

# UX Deep Dive: Smart hearing health

Designing the world's first all-in-one hearing  
assessment device





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# About us



TympaHealth is a team of Doctors and technology experts united by a vision of helping the world to hear



Team Consulting is a medical device consultancy that works with companies to design and develop award-winning medical devices

# Half a billion people in the world suffer from hearing loss.



Hearing loss doesn't  
discriminate



Increased exposure,  
increased risk



It can affect more than  
just your hearing





## Tympa pathway

ALL PROCEDURES IN  
UNDER 30 MINS.



*A faster, easier  
route to ear and  
hearing care.*

### OUTCOMES

#### PROBLEM RESOLVED

Problem cleared by removing excess ear wax.

#### WAX REMOVED

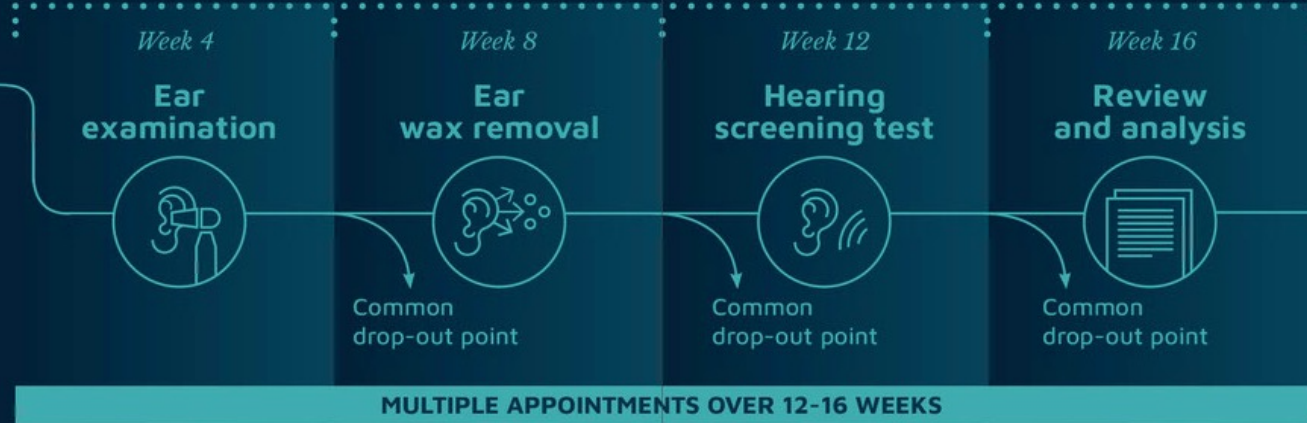
Problem identified, hearing screened ready for audiogram.

#### SPECIALIST REFERRAL

Problem not identified, and patient is referred to a specialist.

*Someone is  
concerned about  
their hearing  
health*

## Current pathway



# The Tympa System

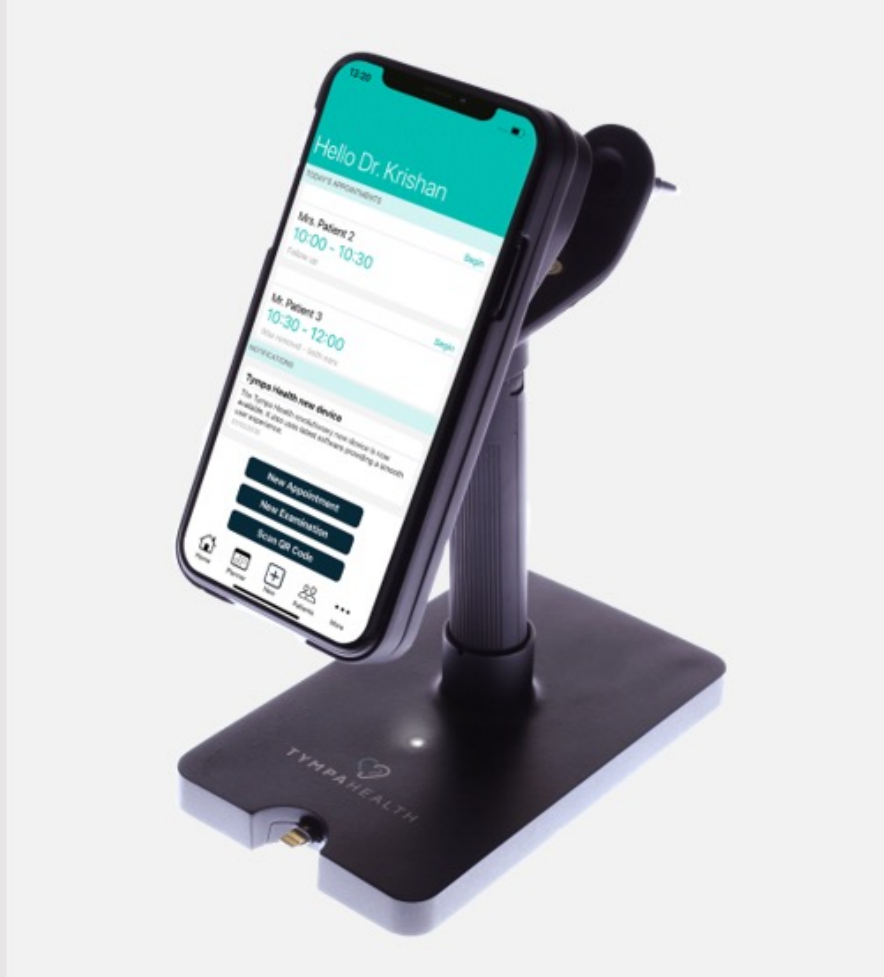




Other devices exist for capturing images, however we wanted an

**all-in-one system that offers the full ear clinic, including microsuction**





Charging  
dock



Integrated image  
enhancement



iPhone and Android  
compatible





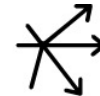
Remote  
review



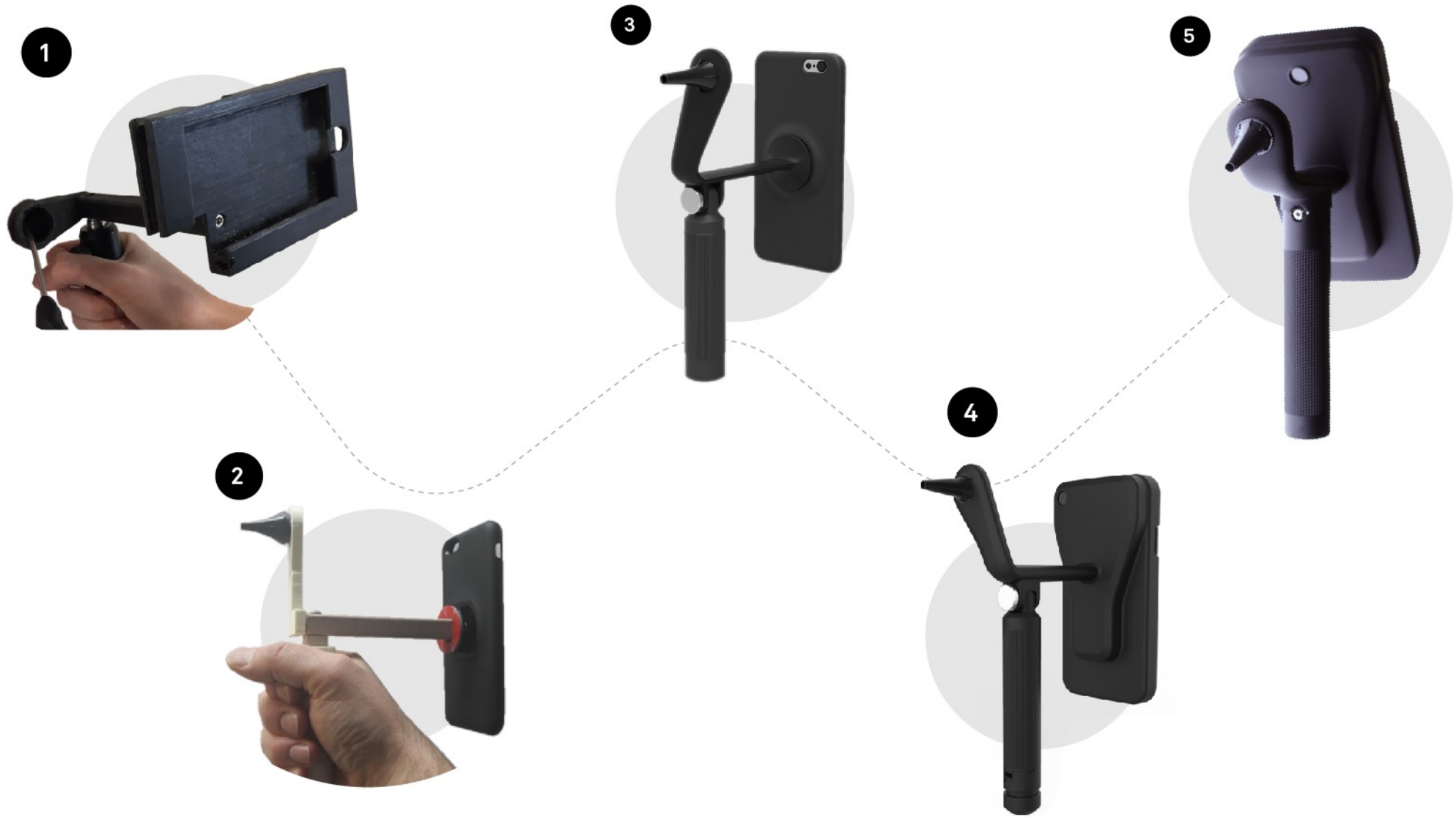
Ergonomic  
handle



Positional  
control



Clear instrument  
access



**Stages of development**

# Generation 1

## 2017-2019

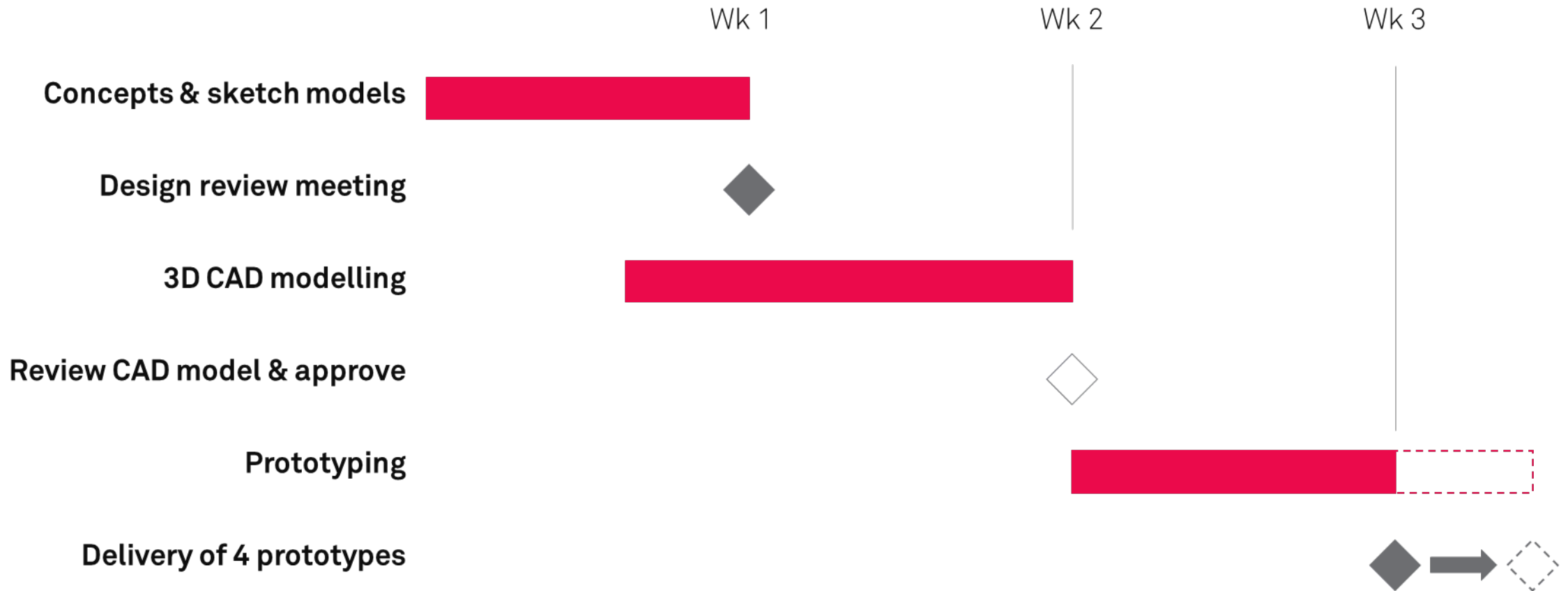




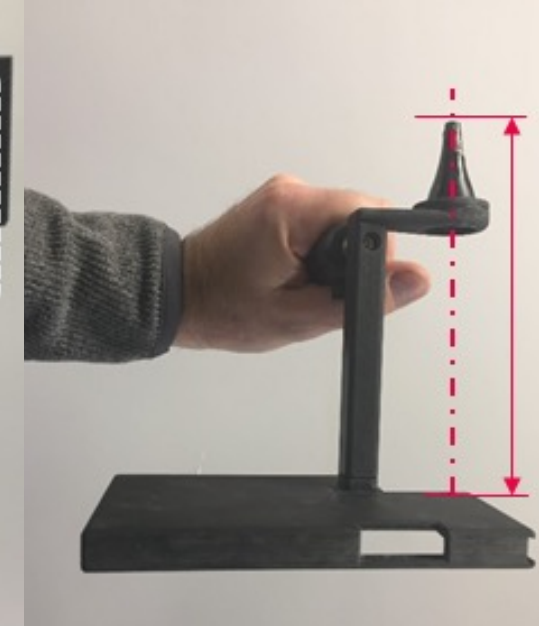
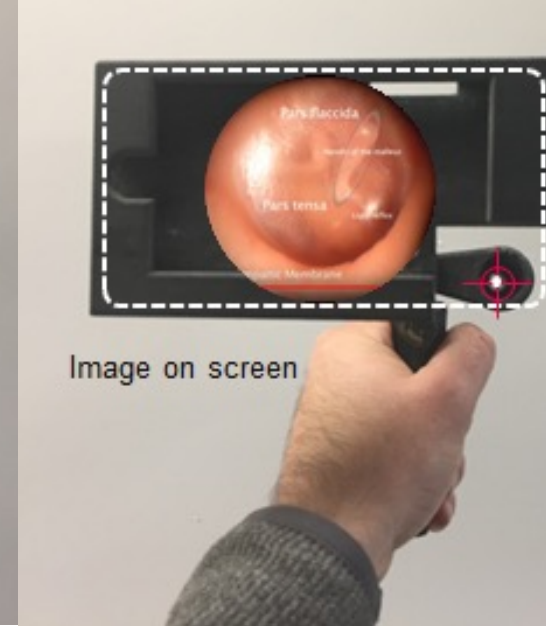
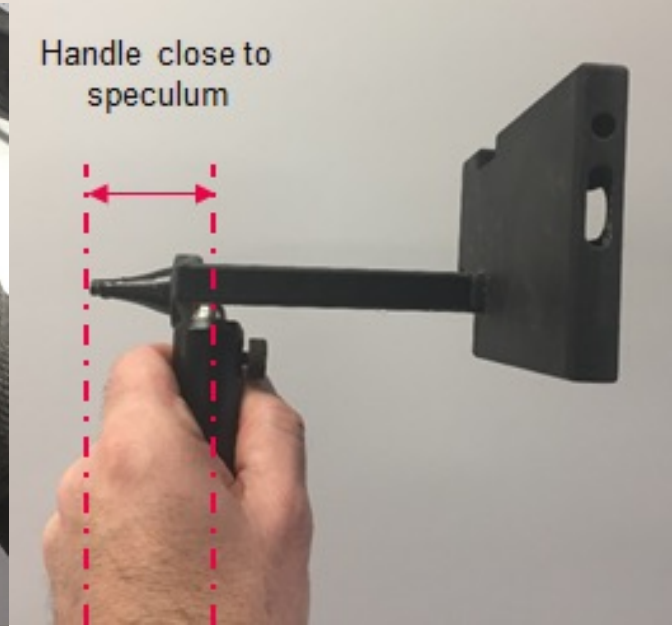


Original concept

# Timeframe



# Familiarisation



## Advantages

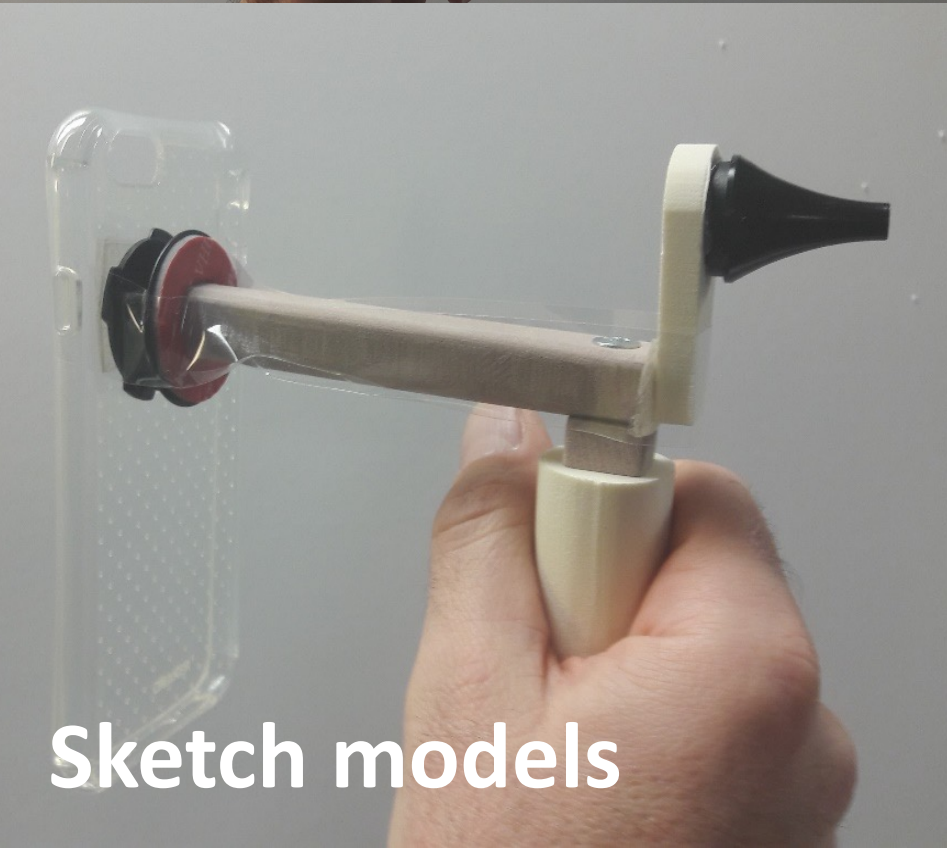
- ✓ Easy to insert iPhone correctly
- ✓ iPhone held securely
- ✓ Good alignment of camera to speculum
- ✓ Clear access to speculum
- ✓ Robust

## Disadvantages

- ✗ Very difficult to use left-handed
- ✗ Bulky
- ✗ Heavy
- ✗ Limited to iPhone 6/6s

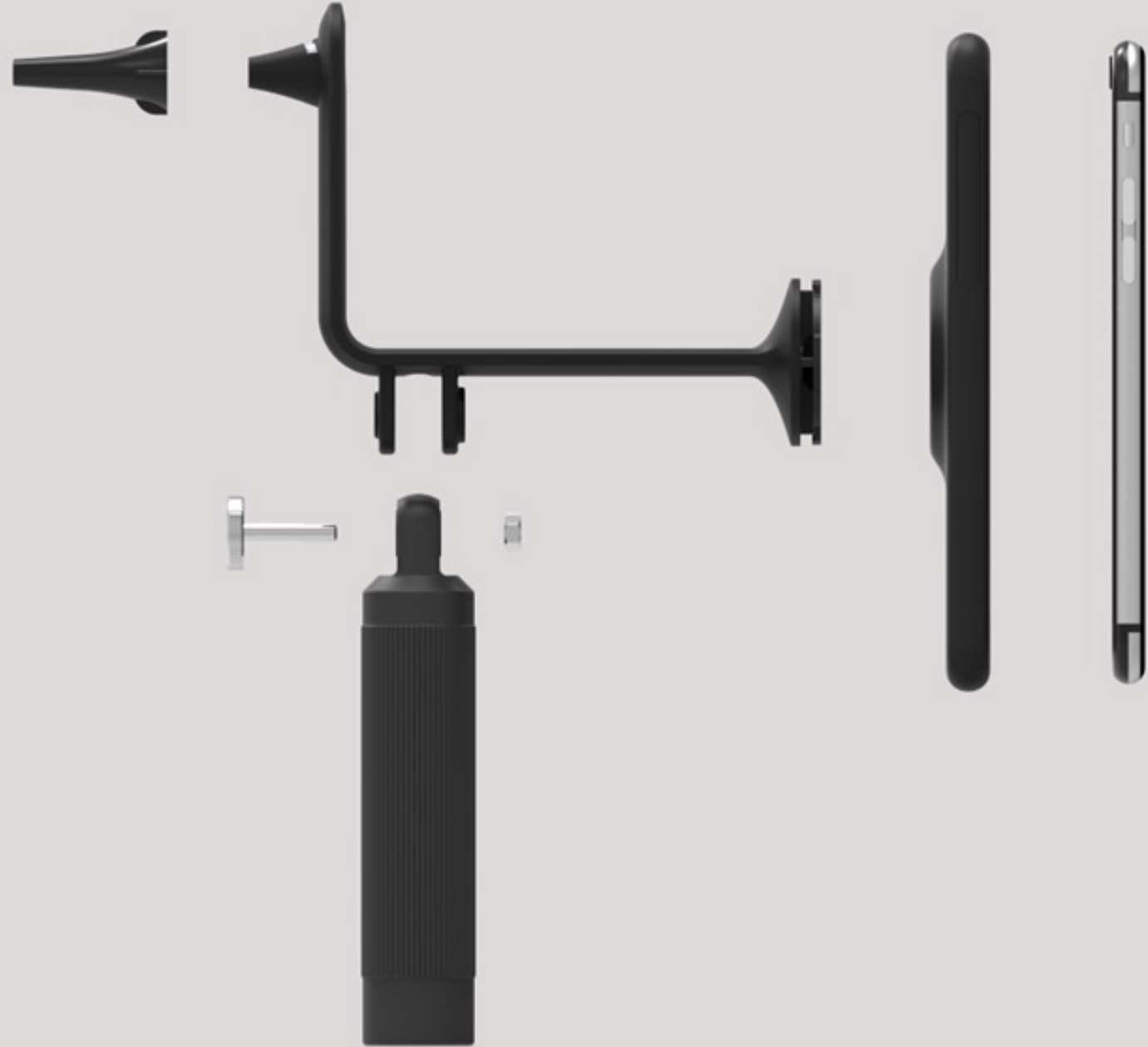






Sketch models

# Final design



# Materials & finishes







Pilot manufacture





**Generation 1 success**

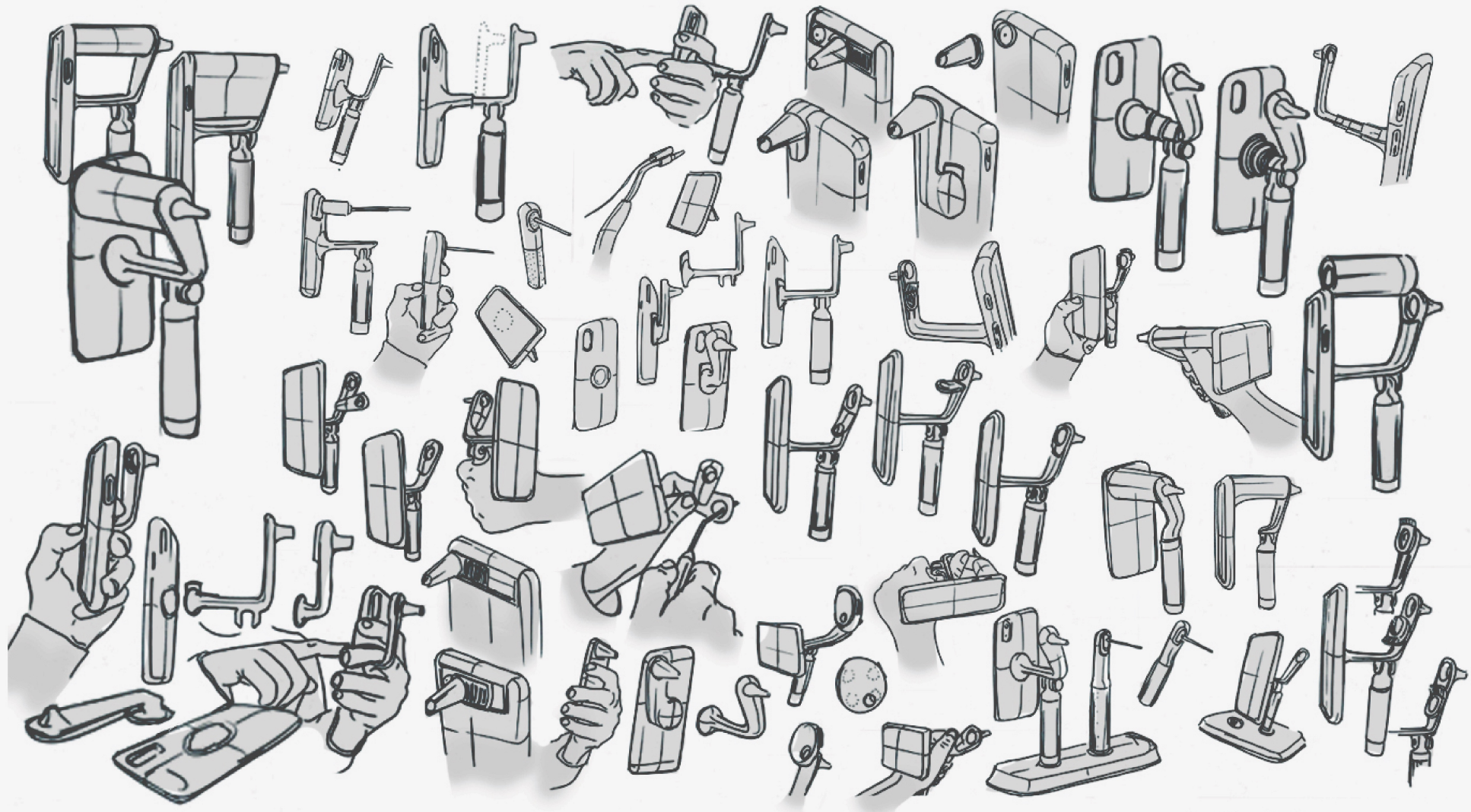
# **Generation 2 development**

2019-2021

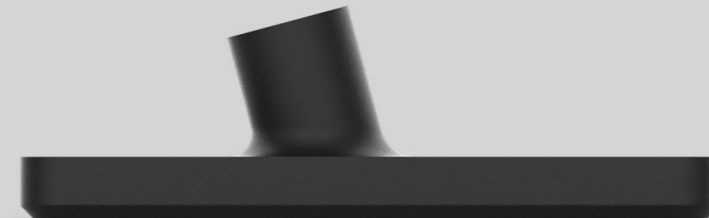
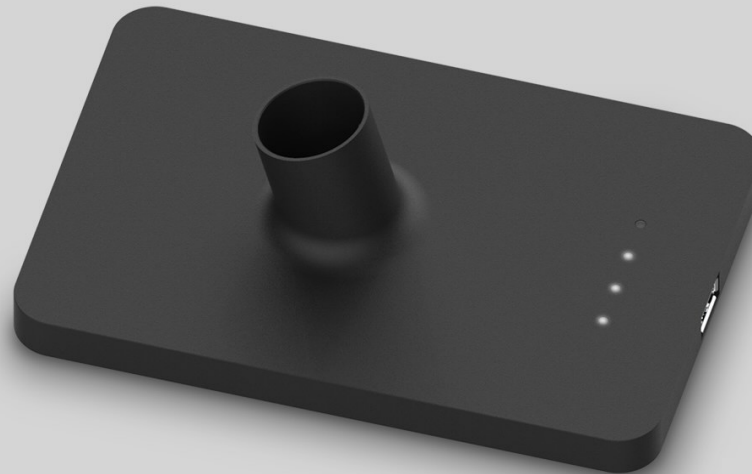




# Generation 2 ideation

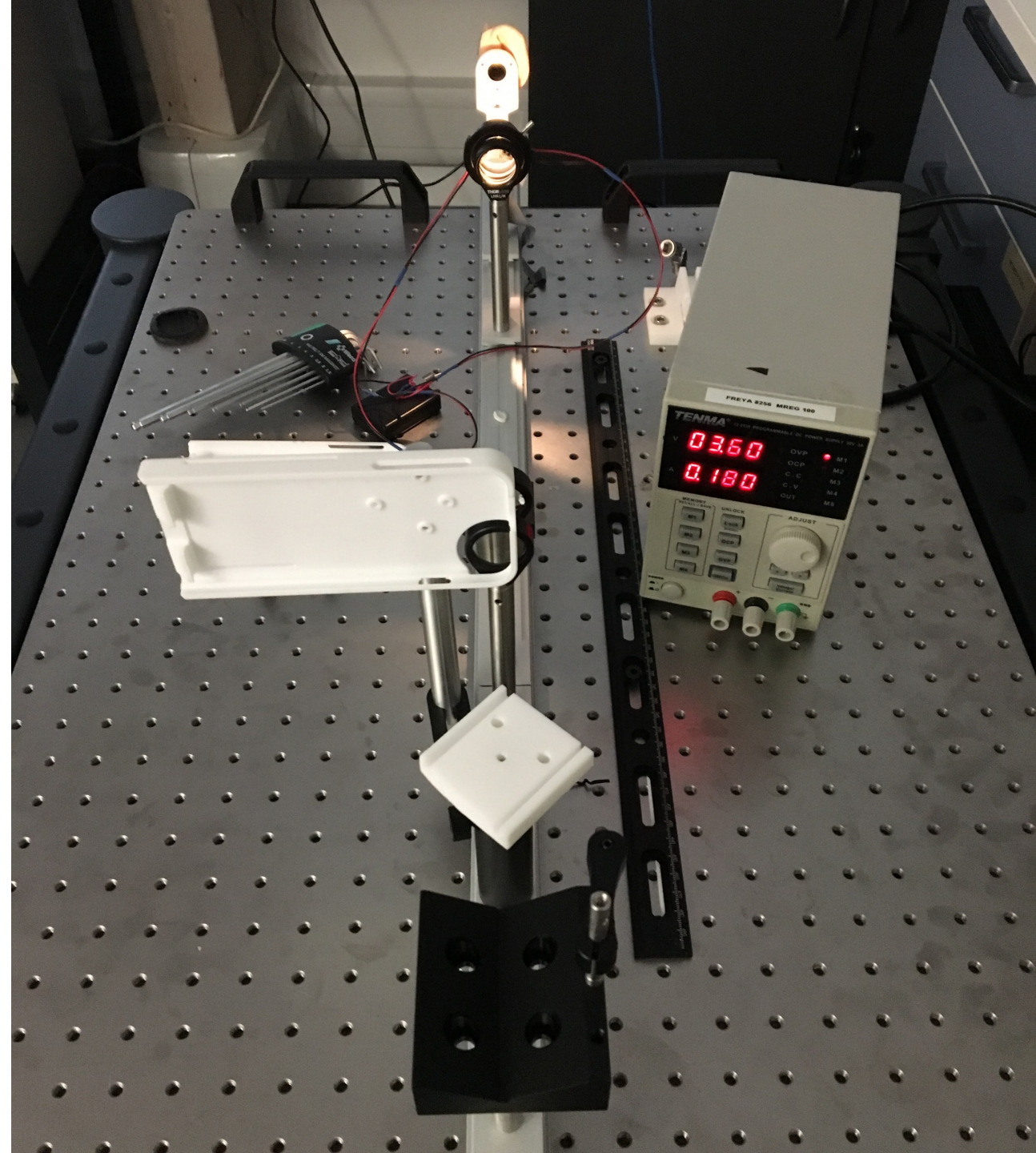


# Generation 2 concept development

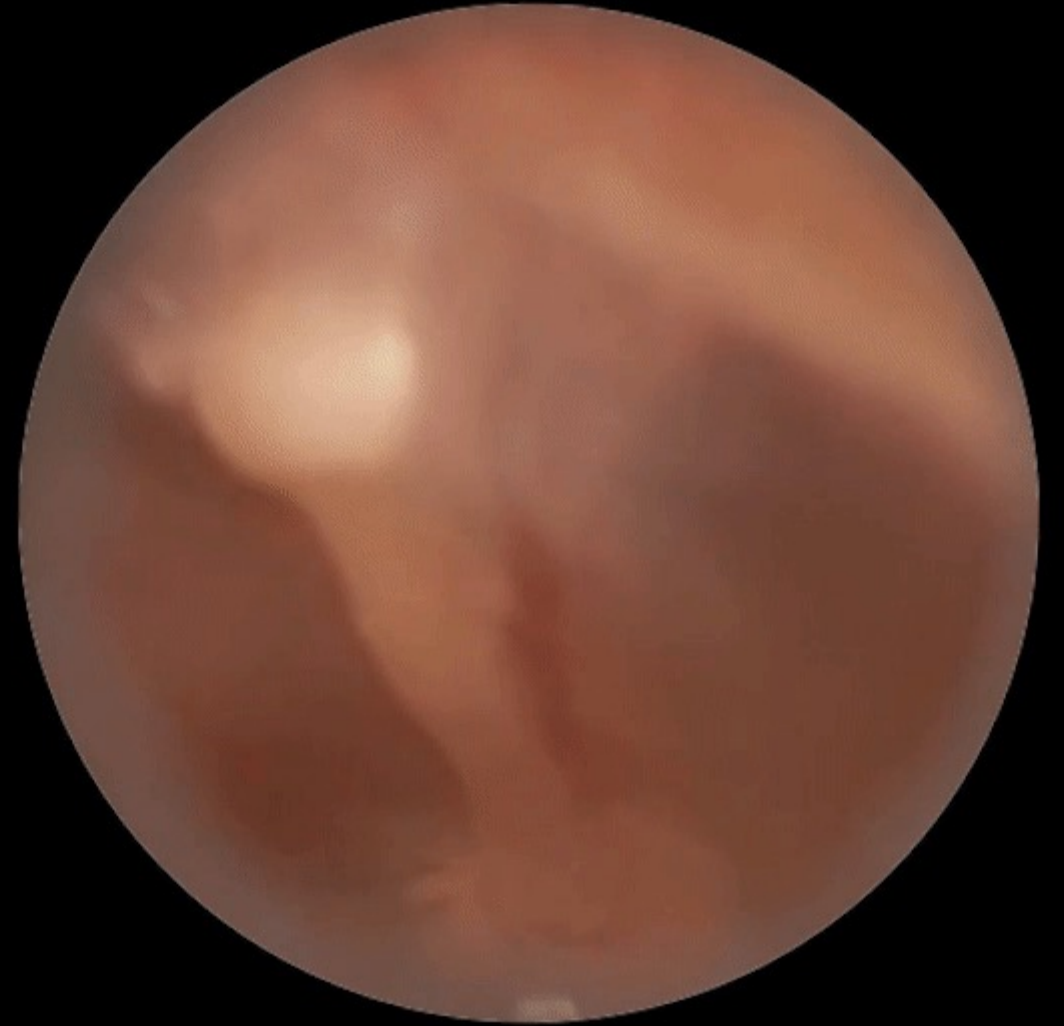




# Developing the optics



# Integrated optics **image enhancement**





A light to improve  
**the optics**



Powering the  
illumination  
**integrated**  
**electronics**





Creating a base  
to power the  
**light and phone**



# Generation 2

## Brief

- Enhance image quality
- Maintain brand language

## Design challenges

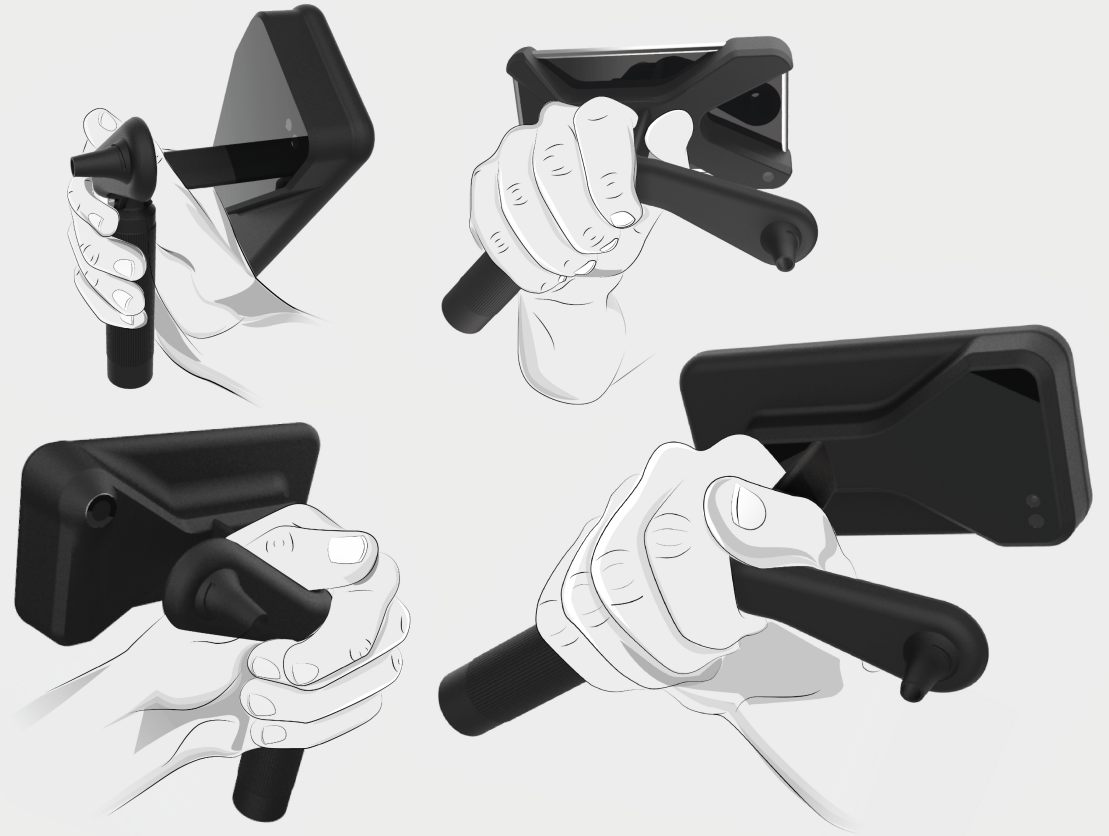
- Integrated optics
- Illuminating speculum
- Re-charging stand
- Integrated electronics

## Result

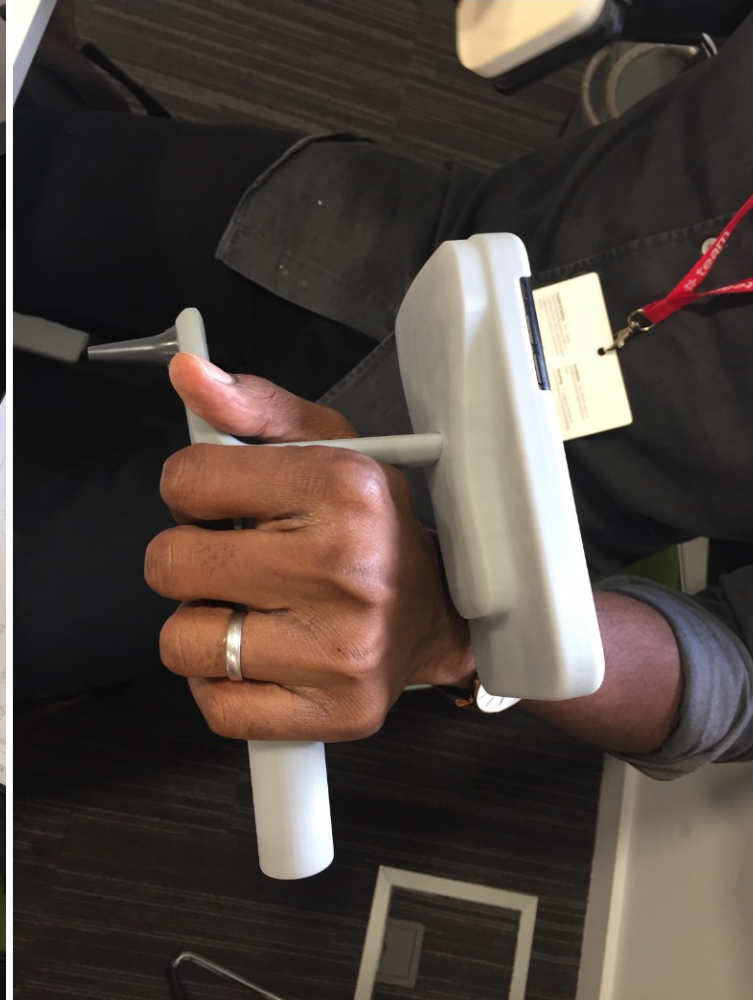
- Functions-like, looks-like prototypes



User feedback:  
**Improve  
ergonomics**







**Straight handle or angled?**



# Ergonomics

- Optimised for left and right-handed use
- Balanced weighting
- Free finger to aid positioning
- Angled display on charging stand









# **The Tympa System today**



# UCLH launch first remote tele-otology service in the UK







**Effective diagnosis and management  
in Cambodia**



# Future?

- Machine learning
- Exploration of other anatomical sites
- Diagnostic capabilities of the hearing test
- Hearing health passport
- Closing the loop for hearing loss



Questions?

