something you currently see in the action camera market.



FORM DEVELOPMENT

Two dimensional sketches can only go so far with a product like this. It was important to get models in my hand to evaluate the design from every side in order to make justified decisions.



FINAL CONCEPT

Taking design cues from high end photography and videography equipment, such as the anodized metal details, allows the cute and fun form to simultaneously feel serious and high quality.





Touch Surface

Swipe through various shooting modes.



VIDEO



PHOTO



BURST



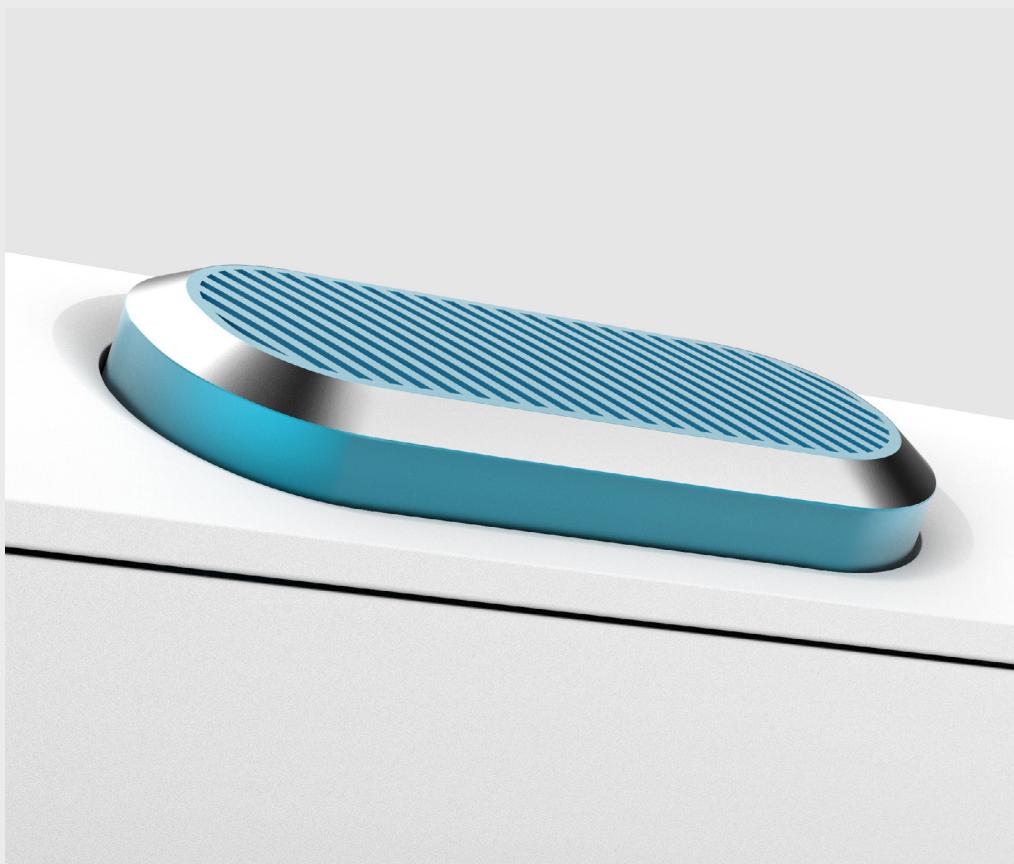
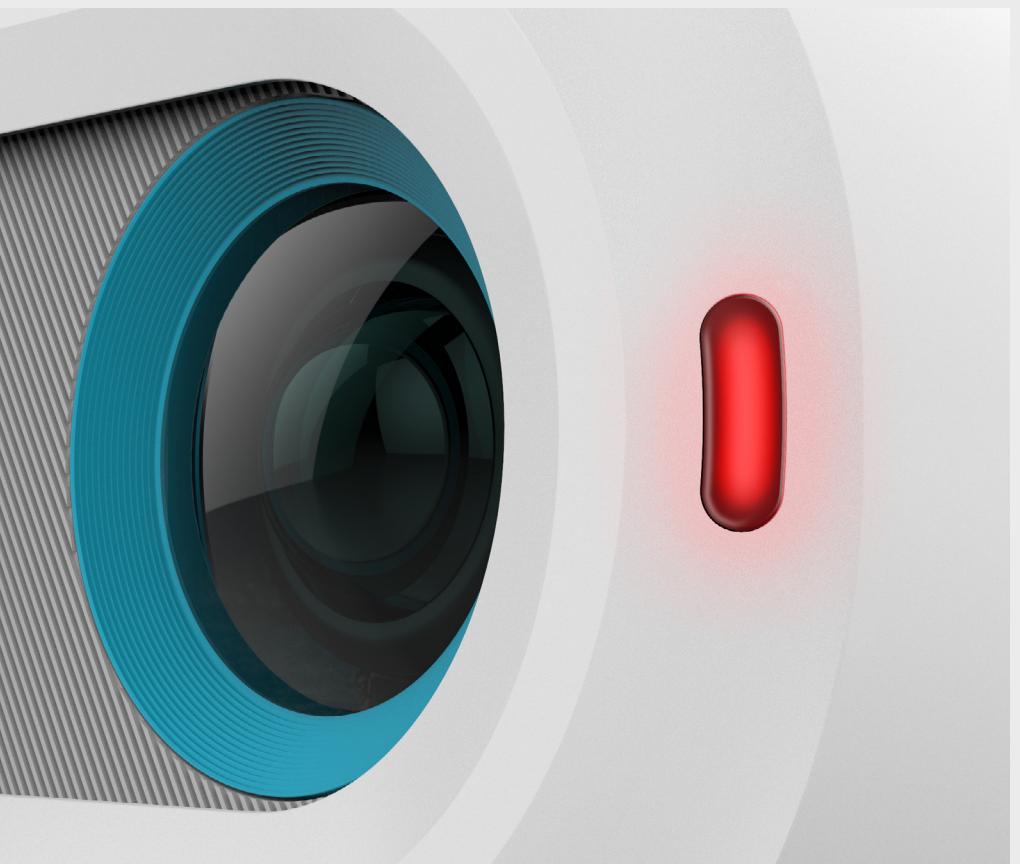
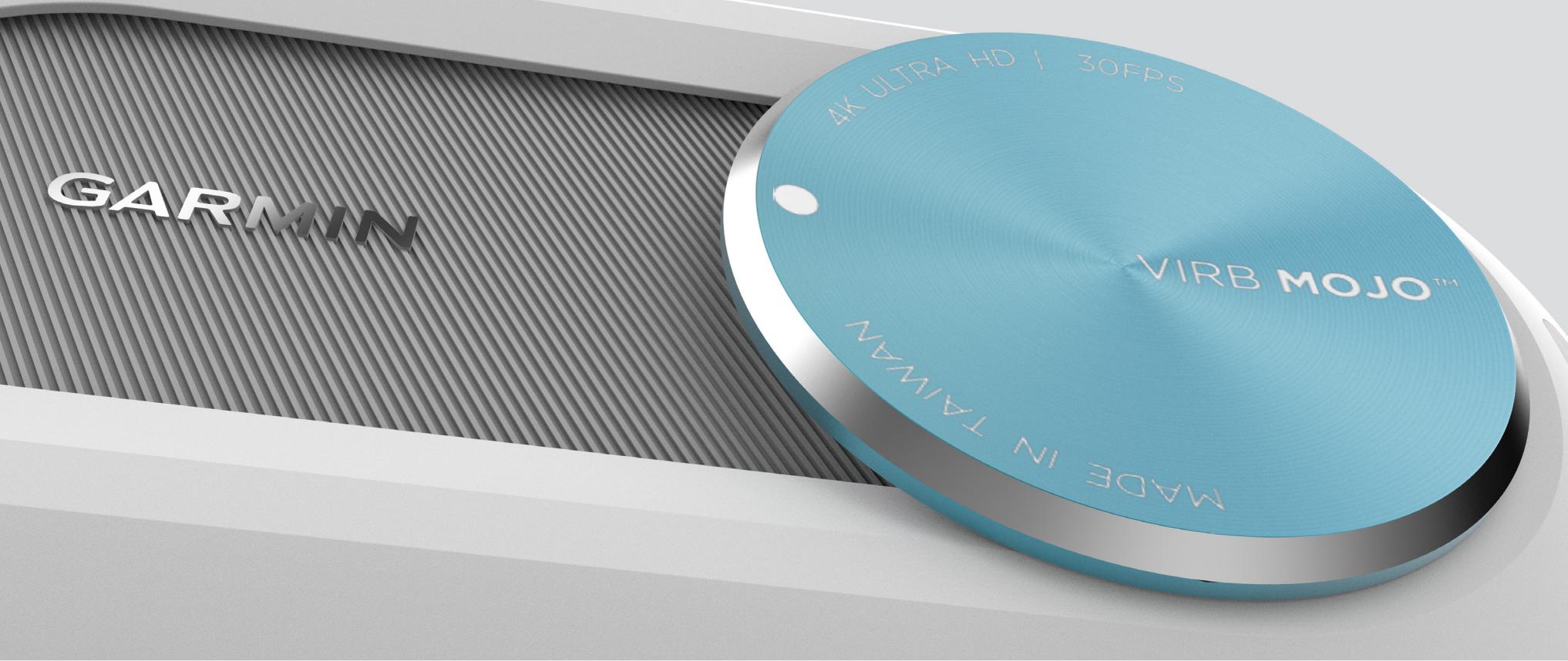
BOOMERANG



LIVE



SHARE





PACKAGING

Clean, simple packaging matches the overall aesthetic of the camera and the story it is trying to convey.





CO-OP Experience

During co-op, I had the privilege of working on projects for these clients.



THANK YOU!

More work + full resolution portfolio
available at **jackthrun.com**

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973.349.0160