

# DESIGNING FOR USABILITY

A LOOK AT ERGONOMICS IN PRODUCT DESIGN



# INTRODUCTION

TODAY'S PRESENTER



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# THE USER EXPERIENCE

Think of 2 products with an unexpected user experience

Something with a positive experience

Something with a negative experience









# AGENDA

- What is usability?
- Why is usability important?
- The design process for improving usability
- Methods to validate concepts



# WHAT IS USABILITY?





# WHAT IS ERGONOMICS?





# WHAT IS ERGONOMICS?

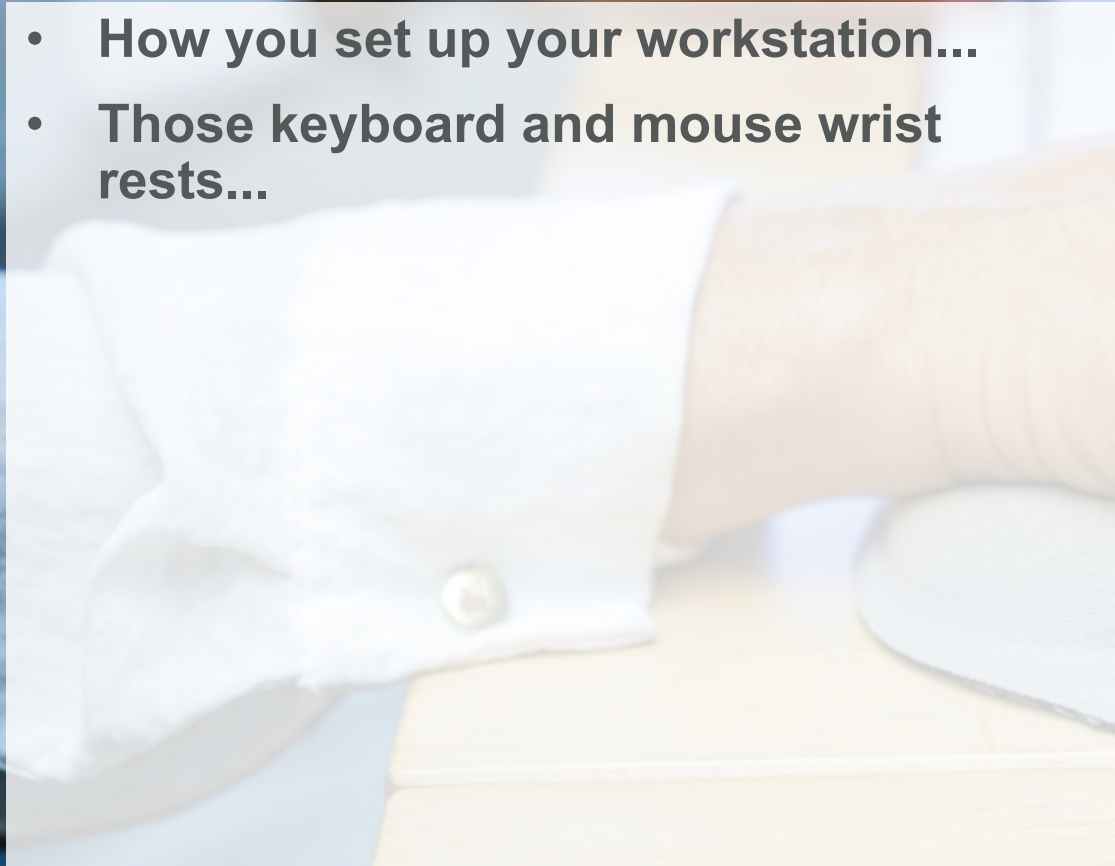
- How you set up your workstation...





# WHAT IS ERGONOMICS?

- How you set up your workstation...
- Those keyboard and mouse wrist rests...





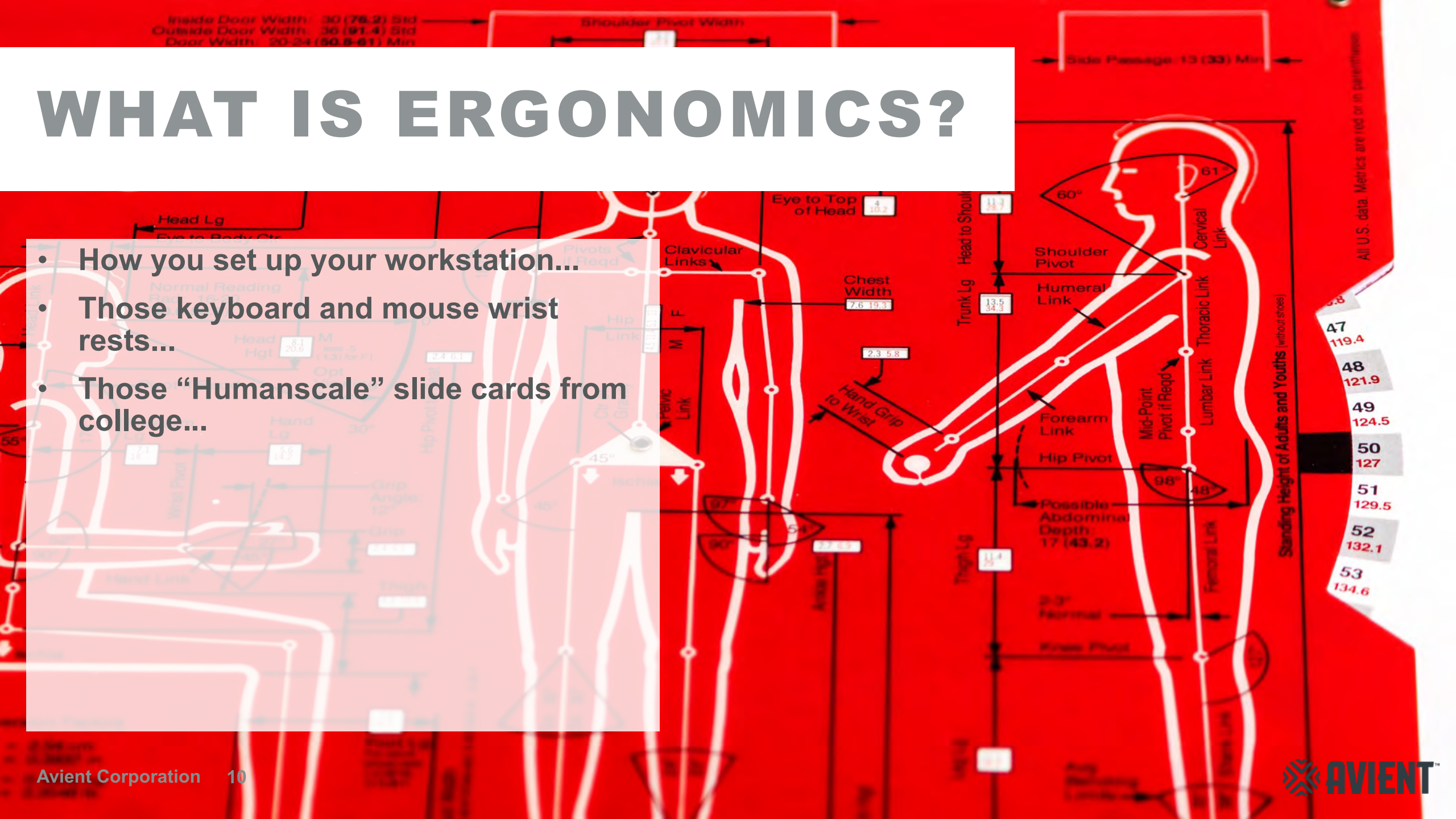
Inside Door Width: 30 (76.2) Std  
Outside Door Width: 36 (91.4) Std  
Door Width: 20-24 (50.8-61) Min

Shoulder Pivot Width

Side Passage: 13 (33) Min

# WHAT IS ERGONOMICS?

- How you set up your workstation...
- Those keyboard and mouse wrist rests...
- Those “Humanscale” slide cards from college...



All U.S. data. Metrics are in inches or in parentheses.

47	119.4
48	121.9
49	124.5
50	127
51	129.5
52	132.1
53	134.6



# WHAT IS ERGONOMICS?

Interaction between Human and Product

- **Increase intuitiveness**
- **Reduce human error**



# WHY IS IT IMPORTANT?





# WHY IS IT IMPORTANT?



# WHY IS IT IMPORTANT?





# WHY IS IT IMPORTANT?



# WHY IS IT IMPORTANT?

Why is it important?

- Bonus learning...
- 55% of the end-users were female





# WHY IS IT IMPORTANT?



# WHY IS IT IMPORTANT?





# THE PROCESS

- How do you design for usability?



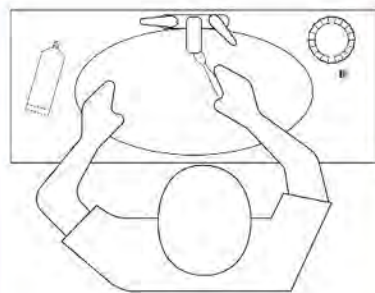
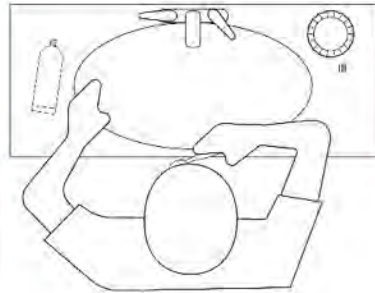
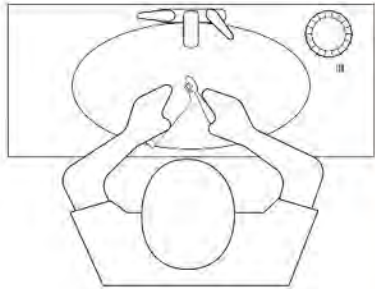
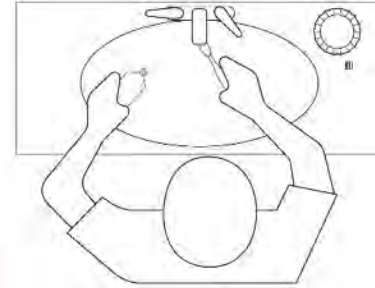
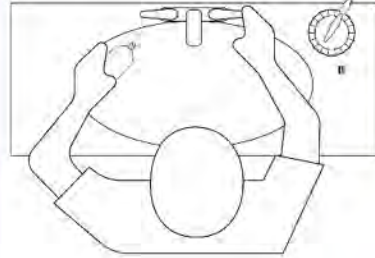
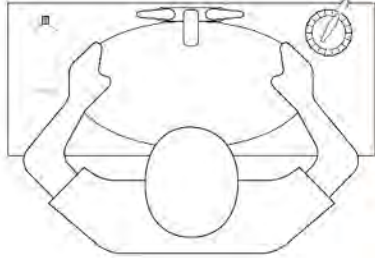


# USE CASE



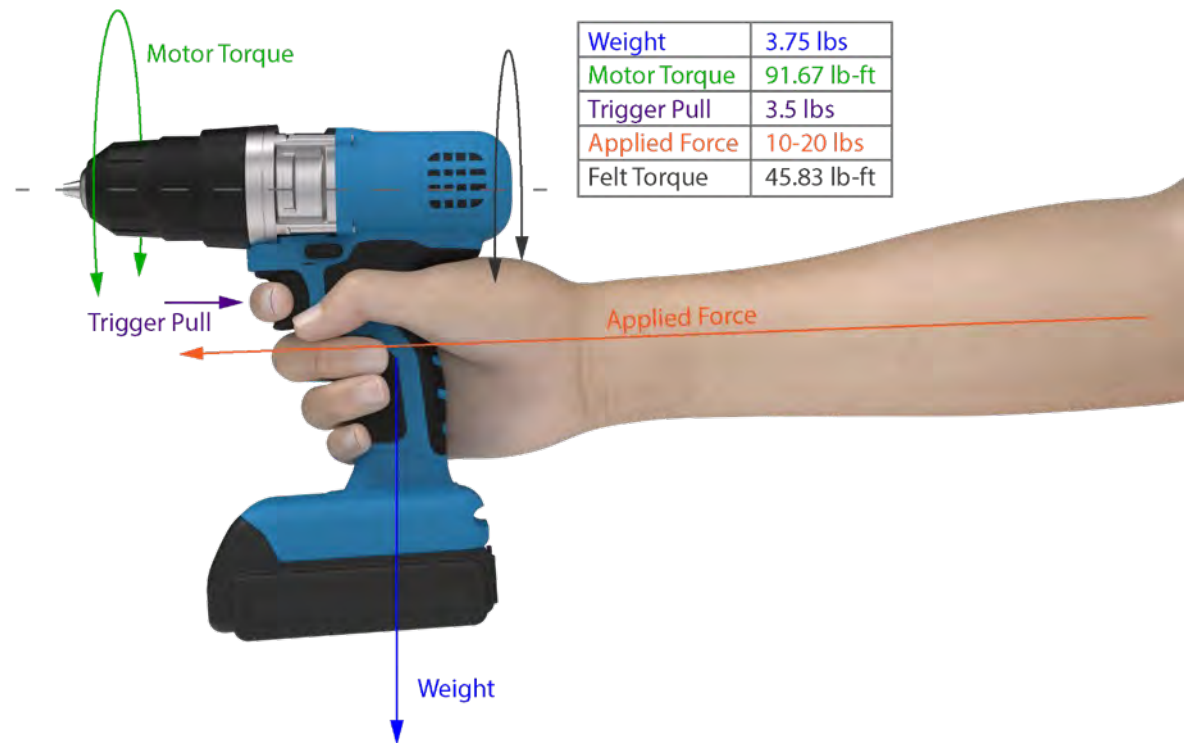
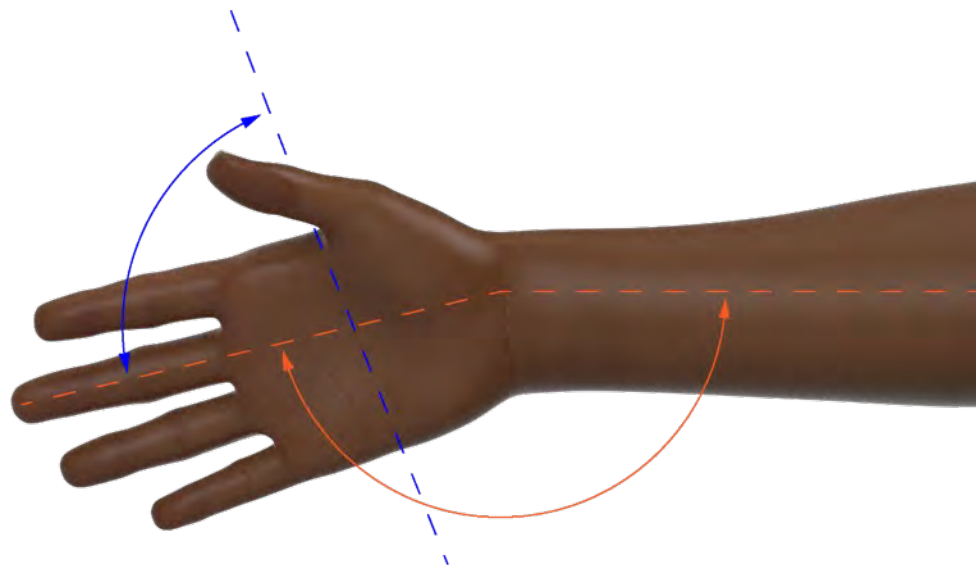


# USE CASE





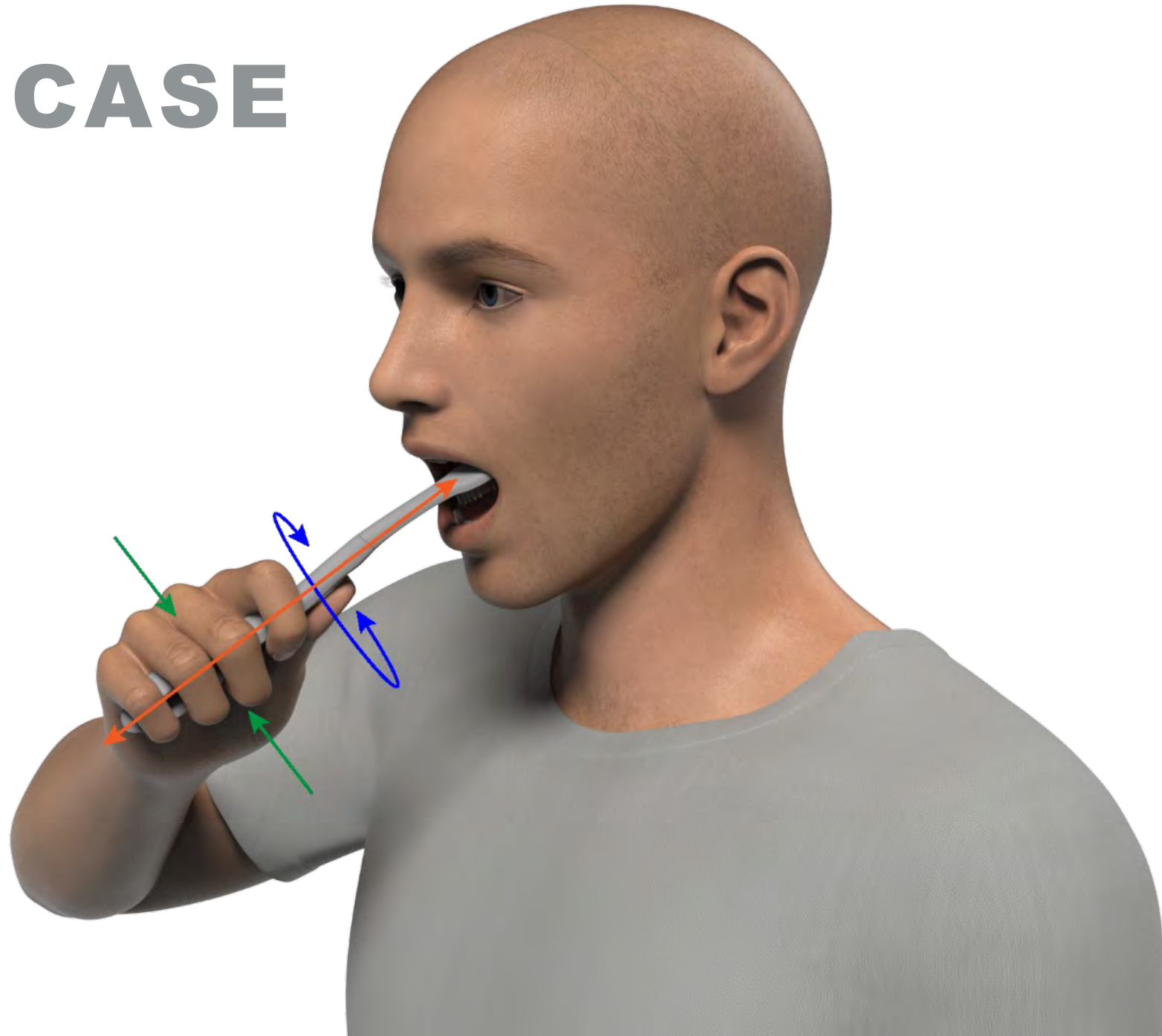
# USE CASE







# USE CASE



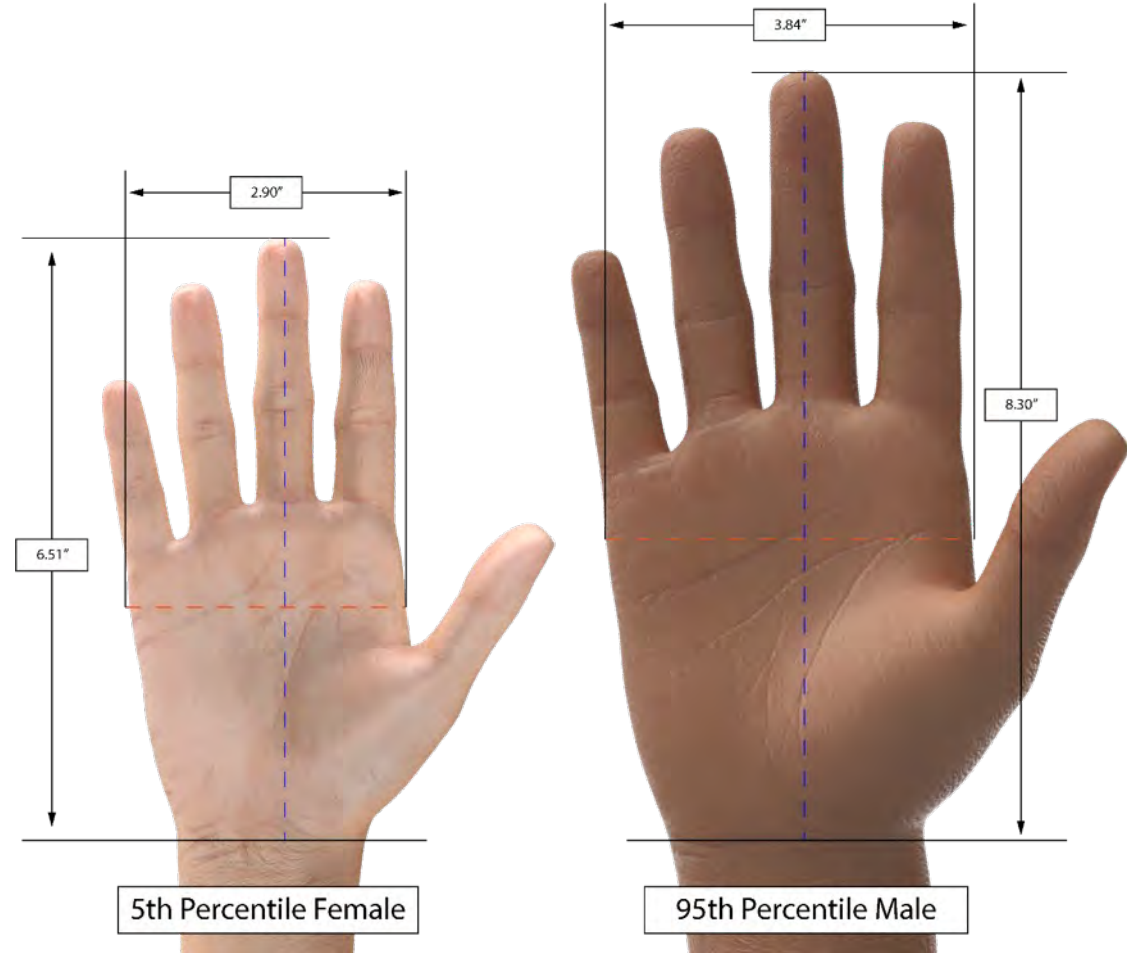
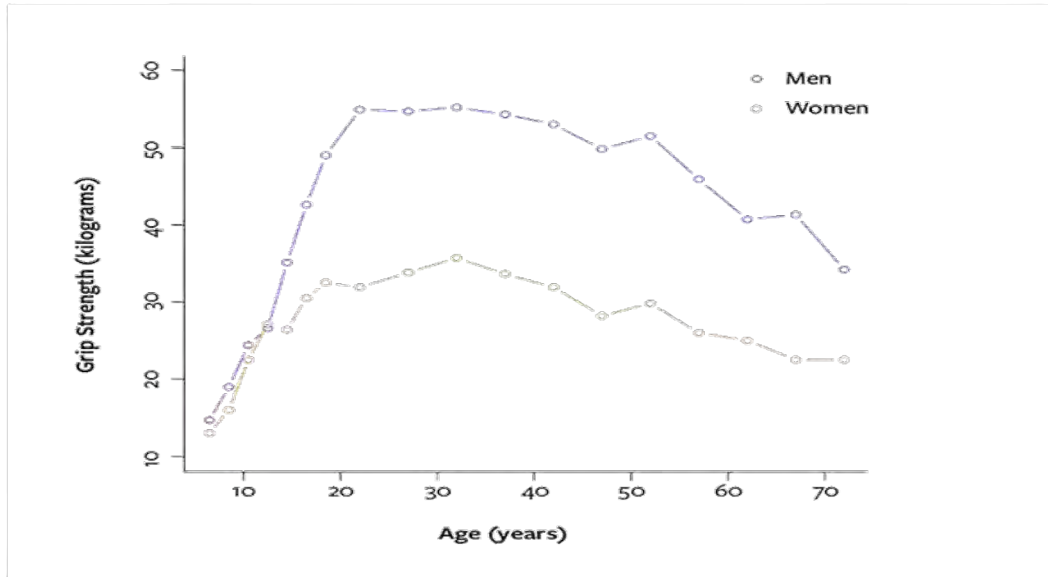


**USER**



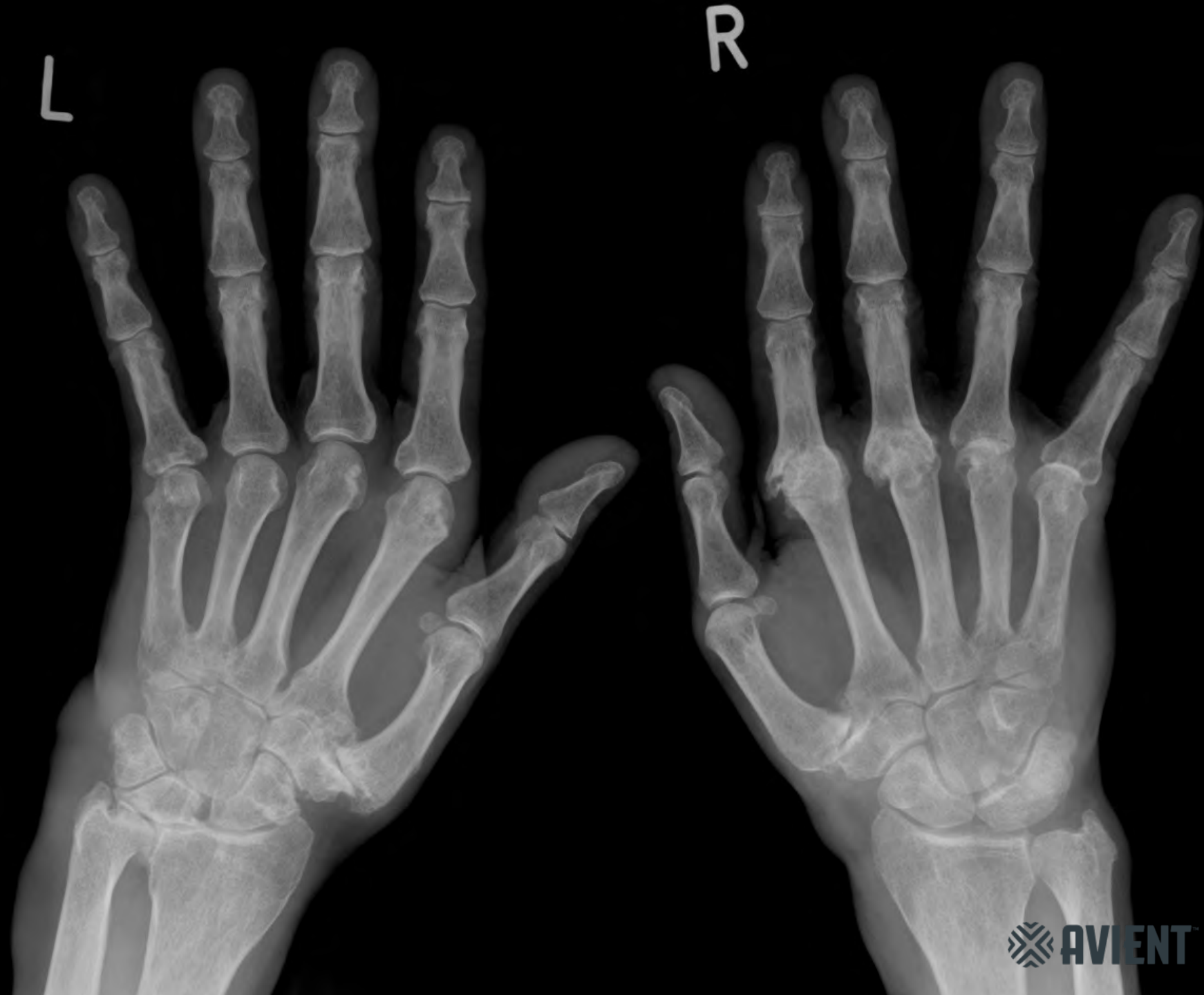


# USER





**USER**







# GRIP TYPE



# GRIP TYPE



Power Grip



Spherical Grip



Key Grip



Pinch Grip



Pencil Grip

POWER

PRECISION





# GRIP TYPE





# GRIP TYPE

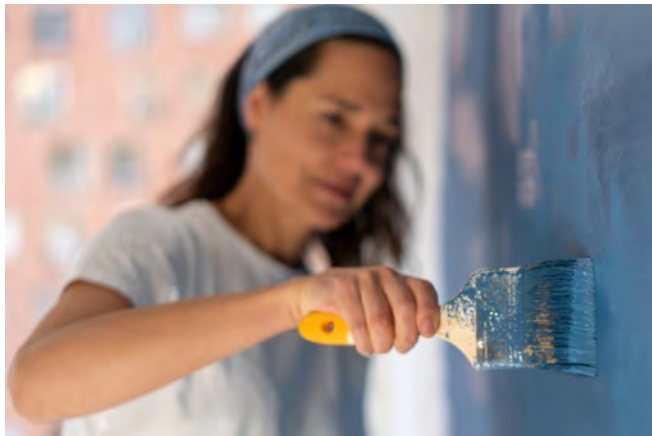






# GRIP TYPE

Novice User



Professional User

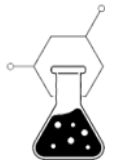




# GRIP TYPE







# GRIP MATERIAL





# GRIP MATERIAL

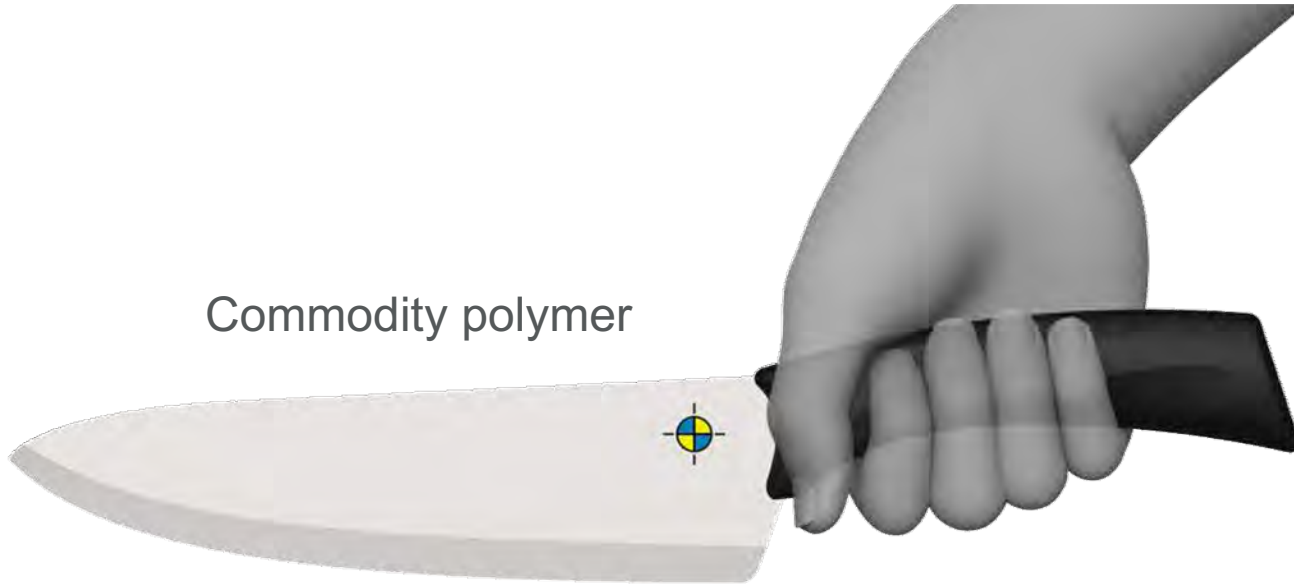




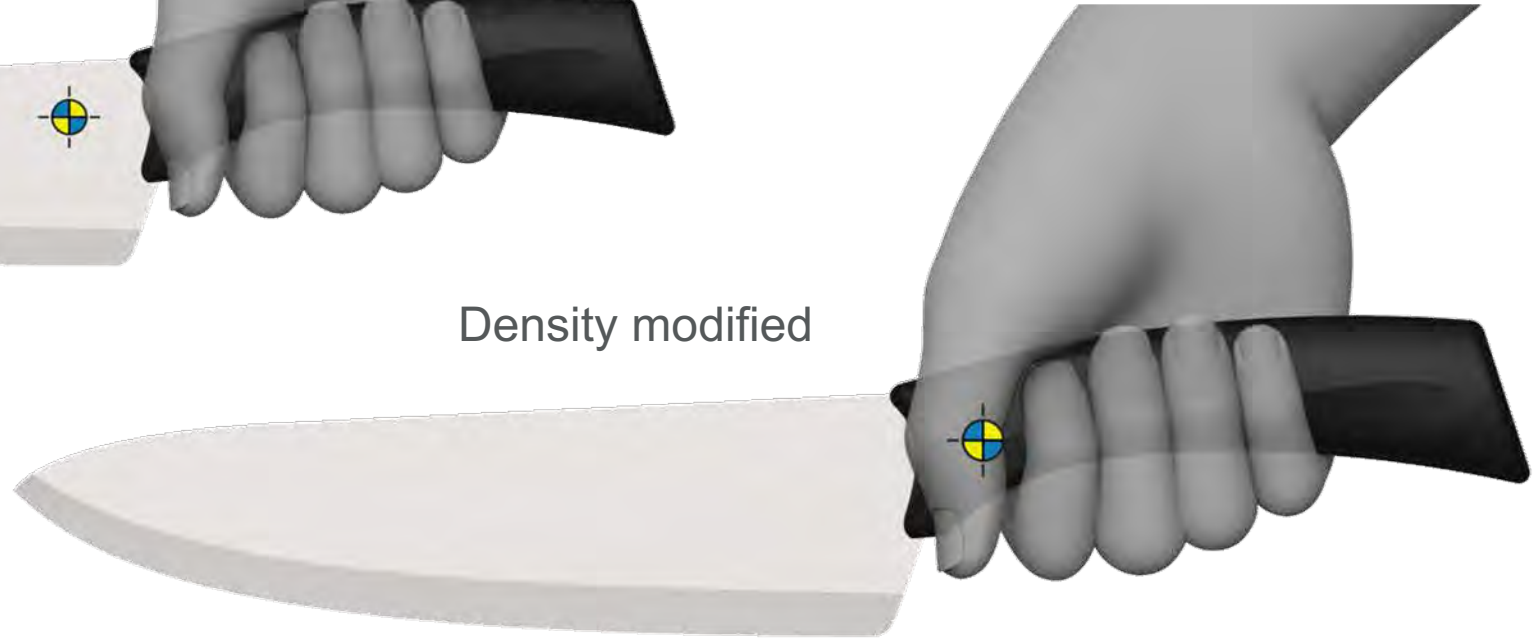


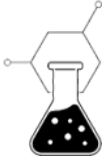
# GRIP MATERIAL

Commodity polymer



Density modified





# GRIP MATERIAL

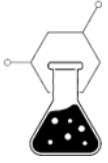




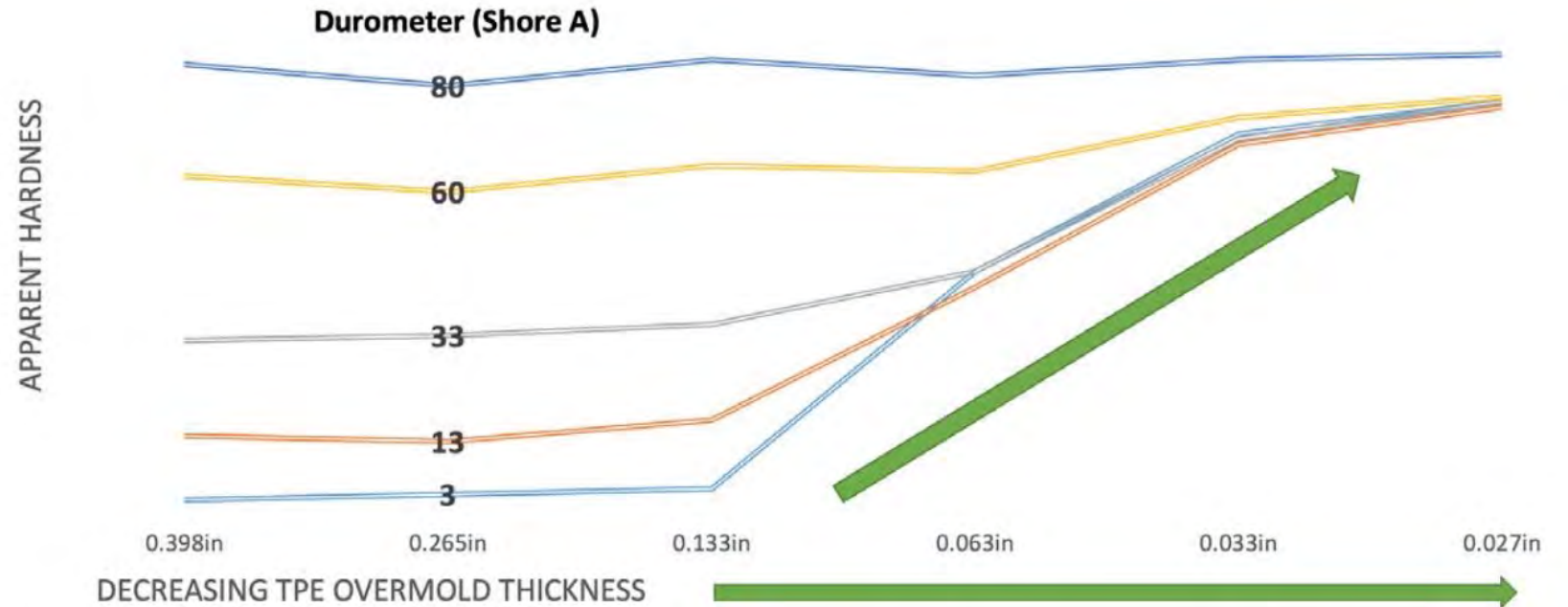
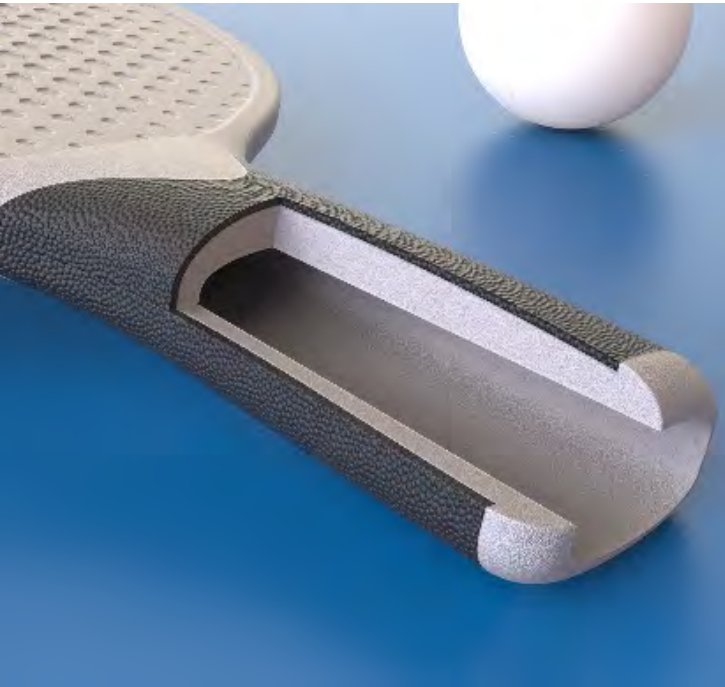


# GRIP MATERIAL





# GRIP MATERIAL

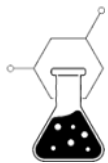






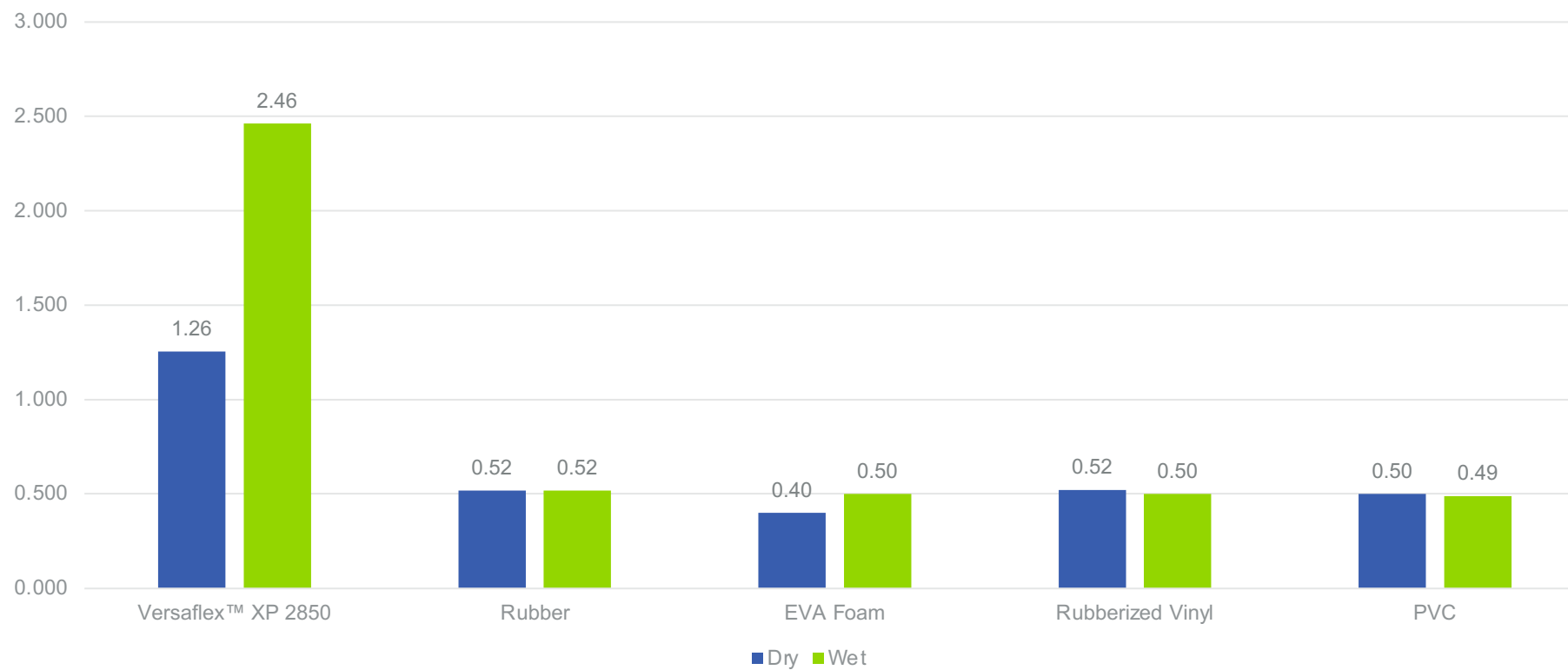
# GRIP MATERIAL





# GRIP MATERIAL

Wet/Dry COF Comparison of Commonly-Used Wet Grip Materials





# GRIP MATERIAL







# GRIP MATERIAL



# THE PROCESS

- How do you design for usability?



# BEYOND GRIP



AUDITORY



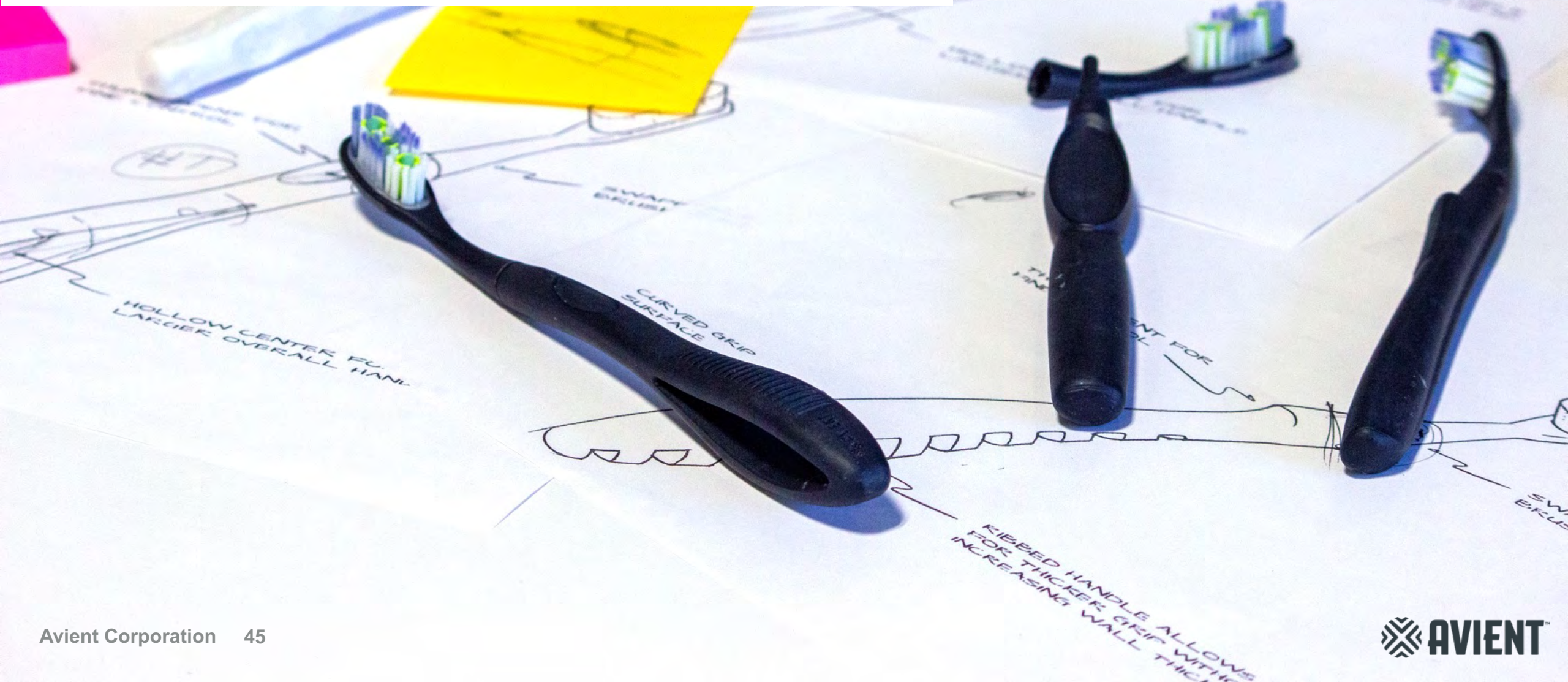
HAPTICS



VISUAL



# VALIDATING THE CONCEPTS





# VALIDATING THE CONCEPTS

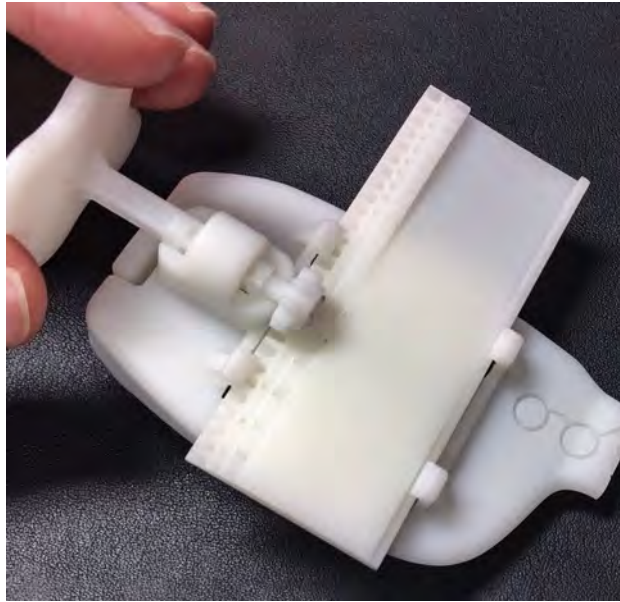


# VALIDATING THE CONCEPTS

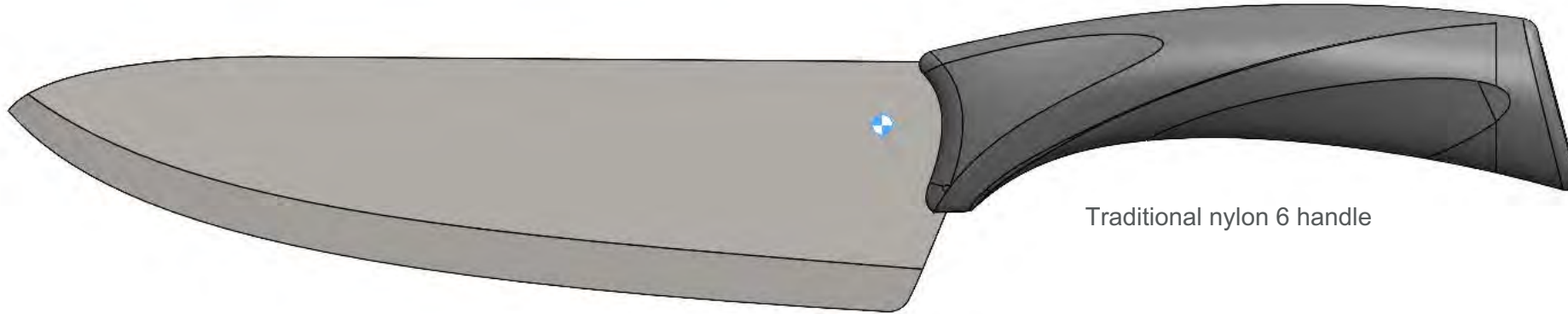




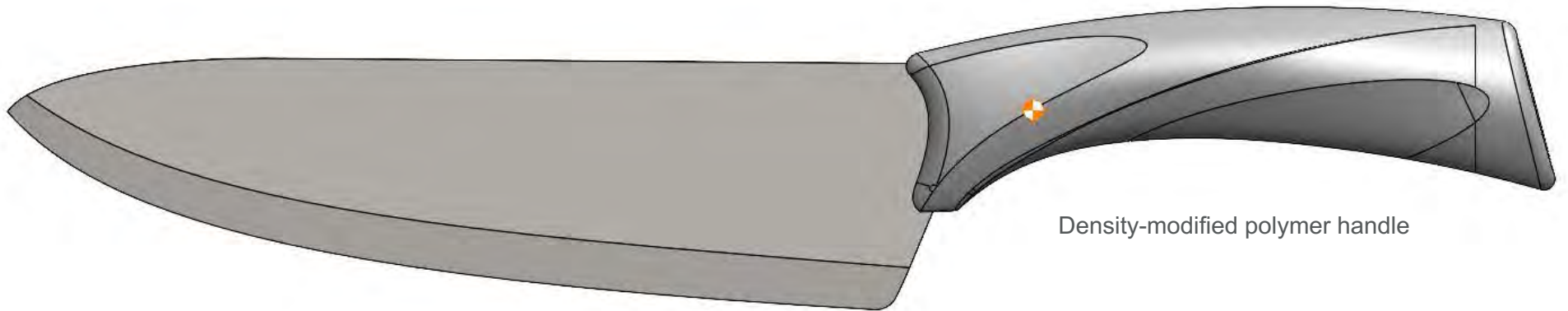
# VALIDATING THE CONCEPTS



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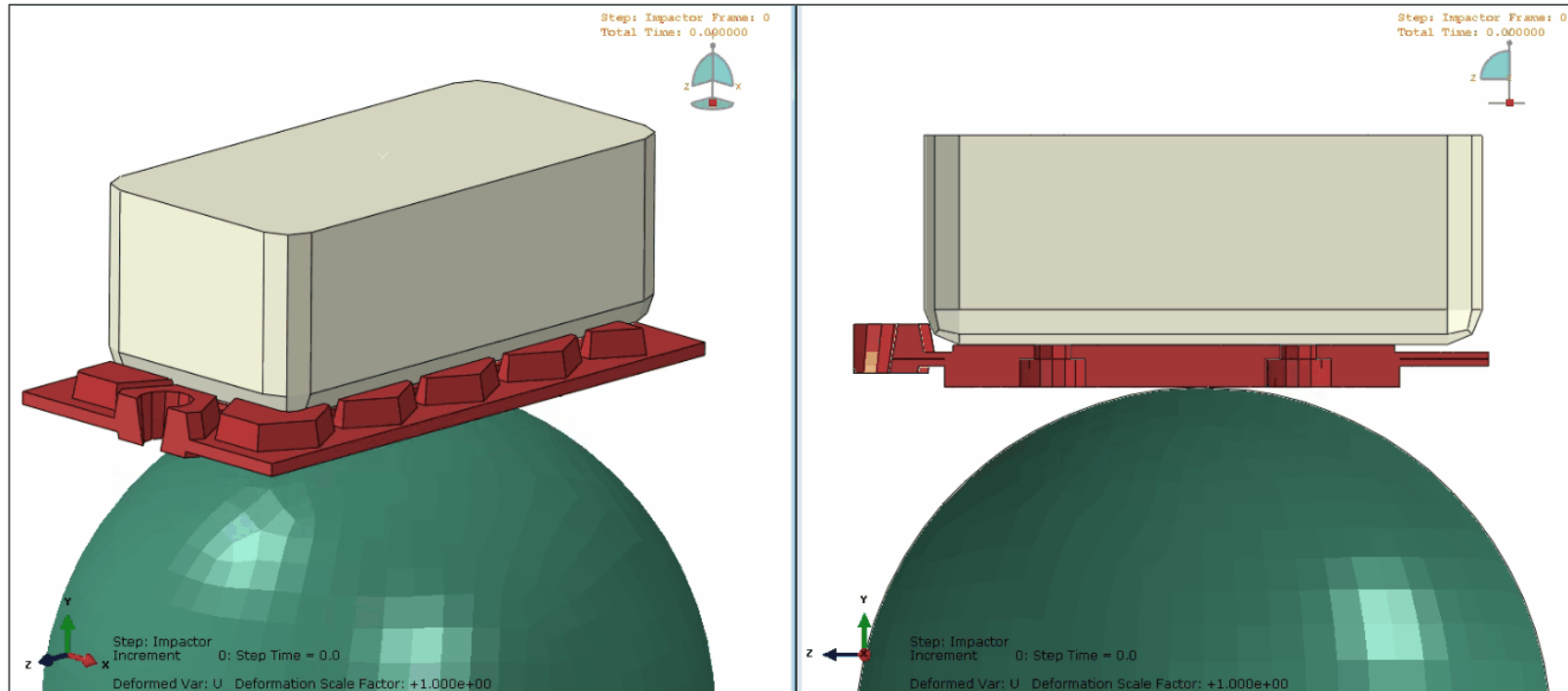


Traditional nylon 6 handle



Density-modified polymer handle

# VALIDATING THE CONCEPTS

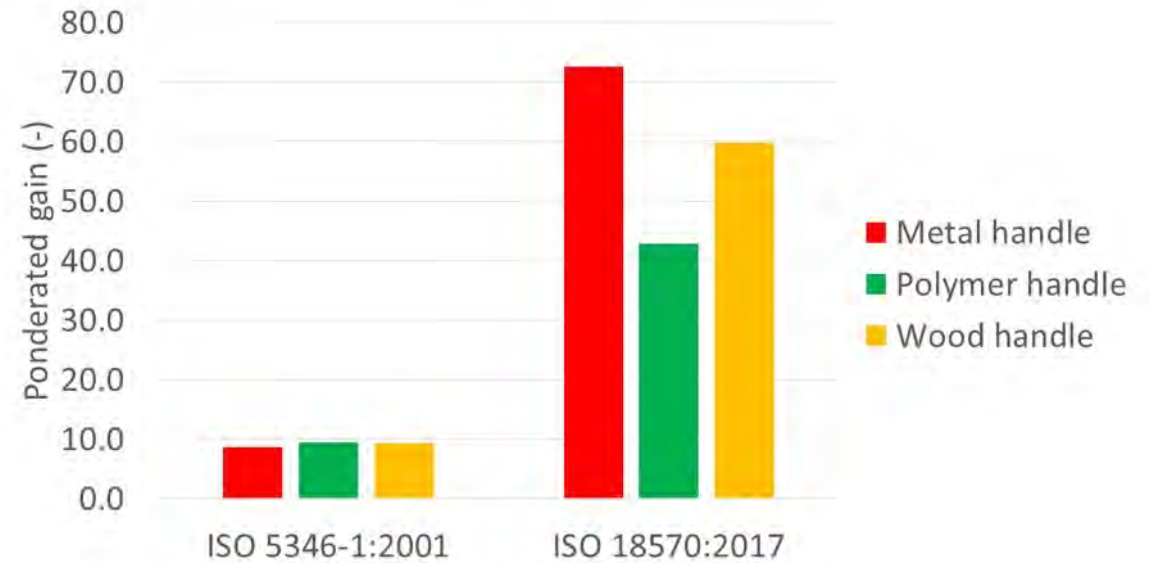
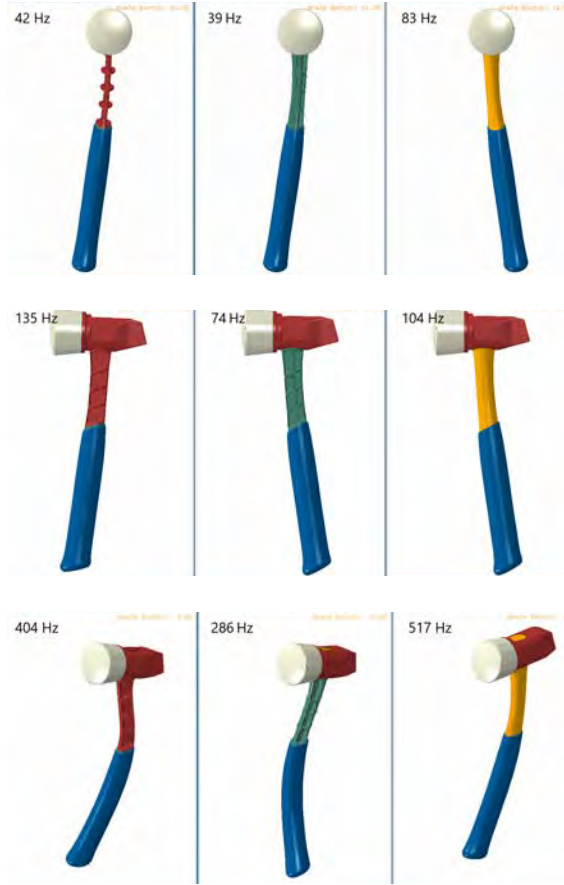




# VALIDATING THE CONCEPTS



# VALIDATING THE CONCEPTS





# USABILITY FOR THE ENVIRONMENT

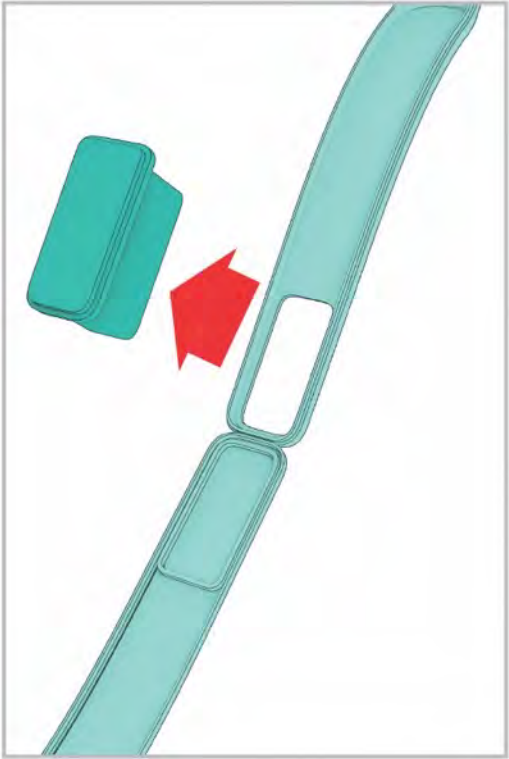
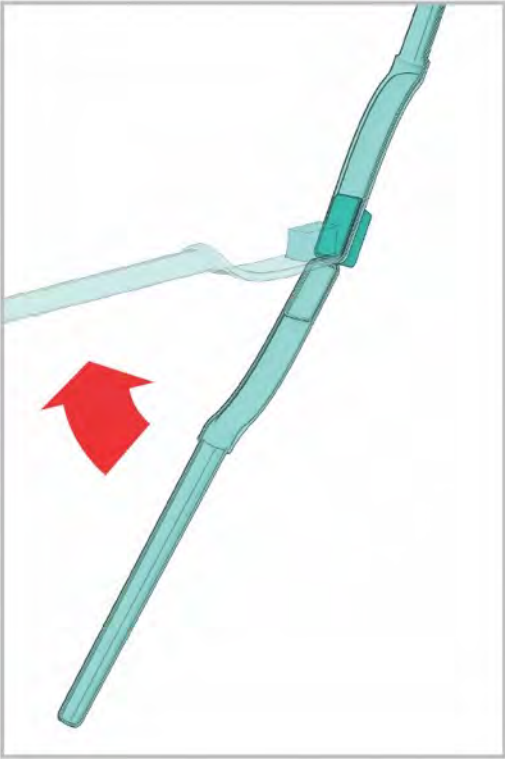
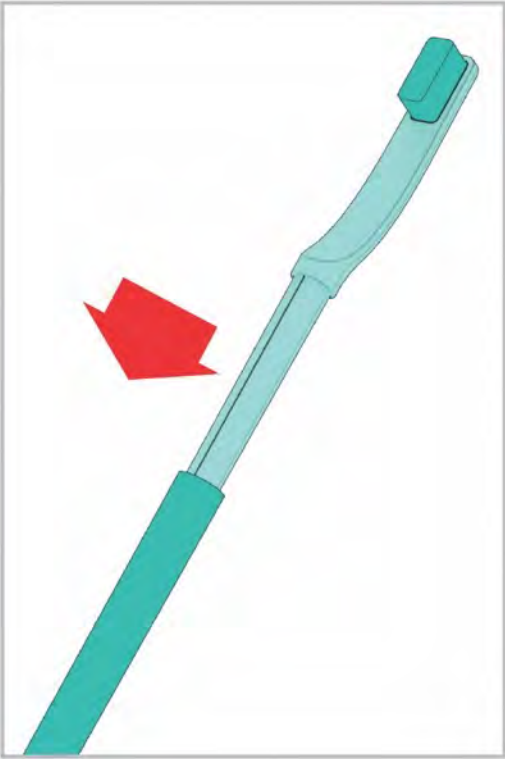
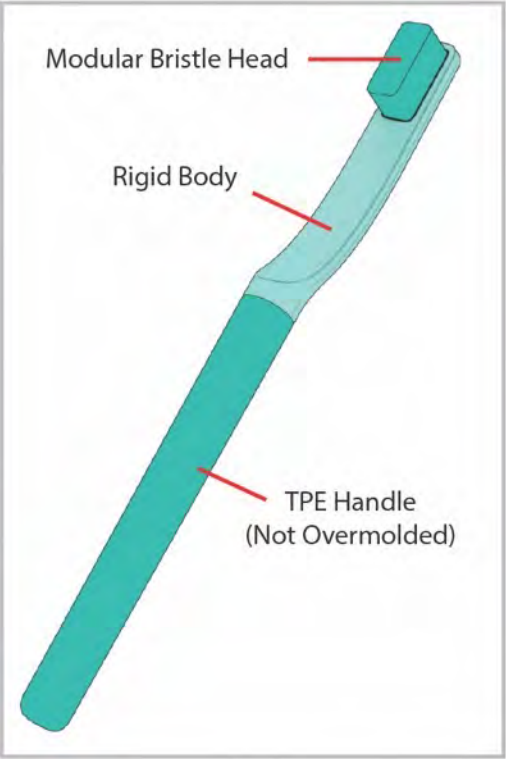




# USABILITY FOR THE ENVIRONMENT



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# USABILITY RECAP

- **Product Design Process**
  - Use case
  - User
  - Grip
  - Grip material
  - Haptics, visuals and auditory
- **Validating the concepts**
- **Usability for the environment**



# THE CHOICE IS UP TO YOU



# THANK YOU

**Josh Leedle**

[www.avient.com](http://www.avient.com)