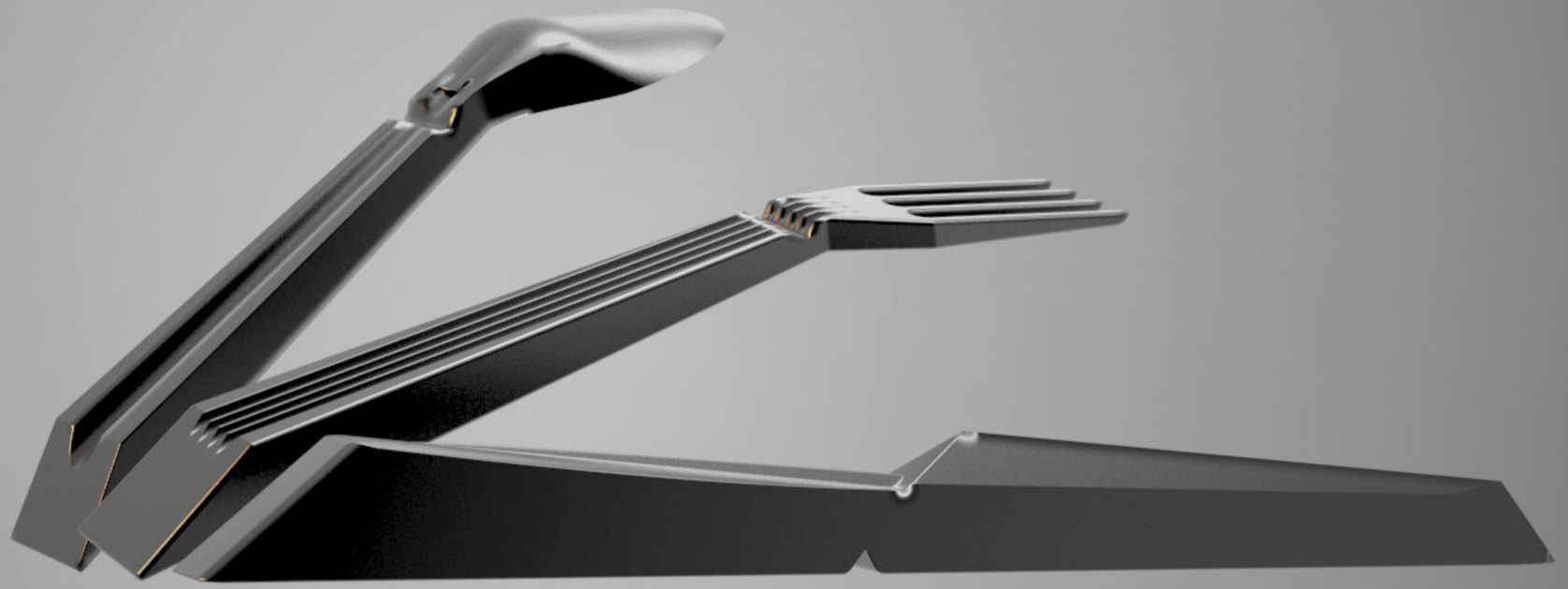
SENSEWARE

UTENSILS FOR THE VISUALLY IMPAIRED



1 MILLION

"Over 1 million Americans live with blindness."

6 MILLION

"Over 6 million Americans have vision loss or are considered visually impaired."

63%

"The visually impaired have a heightened sense of touch. They use their hands upwards of 63% more than the average human."

10%

"Less than 10% of blind people can read Braille. Household tools need a mechanism for deciphering."



LIVING WITH LOW VISION CAN BE CHALLENGING AND ISOLATING, MAKING DAILY ACTIVITIES SUCH AS READING, COOKING, **EATING** AND NAVIGATING UNFAMILIAR ENVIRONMENTS DIFFICULT. THIS CAN ALSO IMPACT ONE'S MENTAL AND EMOTIONAL WELL-BEING, LEADING TO FEELINGS OF FRUSTRATION, ANXIETY, AND DEPRESSION.

THE LIGHTHOUSE FOR THE BLIND INC.

DISCOVERY AND FIELD RESEARCH



Conducted in depth interviews with nine visually impaired individuals



Observed real meal scenarios and utensil use



Documented challenges around orientation and placement



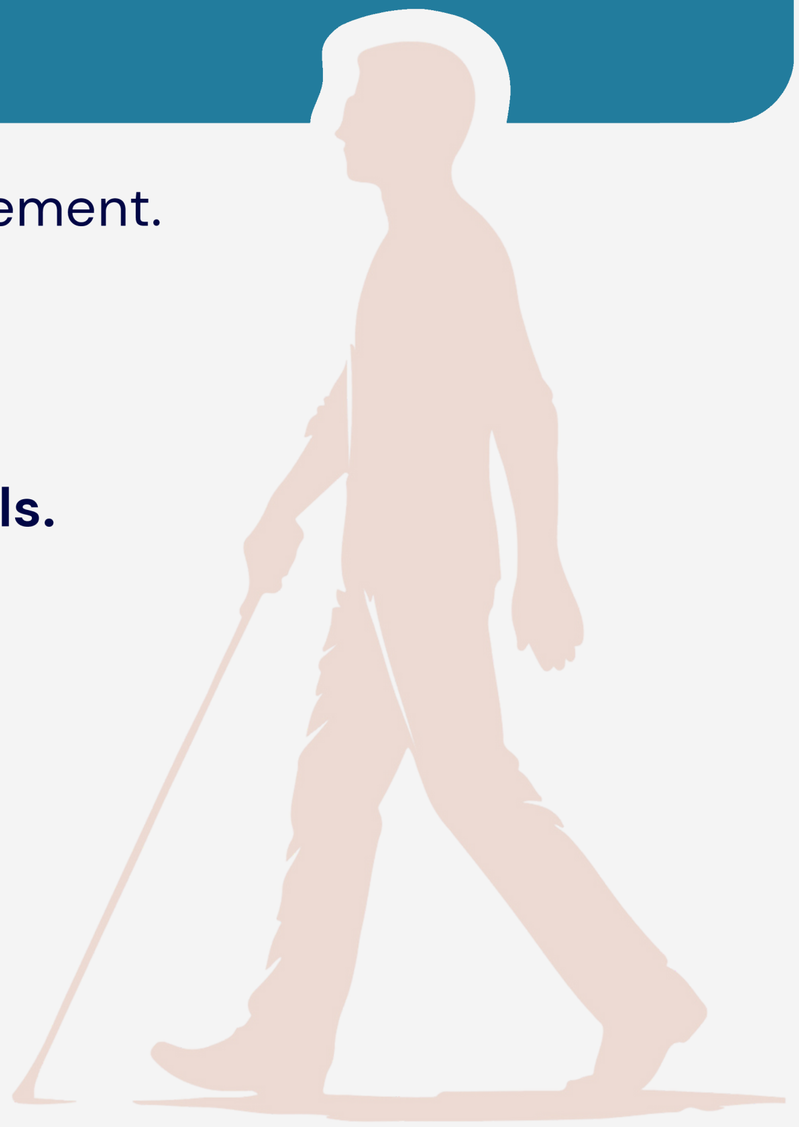
Worked with Occupational Therapists and Vision Rehabilitation Therapists

SYNTHESIS AND EMERGING INSIGHTS

Standard utensils **rely heavily on visual orientation** and placement.

Users frequently paused, **struggled**, and readjusted grip.

Small uncertainties compounded into **frustration during meals.**



EQUITY IN DESIGN

DESIGNING UTENSILS THAT ARE FUNCTIONAL **AND** BEAUTIFUL



Current market solution

- I set out to design utensils that reduced the stigma of vision loss while valuing beauty from both a visual and tactile perspective.
- Alternative products look childish and cheap. Without specialized utensils stakeholder either struggle to use regular utensils or rely on caretakers for feeding.
- Senseware is designed to hide the functional aspects while conveying elegance.

+ DESIGN CRITERIA

01 WHICH UTENSIL

Deciphering between utensils without feeling the the end that enters the mouth is a key problem facing the visually impaired.

02 HAND PLACEMENT

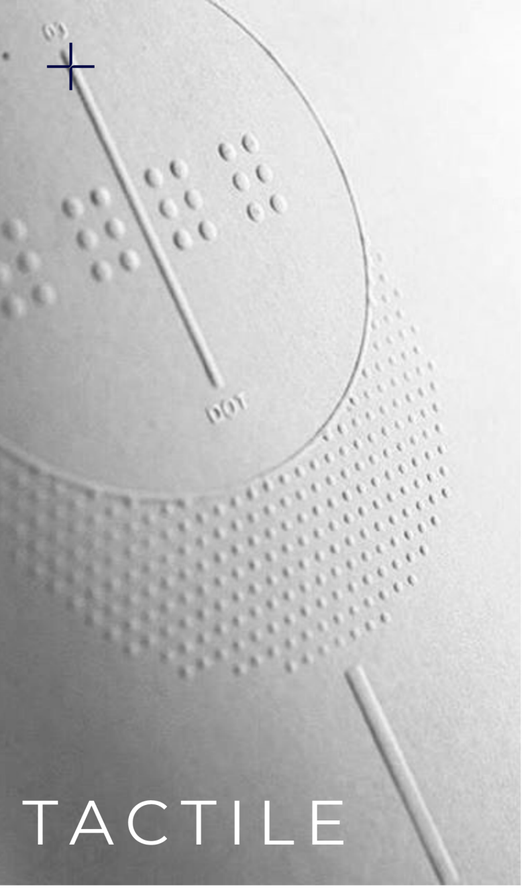
Knowing where exactly to hold the utensil is difficult and potentially dangerous without being able to see the utensil.

03 SCOOPING MECHANISM

The curvy and bulbous shape of most spoons (unlike a shovel shape) make it difficult for scooping.

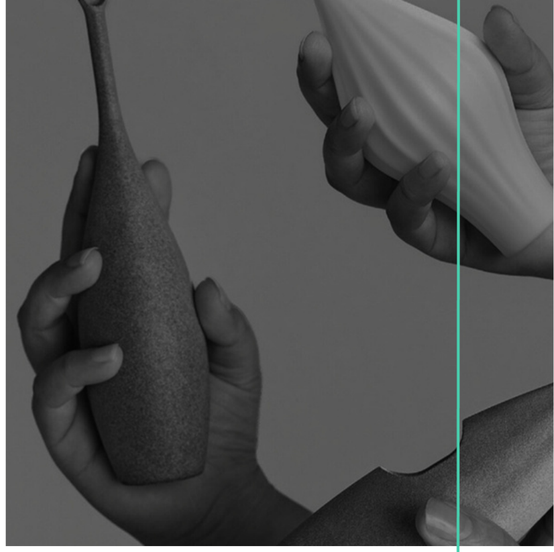
04 RESTING POSITION

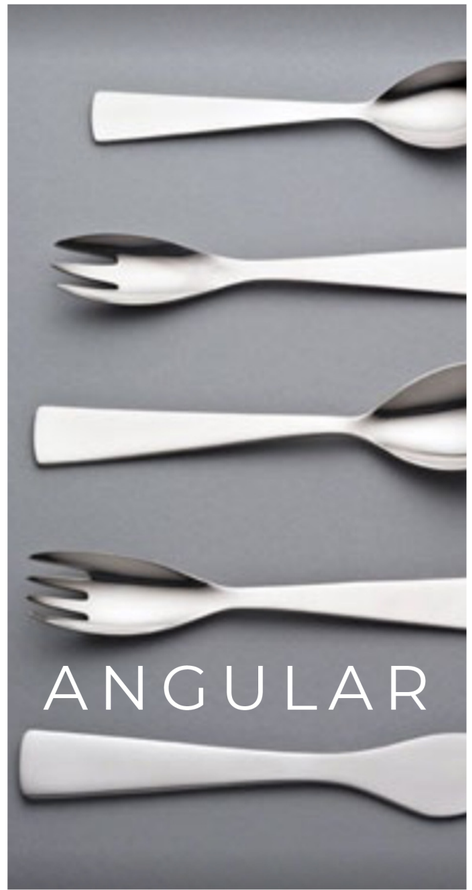
Needs a straightforward place to rest/place the untensil.











MOOD BOARD







SKETCH EXPLORATION





PROTOTYPING

Realistic Prototypes from foam core.



INTERVIEWS + FEEDBACK



FORK

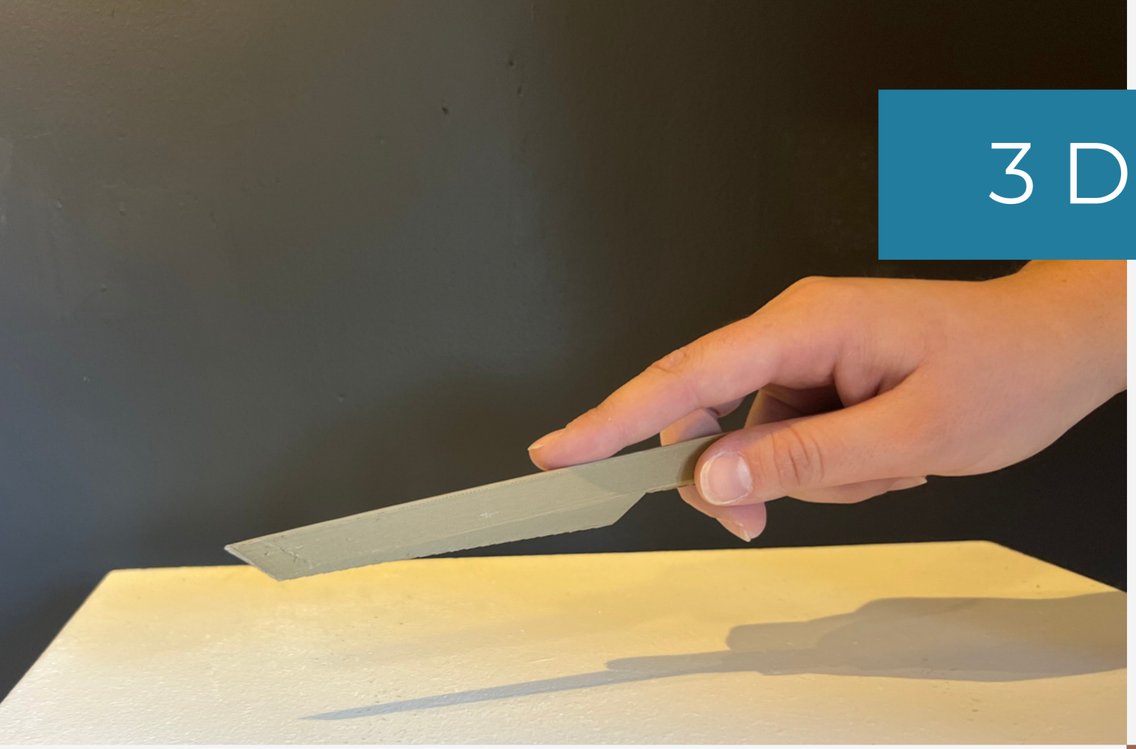
Increase angle between handle and prongs. Make ridges deeper and wider. Add hand place indicators. Increase fillet size.

KNIFE

Identification Ridge needs to be bigger. Add hand place indicator or groove. Increase fillet size.

SPOON

Increase overall size. The cutout beneath the spoon should be deeper. Add groove. Increase fillet size.



3D PRINTING KNIFE

STAKEHOLDER FEEDBACK

Identification Ridge needs to be more pronounced.

Bigger fillets to create a smoother and softer feel

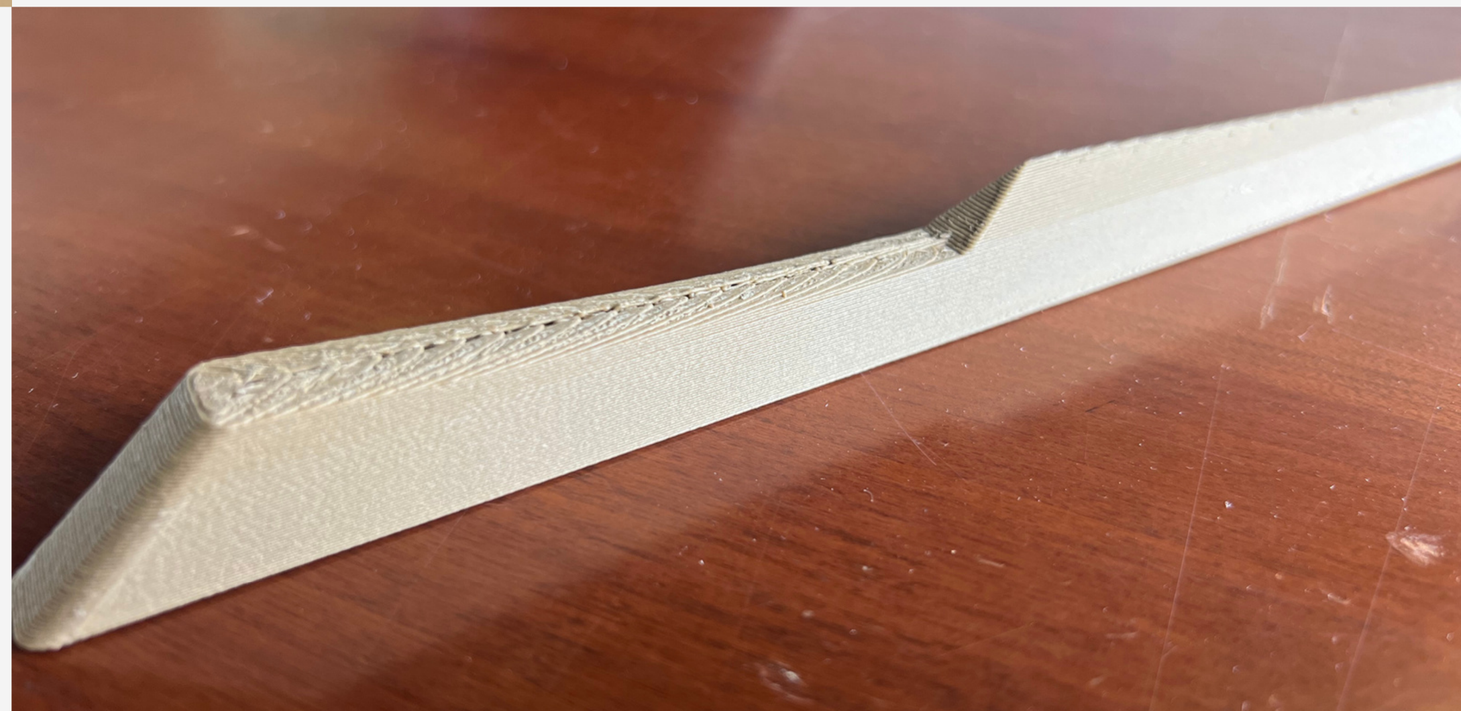
Need to simplify indication for hand placement

Proportions are perfect and look dynamic

I love the angle on the butt of the knife

Although the knife is angular, it rests flat on the table simply

ICaptured the desired angled but soft (Better than spoon and fork)





3D PRINTING FORK

STAKEHOLDER FEEDBACK

Identifying marks need to be much deeper and wider.

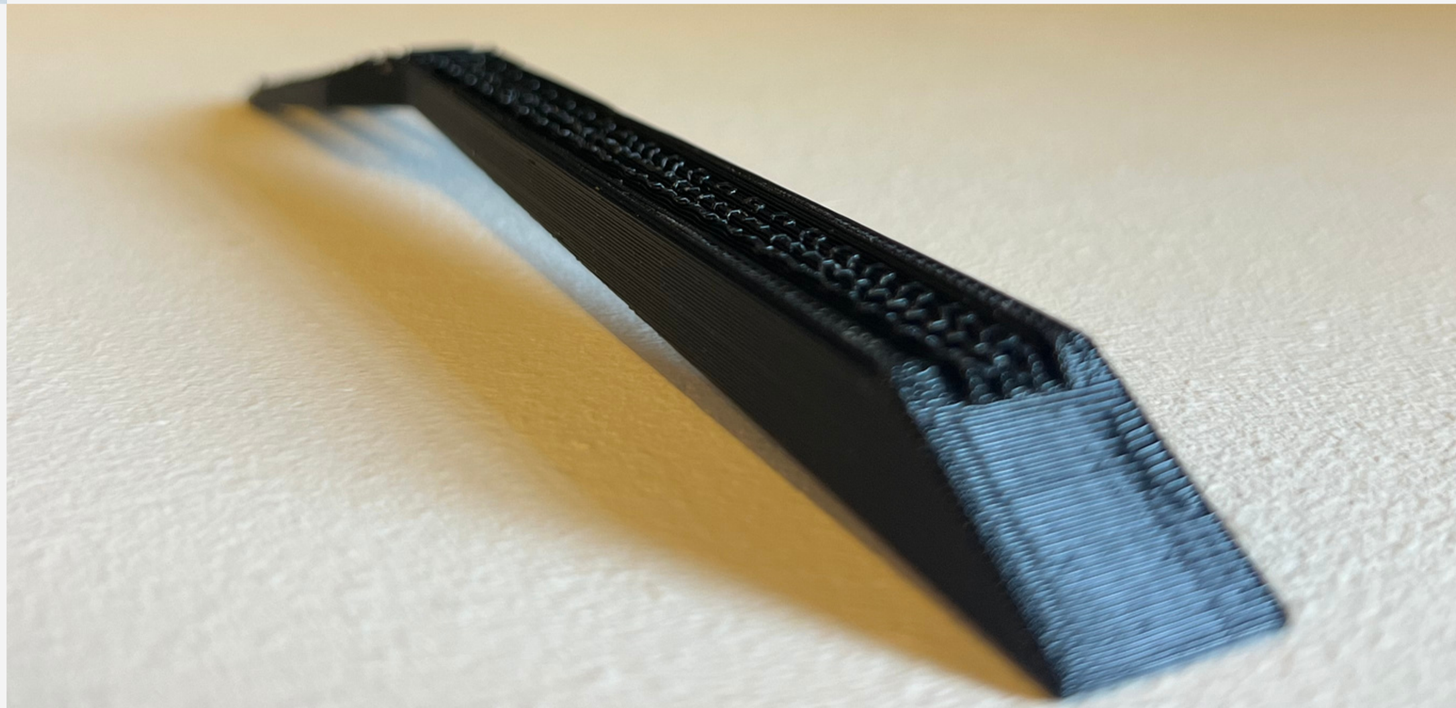
Increase angle between handle and prongs

Again better hand placement indicators

Proportions are perfect and look dynamic

Transition from handle to prongs, feels smooth but looks sharp

Consistent look with other utensils, fits brand identity well





3D PRINTING SPOON

STAKEHOLDER FEEDBACK

Slightly too small. Concave part needs to be deeper

Again it needs larger fillets, it feels to sharp

The cutout beneath the spoon should be deeper

No clear indication of hand placement

Scooping mechanism works and is at the right angle and flatness

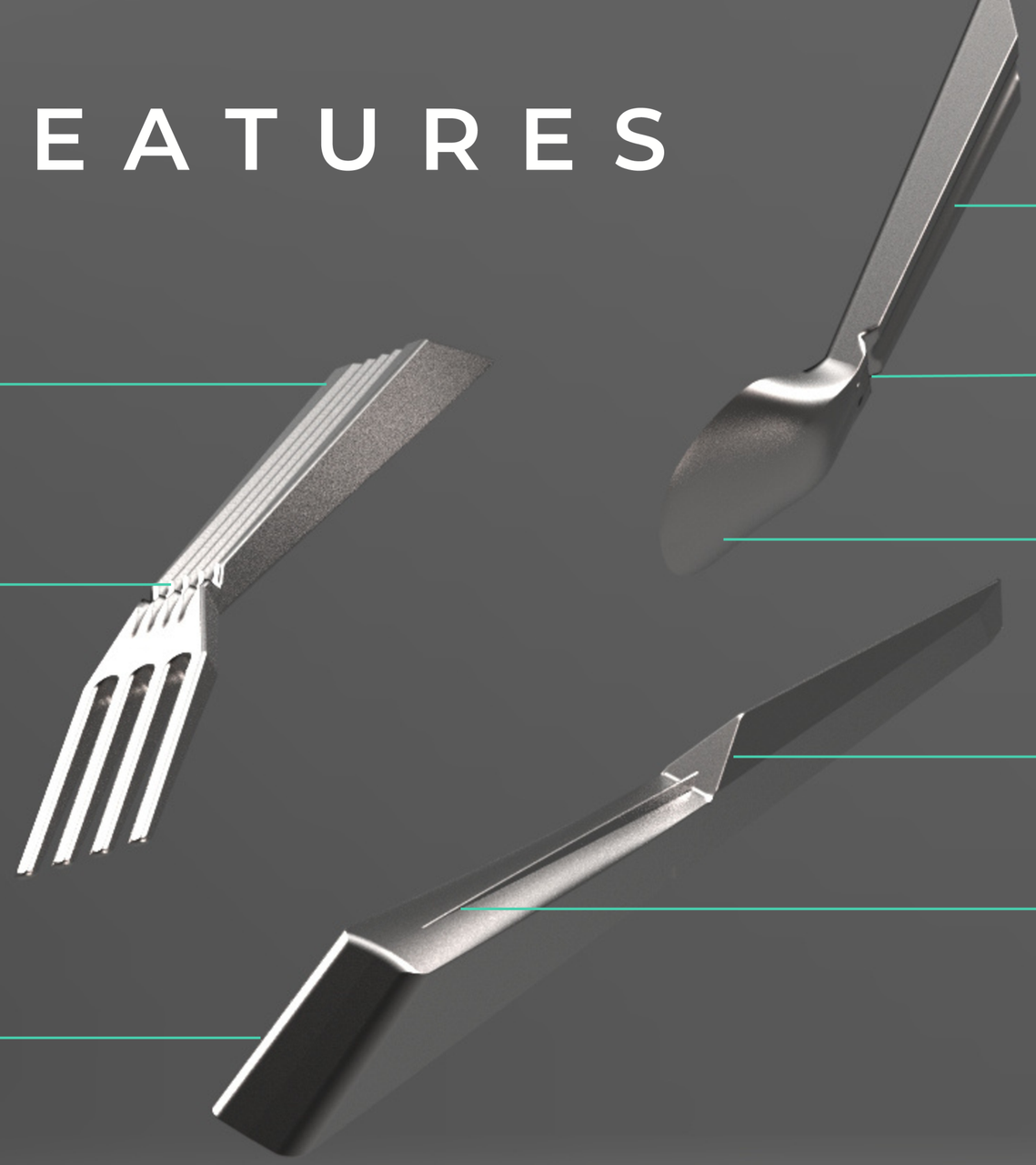
Transition under spoon is perfect

Embodies brand identity and is more utilitarian than either fork or knife.

I was able to capture the desired angled but soft look. (Better than knife and fork)



KEY FEATURES



INDICATION LINES

RESTING GROOVE

BACK ANGLE

INDICATION CUTOUT

RESTING GROOVE

SCOOPING MECHANISM

RAISED EDGE

INDICATION RIDGE



RESTS ON BOWL FOR EASY FINDING, PLACEMENT, AND AWARENESS



RIDGES INDICATE HAND PLACEMENT


ELEGANCE
+
FUNCTIONALITY

BEFORE SENSEWARE

CLUMSY, CHILDISH, DIFFICULT TO USE



SENSEWARE

ELEGANCE + FUNCTIONALITY

RESTORING DINING DIGNITY
FOR THE VISUALLY IMPAIRED

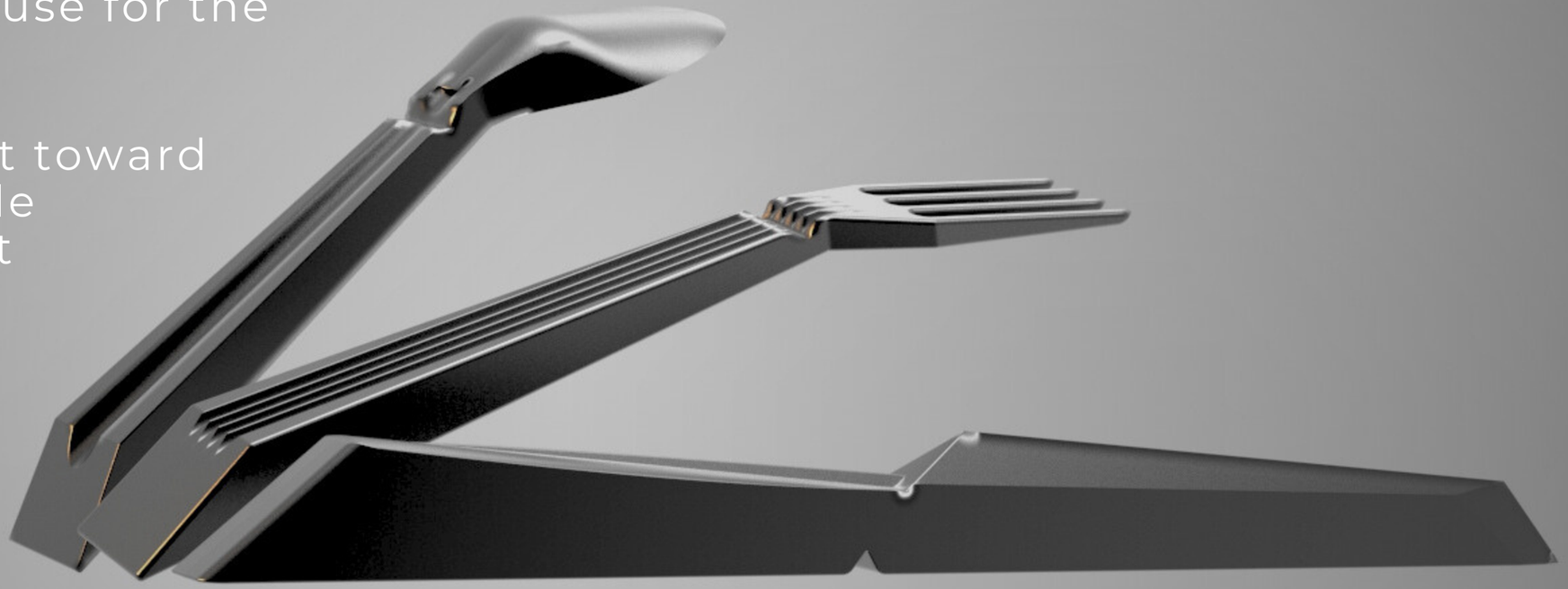


NEXT STEPS

1. Published to open source CAD platforms for free access and adaptatioN

2. Distributed through organizations such as the Lighthouse for the Blind

3. Ongoing refinement toward a scalable, accessible commercial product



THANK YOU

SOURCES

https://lighthouseguild.org
https://www.afb.org https://www.nfb.org
https://www.who.int/health-topics/blindness-and-vision-loss
https://www.cdc.gov/visionhealth
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https://www.who.int/publications/i/item/WHO-CCM-19.3
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SENSEWARE