



**Juvo** 

Take control back from  
your heat sensitivity



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MY DESIGN  
JOURNEY



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# MY BACKGROUND

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I decided to base my final year project on an issue that was close to me as my uncle has been living with Multiple Sclerosis for 24 years and struggles every day with fatigue due to the illness. My aim was to use my passion in design and problem solving to try and create a product that would not only help my uncle but all MS sufferers dealing with fatigue as a symptom of their illness. I decided to focus on outside causes that bring on or increase the severity of an MS sufferers fatigue and that was sensitivity to heat, rises in room temperature and body temperature happening without the MS sufferer knowing. My aim with JUVO is to give the sufferers a innovative tool to alerts them to their heat sensitivity by monitoring room temperature 24/7, give them the ability to take body temperature and alert the user of sudden changes in both.





**Juvo**

**Aiming to improve the health and  
wellbeing for MS sufferers in Ireland**

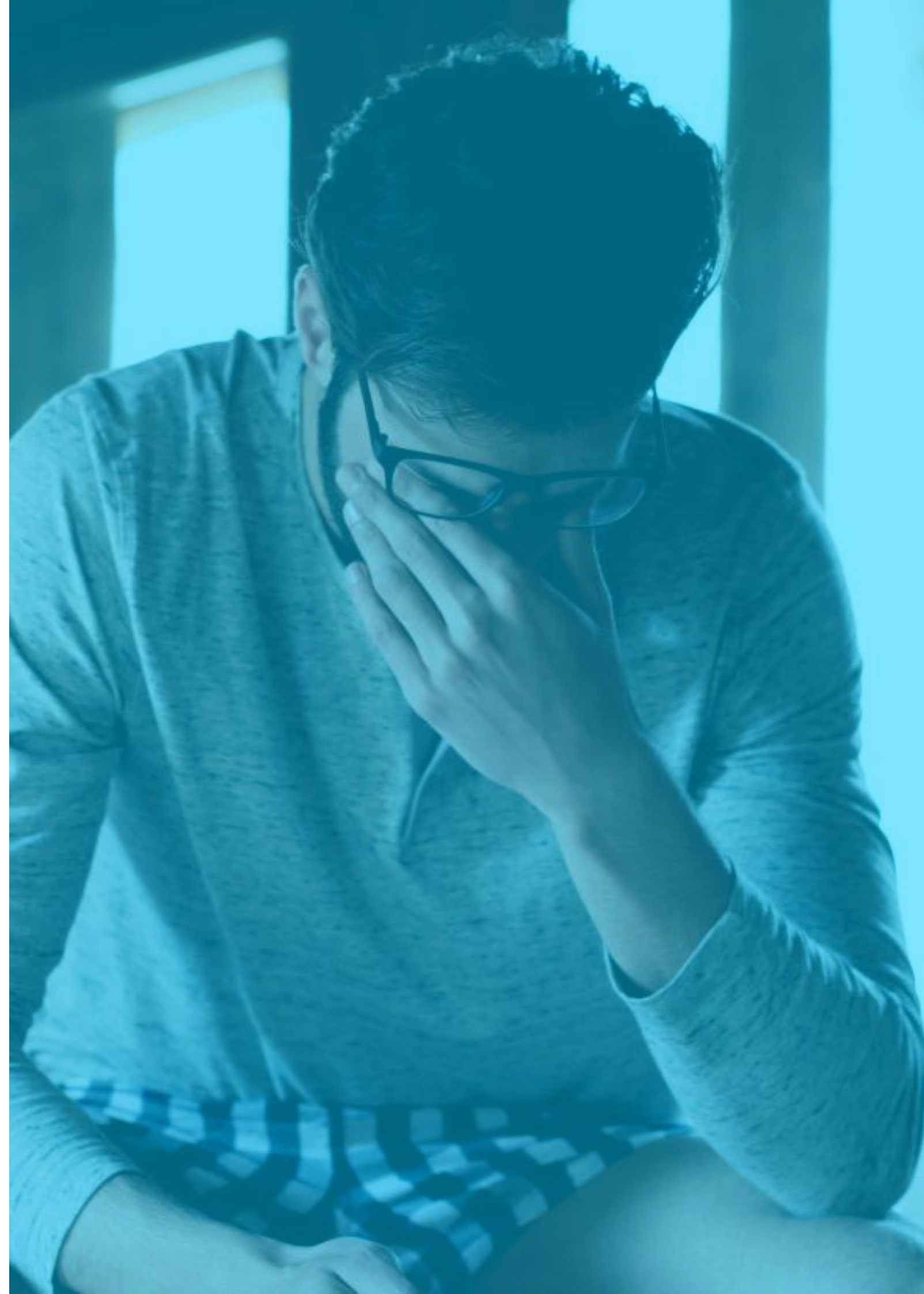


# HOW CAN WE PROACTIVELY INTERVENE AGAINST FATIGUE FOR MS SUFFERERS?

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“You can’t look at a symptom in isolation because that just isn’t how it works, but if you understand and see the outside causes and deal with them, it will help with the fatigue” -  
MS Nurse

**Juvo is an innovative temperature monitoring system consisting of Beacons placed in rooms around the house and a wrist strap that takes the body temperature when prompted to give the user a sense of control about how their environment temperature is affecting them. The beacons combine the technology of temperature sensors and state of the art ‘Beacon technology’ used to track the users temperature when they have entered a room with a beacon through bluetooth.**

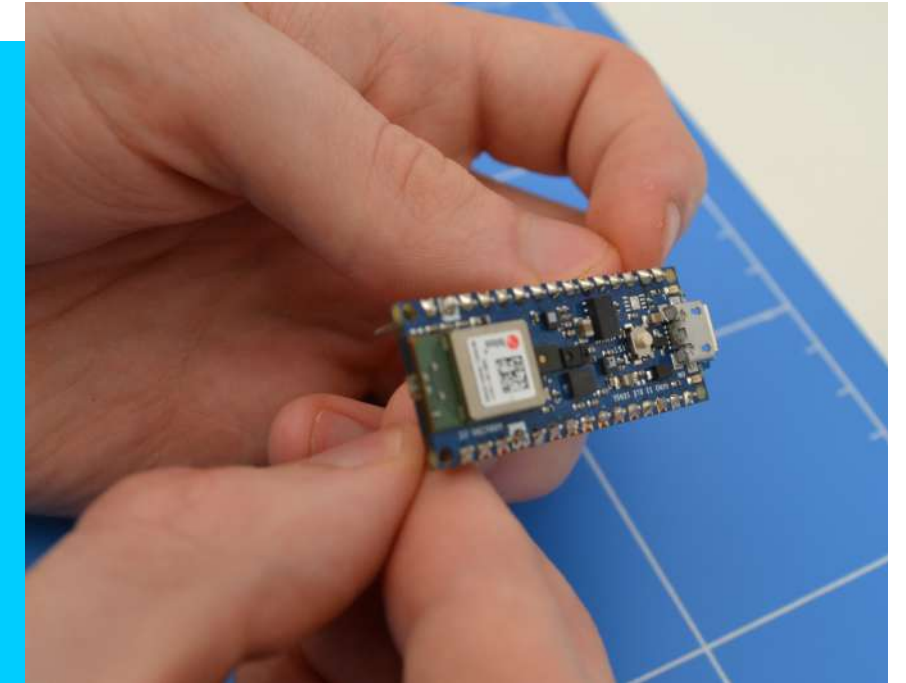


# KEY FEATURES



## Beacon Tech

Juvo uses beacon technology to detect if the user has entered a room with a beacon so it can notify them of any changes in that room temperature.



## LED Ring

The LED ring on the beacons visually notifies anyone in the room of the current room temperature using a colour scheme used on the app to illustrate the temperature levels taken by Juvo.



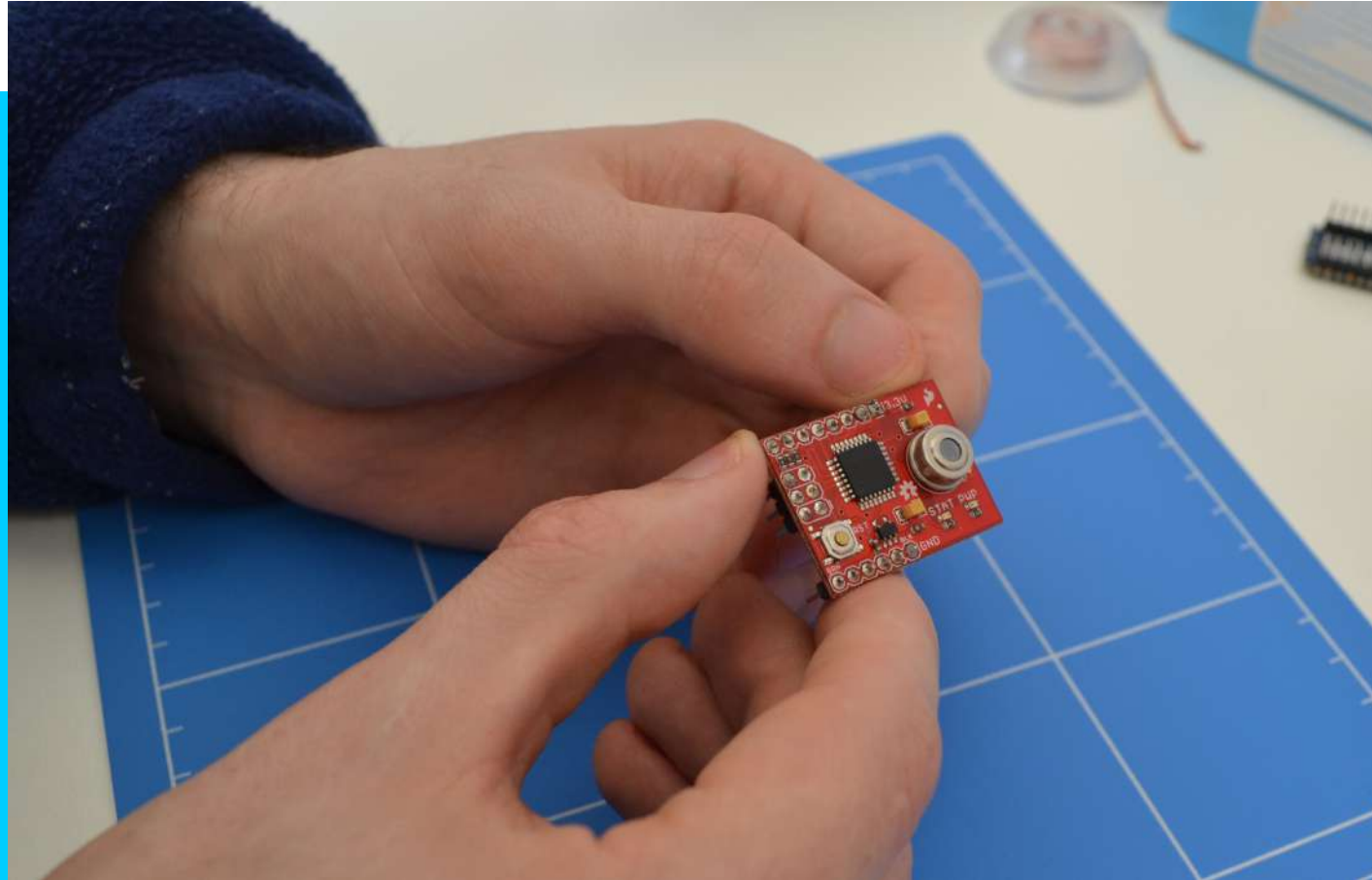
## Temperature Sensors

Temperature sensors are located inside our beacons to monitor changes in room temperature and work with the beacon technology to notify the user of any changes so they can proactively act on this.



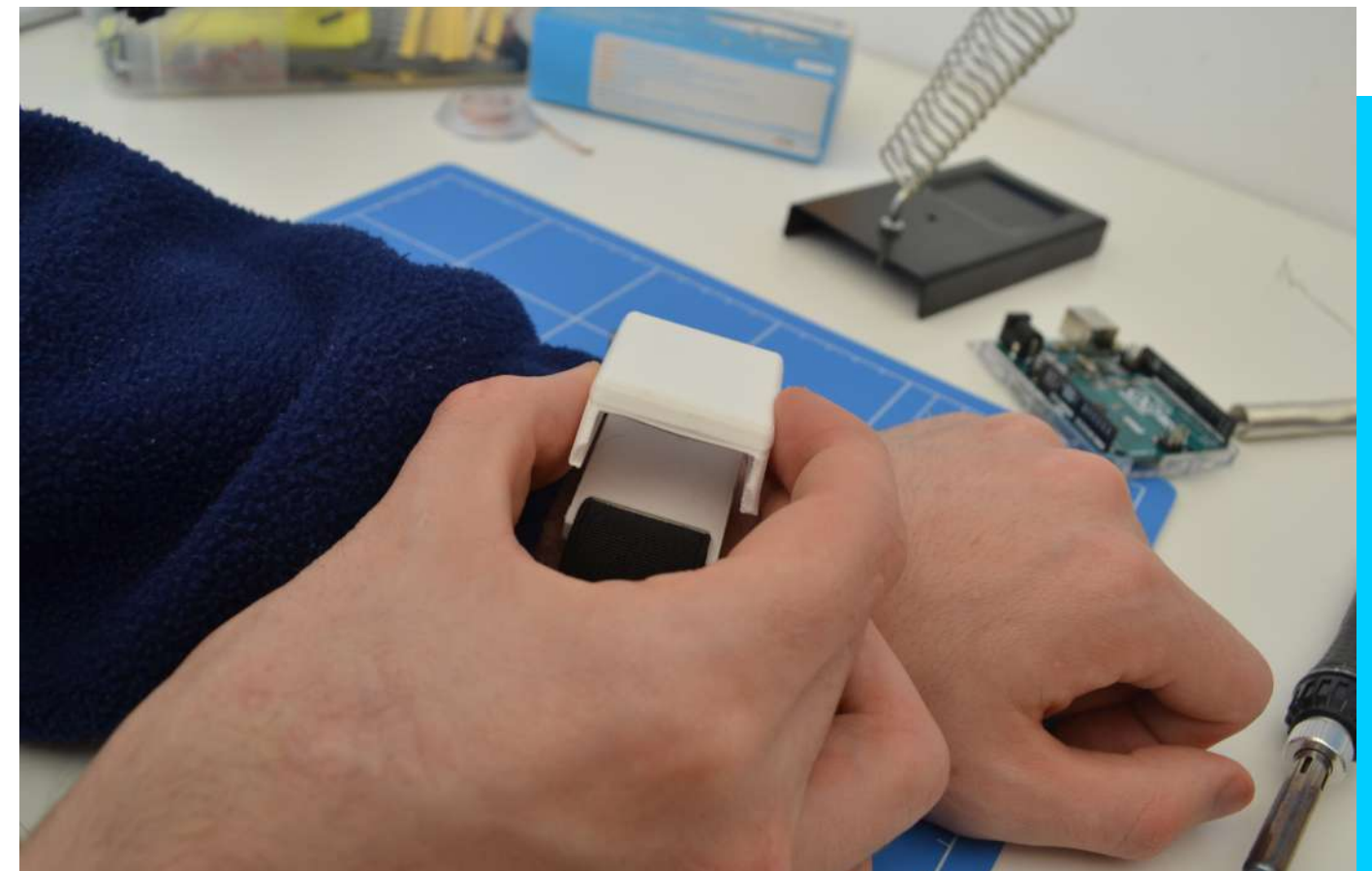
## Infrared Sensor

The infrared sensor found in the Juvo strap is used to take the body temperature of the user when prompted from the forehead and is controlled from the app. The data collected will then be displayed on the app also.



## Always On Charge

The Always on battery pack will charge the juvo strap while on the user so the strap will always be on for use. All you do is place the pack over the strap housing and it will hold in place with magnets and charge the strap in 90 minutes!





# HOW DOES IT WORK?

When a user enters a zone of a beacon the beacon will be able to pick this up with a bluetooth signal to the phone. Once it has seen the user is in the room the beacon will notify the user of the current room temperature recorded in that room and advise the user to open the app and view the temperature information for that room.





The **Juvo** strap is controlled by the app where the user can activate the strap to take the body temperature and view the results afterwards.



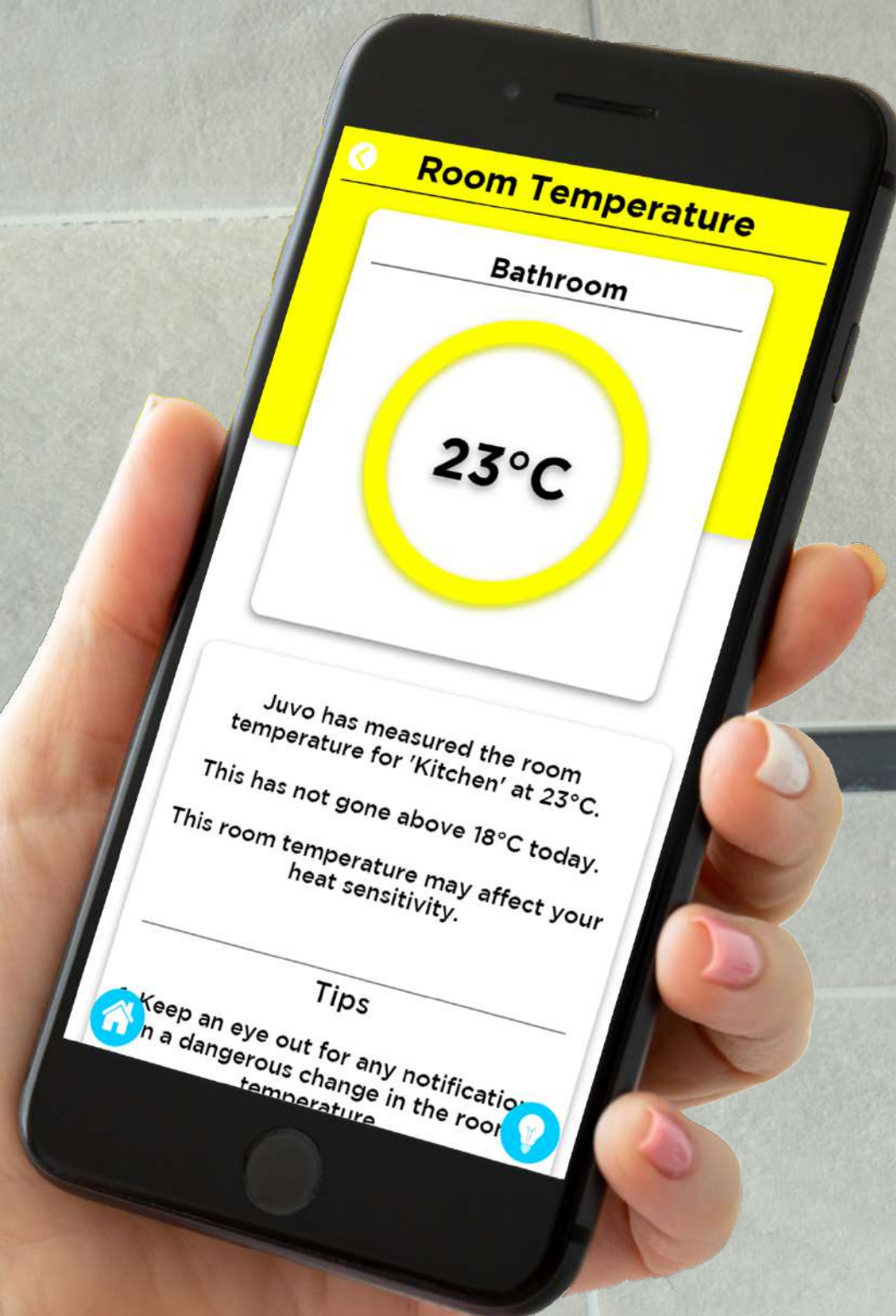




## Our user-friendly app

Juvo gives MS sufferers peace of mind by allowing them to stay on top of their environmental temperatures as well as their own body temperature with the use of the Juvo app.





**Juvo will notify the user of any cautious or dangerous changes to the room temperature the MS Sufferer is in so they can proactively act on the change before it affects them.**



# THE PROCESS

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## Empathise



## Define



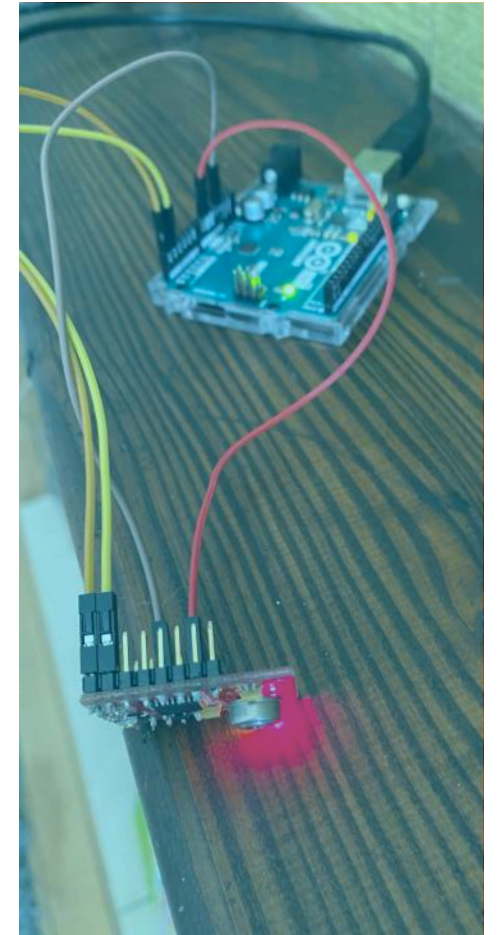
## Ideate



## Prototype



## Test





I followed the Stanford D-school for design thinking. By doing so, I was able to understand the users needs and their struggles with MS. My aim was then to produce a solution that would meet the needs and struggles of the user. To always make sure I was staying on track and focusing on the users needs I would go back and review my findings from the user interviews and surveys taken.





# USER INVESTIGATION

## Observation



## Interviews

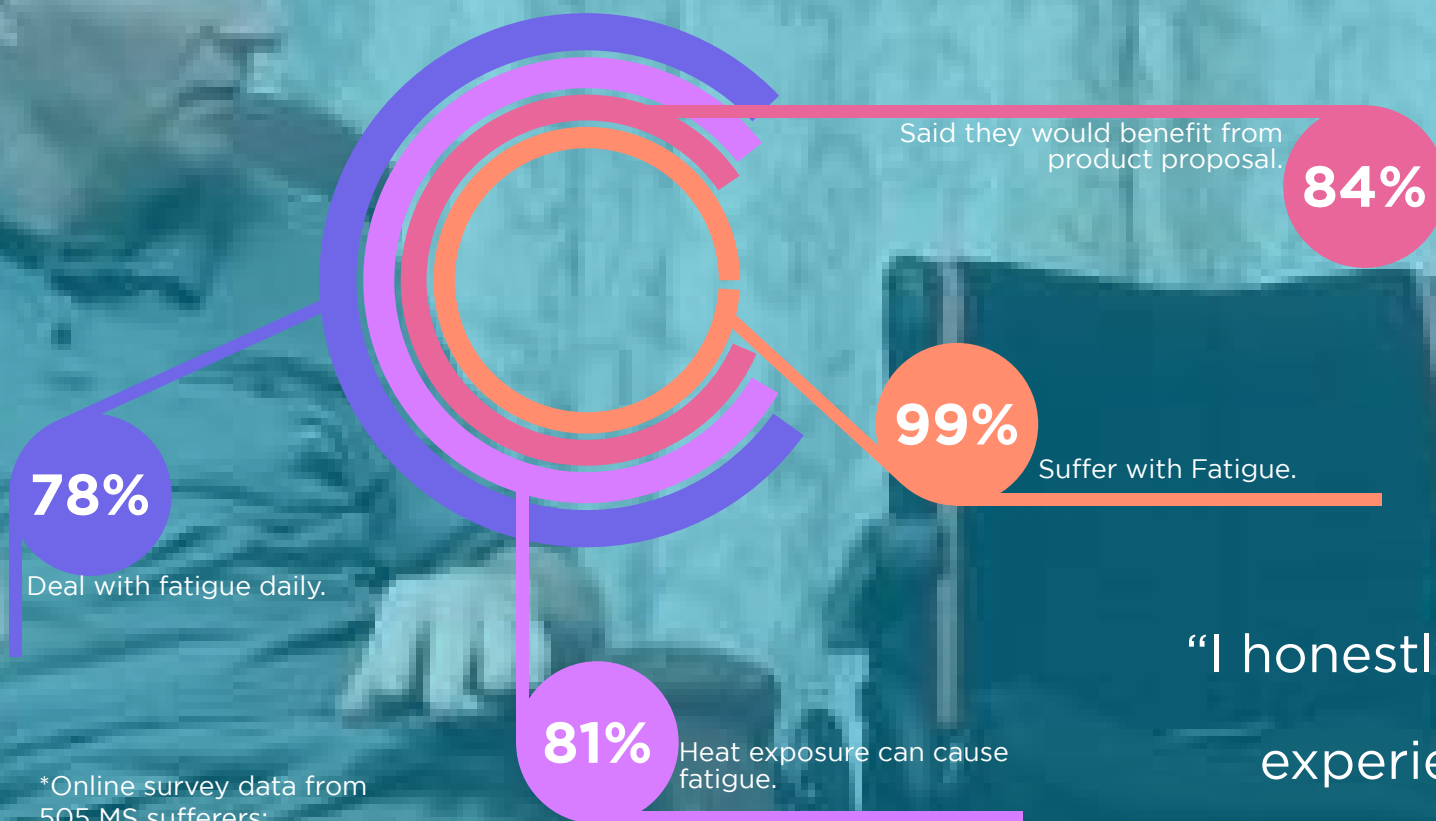


## Surveys



To get a better understanding of the issue I conducted three major user investigation techniques, observational study with an MS sufferer, interviews with MS sufferers and specialists in MS while also creating a survey for MS sufferers. Each supplied me with a greater knowledge of the disease and what the major struggles are for an MS sufferer in Ireland.

# KEY FINDINGS



“Even with fatigue being such a common & devastating symptom of MS, it is still so poorly understood & underestimated from a professional level on how it affects the MS sufferers.”

- MS Physio

“I honestly believe after having MS for 23 years & experiencing several symptoms, Fatigue is the hardest thing I have had to battle against mentally and physically.”

- MS Sufferer

“You can’t look at a symptom in isolation because that just isn’t how it works, but if you understand and see the outside causes and deal with them it will help with the fatigue.”

- MS Nurse





# MARKET RESEARCH

2.3 Million

MS sufferers  
worldwide

9,000

MS sufferers  
living in Ireland

97%

Of MS sufferers  
in Ireland live  
with fatigue as  
a symptom

81%

Suffer with  
heat sensitivity  
as a symptom

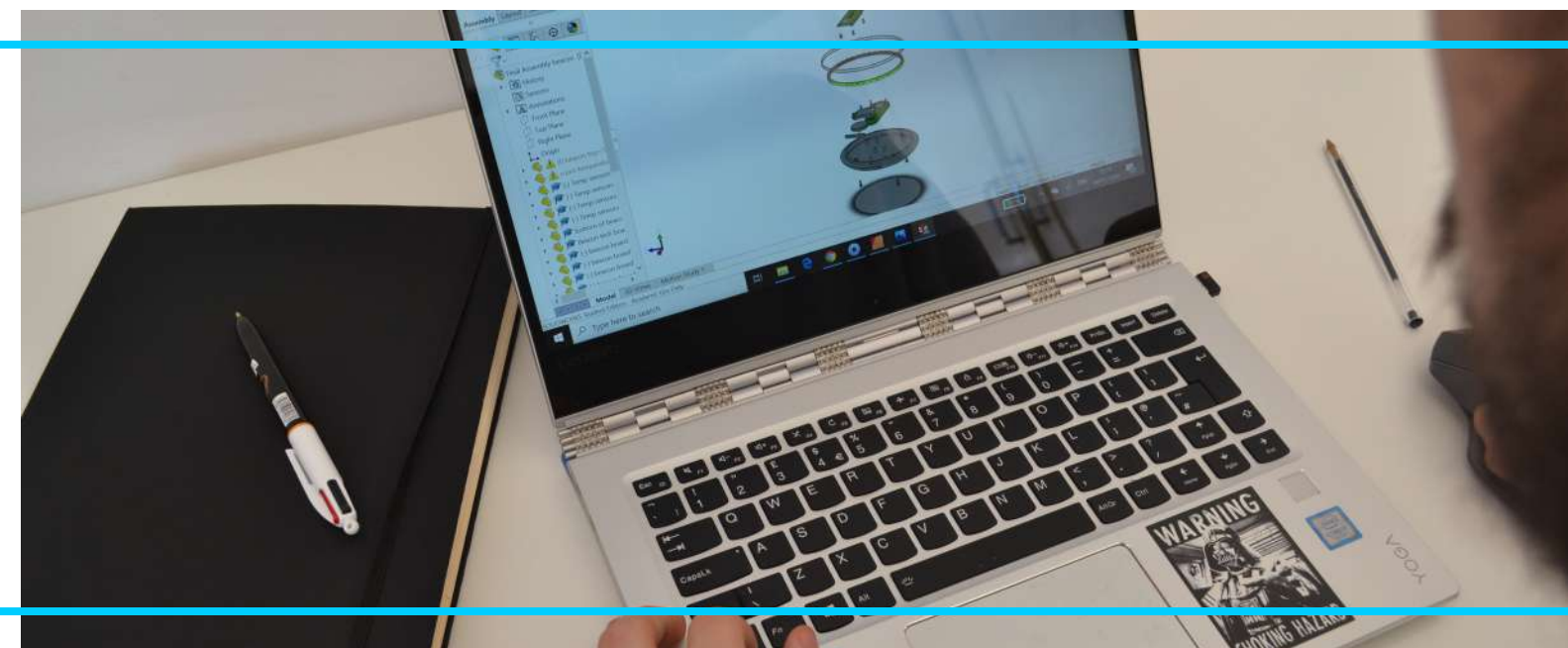
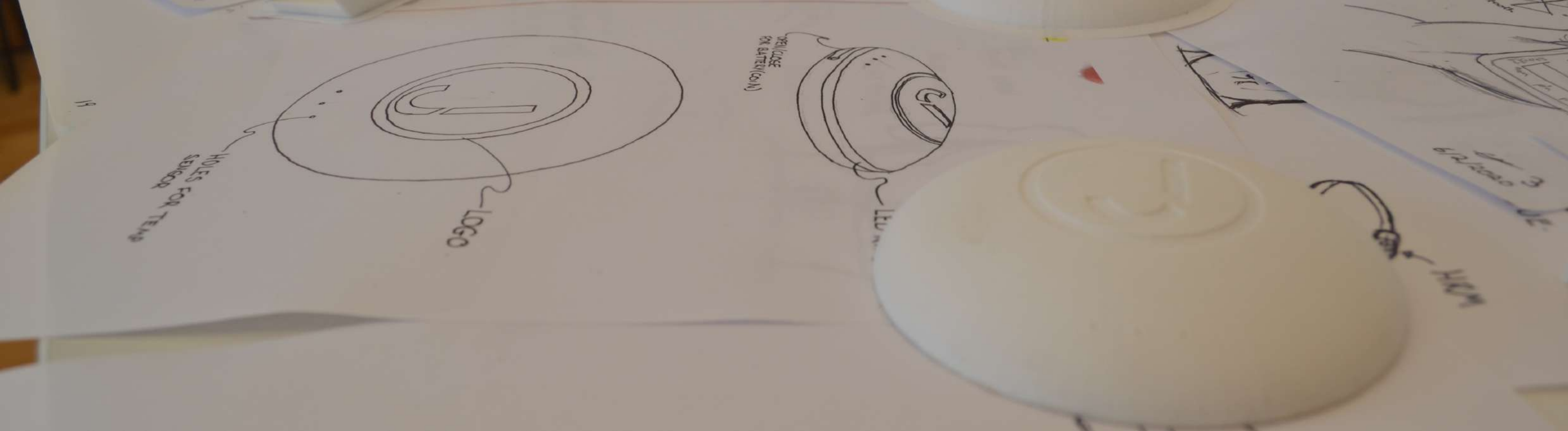
MS sufferers in Ireland have  
increased by 44% over the past 20  
years with the number rising by 3%  
annually each year.





# IDEATION





During the ideation phase of the project I began using many of my skills sets to create and brainstorm ideas for the project. I began sketching concept forms and mood boards which then led to creating models using computer aided designs (CAD) and rapid prototyping designs. These techniques helped me form variable solutions and begin to see what I felt best suited aesthetically and functionally my vision. As I progressed I took these keys solutions and concepts forward and intergrated them in with the innovative technologies Juvo has brought to improve the lives of MS sufferers in Ireland.

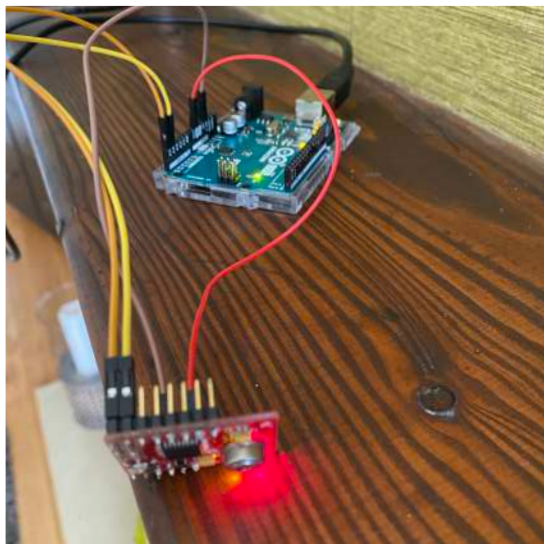
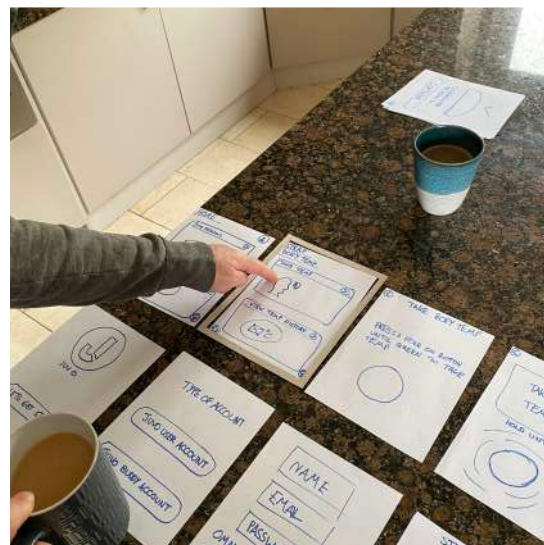
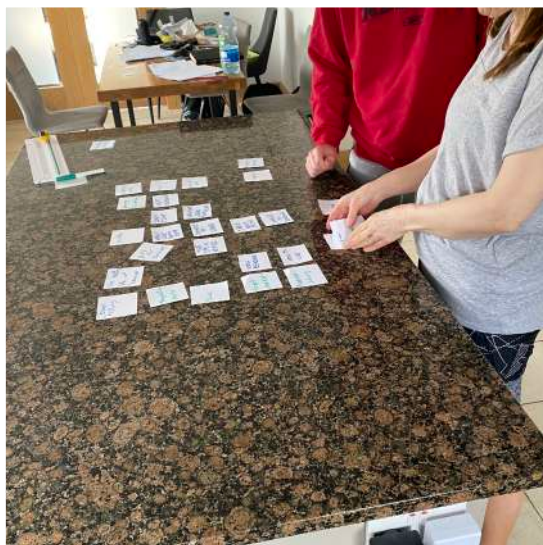
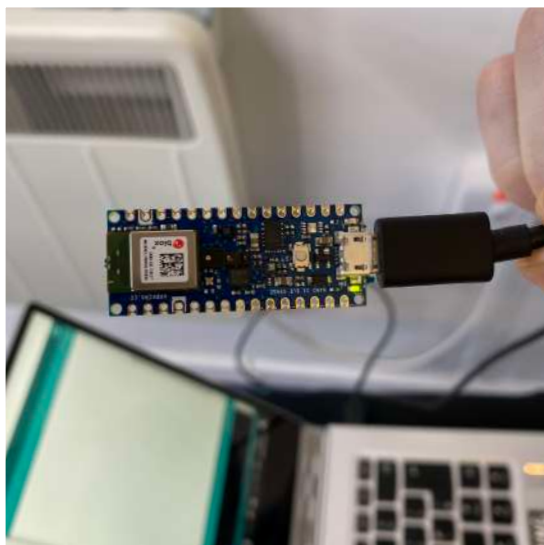
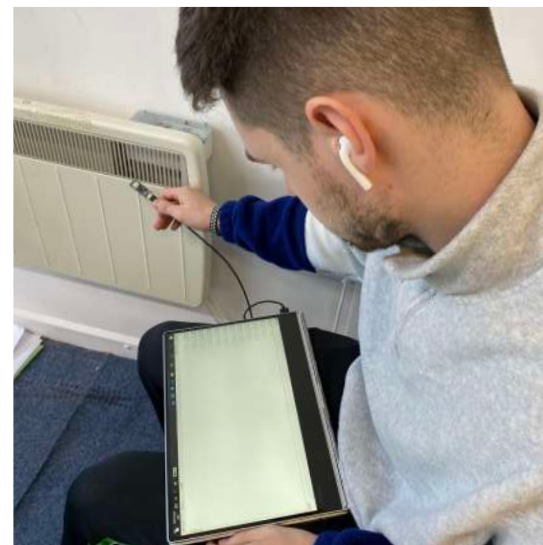
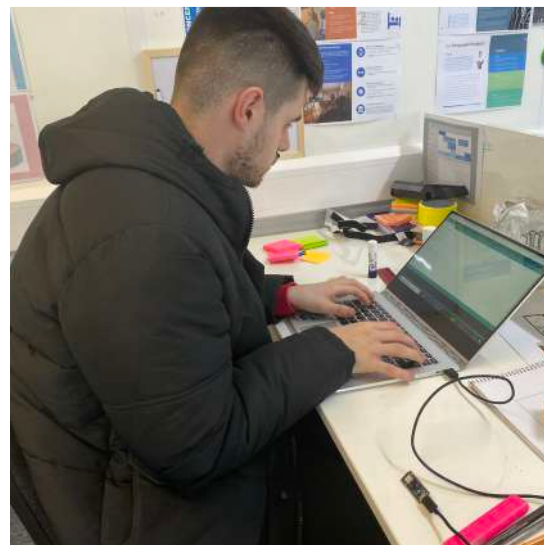


# TESTING



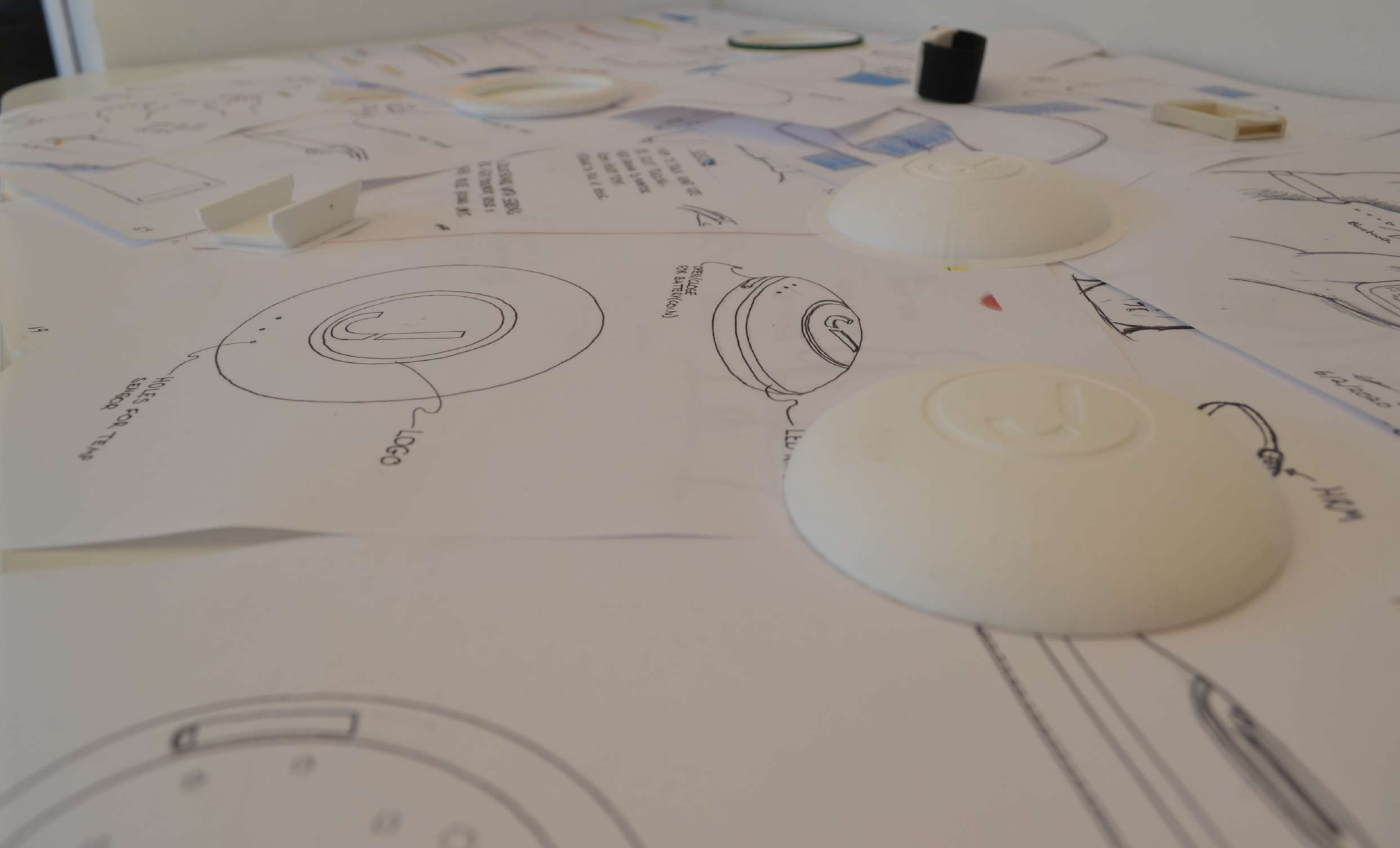
Testing consisted of proving the technology could fulfill the requirements for Juvo and working towards a product that benefited the user.



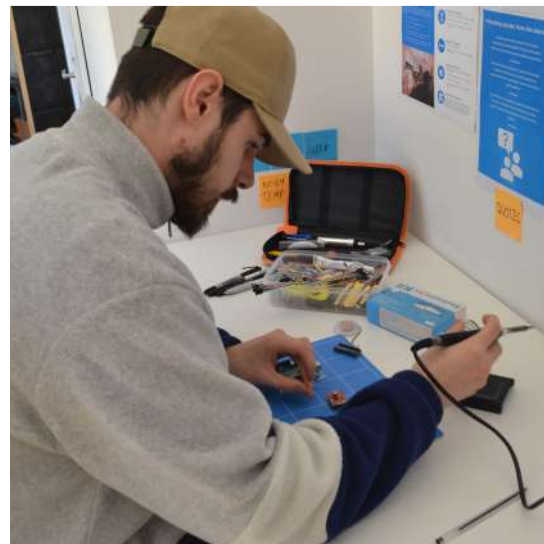
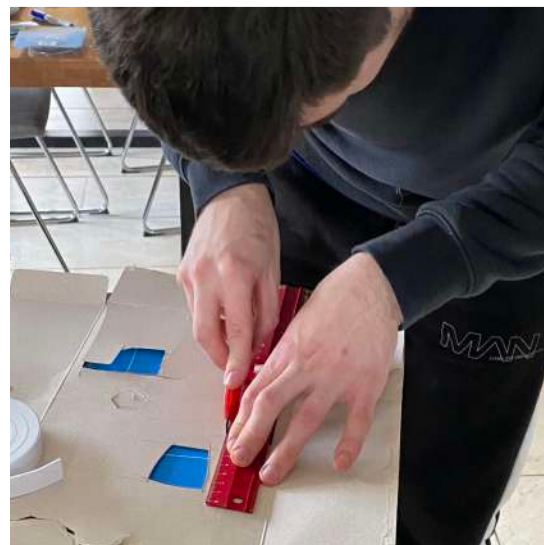




# PROTOTYPING













# FINAL PROTOTYPES



Using my computer aided designs for the Juvo Strap and beacons I was able to get the models housings 3D printed to represent how the products final design and form will look. For the strap I used an elastic nylon material to allow stretching in the material so it better fits the users wrist shape and size. Due to the COVID-19 situation and lack of acces to different finishing methods and machines to create the final product, the prototype does not fully represent the products finish aesthetically but with access to better methods a final prototype will be made to the final specifications and finish.





Juvo BEACON

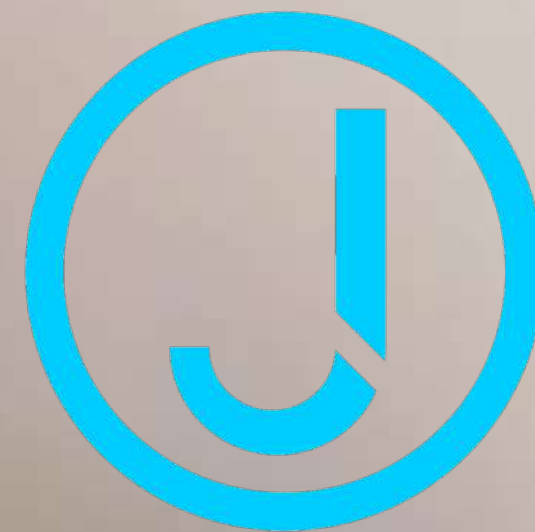


Juvo STRAP

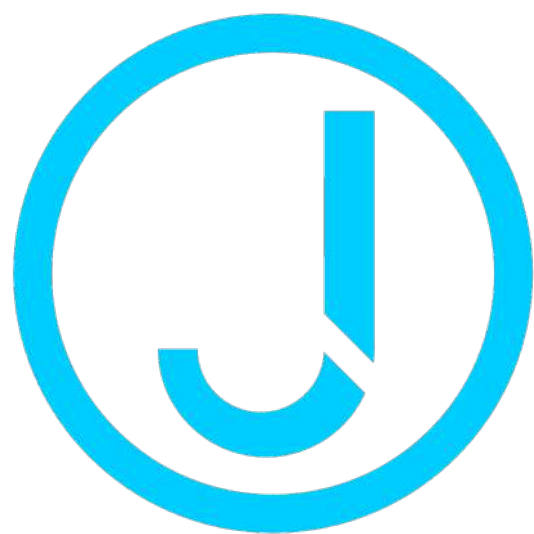




# **VIRTUAL REPRESENTATIONS**















Juvo



# MY VISION



Improve the overall health and wellbeing for MS sufferers.



Intergrate further technologies to aid MS sufferers with other aspects of their MS.



Bring Juvo into other areas of the health industry and consumer markets where others can benefit.

