



EMTTTS

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DE1226
Collaboration & Professional Association

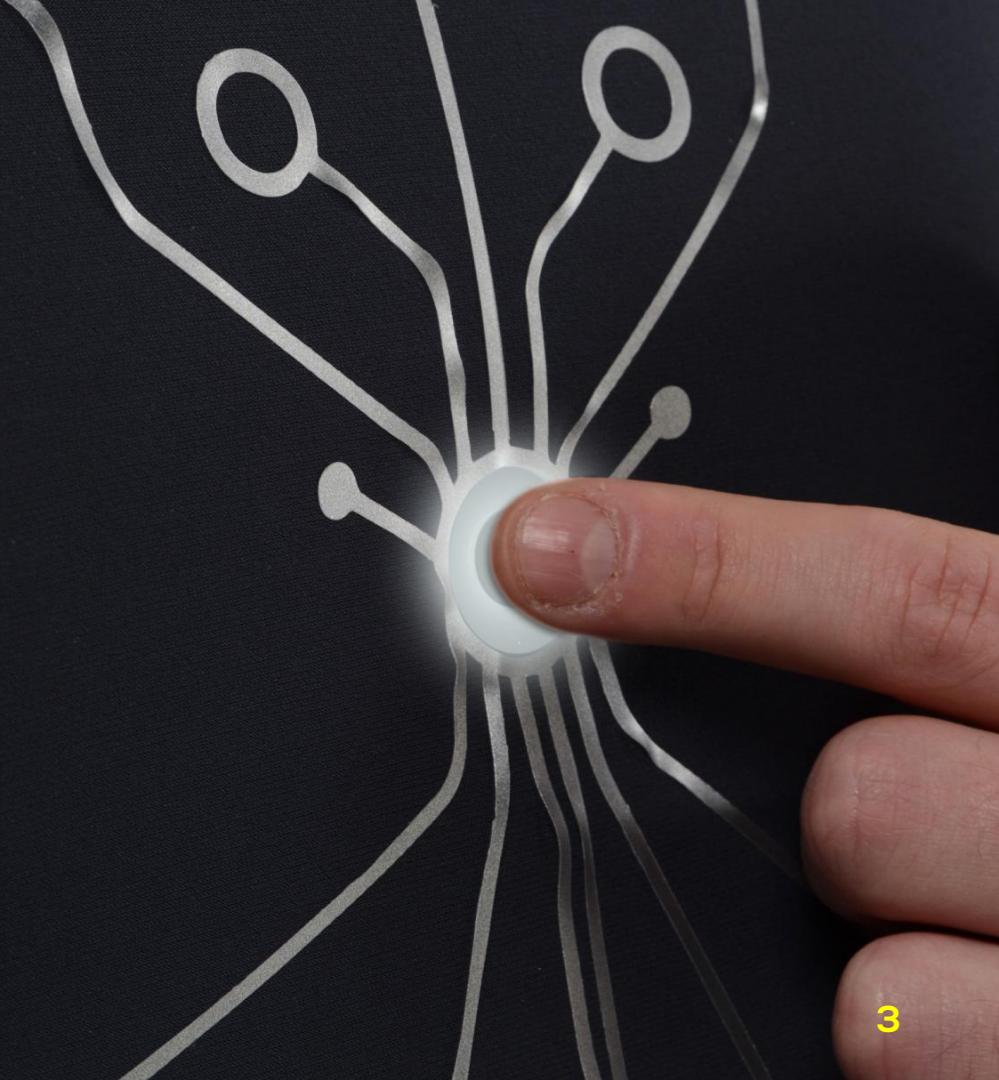
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Brief

Brief

Develop a design solution
that utilises '**Advanced
Textiles**' to improve well-
being or the quality of life



**'ONE IN
SIX CONSUMERS CURRENTLY
OWN AND USE WEARABLE
TECH'**

<http://www.nielsen.com/us/en/insights/news/2014/tech-styles-are-consumers-really-interested-in-wearing-tech-on-their-sleeves.html>



Wearable Research



'EMPLOYEES EQUIPPED WITH WEARABLE TECHNOLOGY REPORTED 8.5% INCREASE IN PRODUCTIVITY AND A 3.5% INCREASE IN JOB SATISFACTION.'

<http://www.techtimes.com/articles/6396/20140503/wearable-technology-can-boost-employee-productivity-job-satisfaction-study.htm>

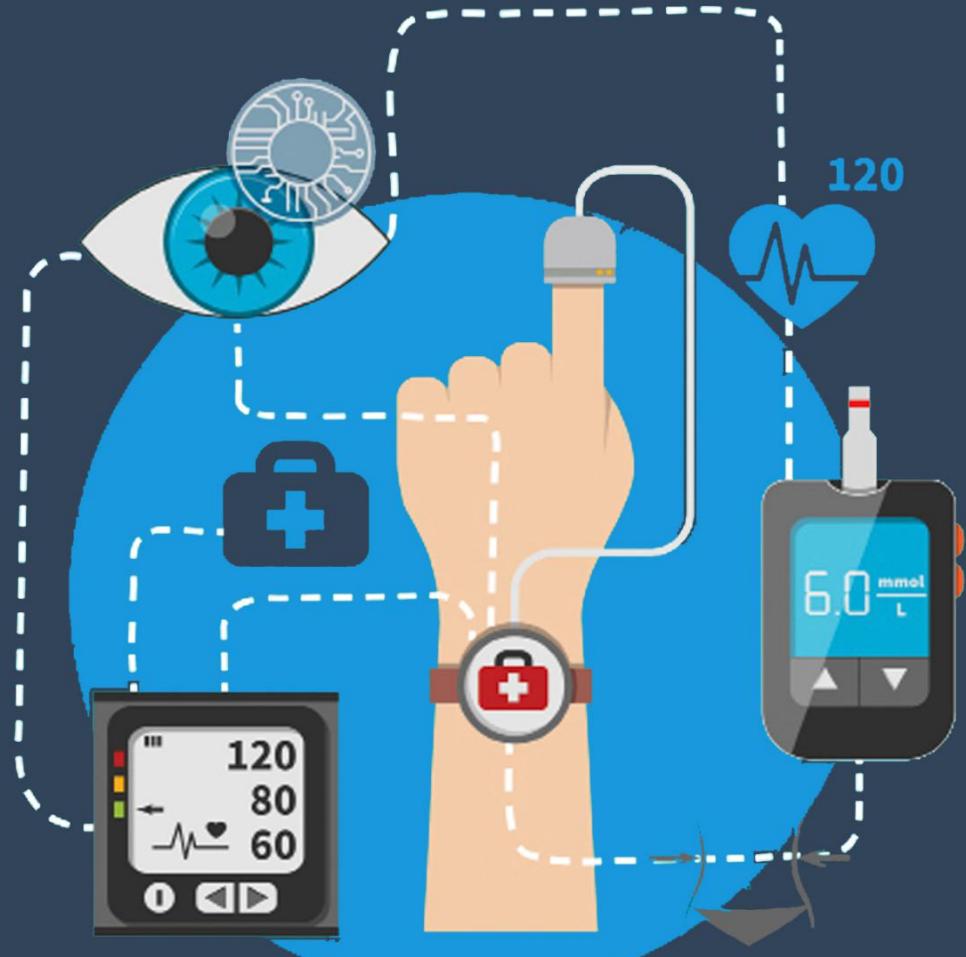
Wearable uses

Medical

Wearables for medical use has increased over the last number of years, doing this makes it much easier to track and monitor patients health. Medical wearables are used to make the lives of people who are living with medical conditions easier and allow them treated conditions independently at home.

Medical Wearables allow for:

- Patient monitoring
- Patient tracking
- Heart rates
- Sleep Monitoring
- Treating conditions
- Fitness tracking





Wearable uses

Industrial

Using wearables whilst working in an industry has proved to make the work more efficient and has increased job satisfaction amongst employees. Using wearables makes it easier for employees to find out information regarding products, storage, and moving items.

Industrial Wearables allow for:

- Asset locating and tracking
- Smart glasses for real time information
- Ring scanners
- Smart Helmet
- ExoSkeletons to aid with heavy lifting

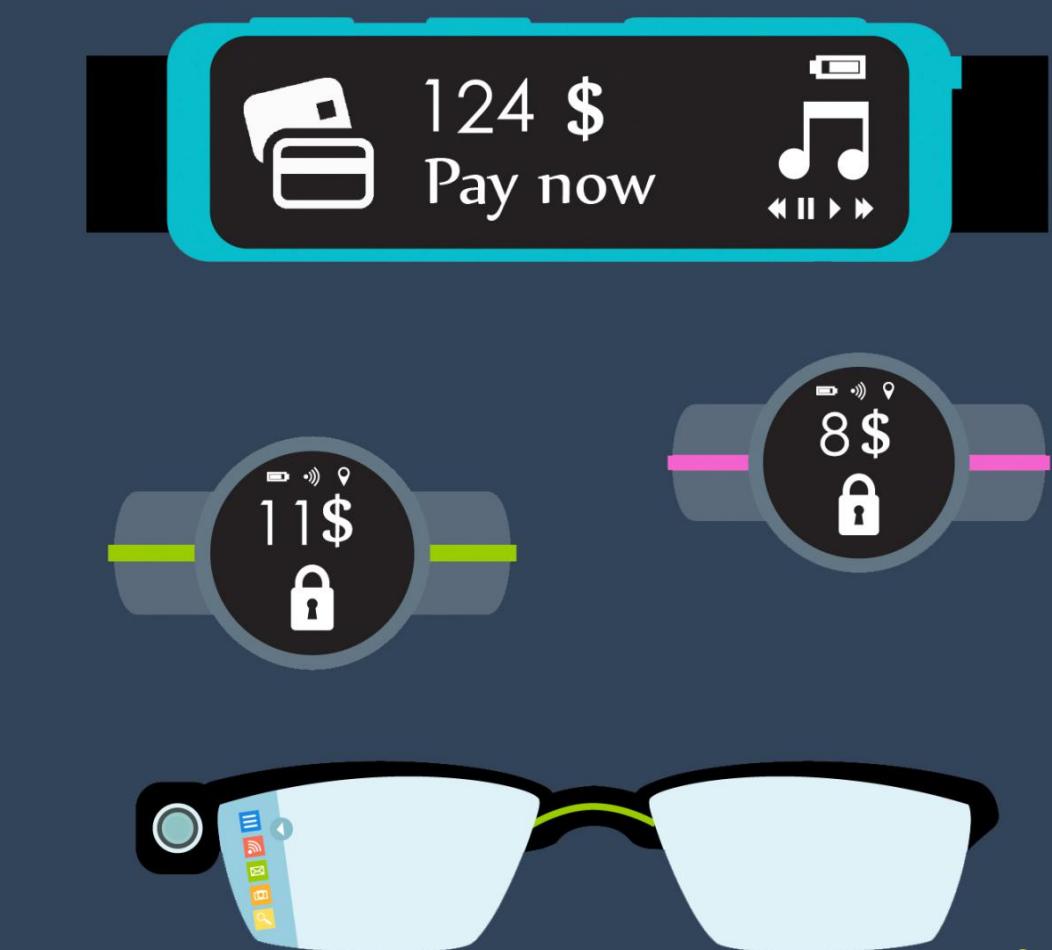
Wearable uses

Consumer

Consumer wearables make the lives of consumers easier whether it is fitness tracking or using their wearable to pay for purchases. Wristwear is the most popular form of wearable intelligence on the market.

Consumer Wearables allow for:

- Fitness tracking
- Fashion
- Translation devices
- User tracking
- Synchronising and transferring data
- Navigations devices
- Communication devices



A graphic on the left side of the slide features a series of yellow bars of increasing height, symbolizing growth. A large, solid yellow arrow points upwards from behind the bars, further emphasizing the theme of increasing market size.

**'GROWTH IN THE
WEARABLES MARKET IS
EXPECTED TO INCREASE
35% BY 2019'**

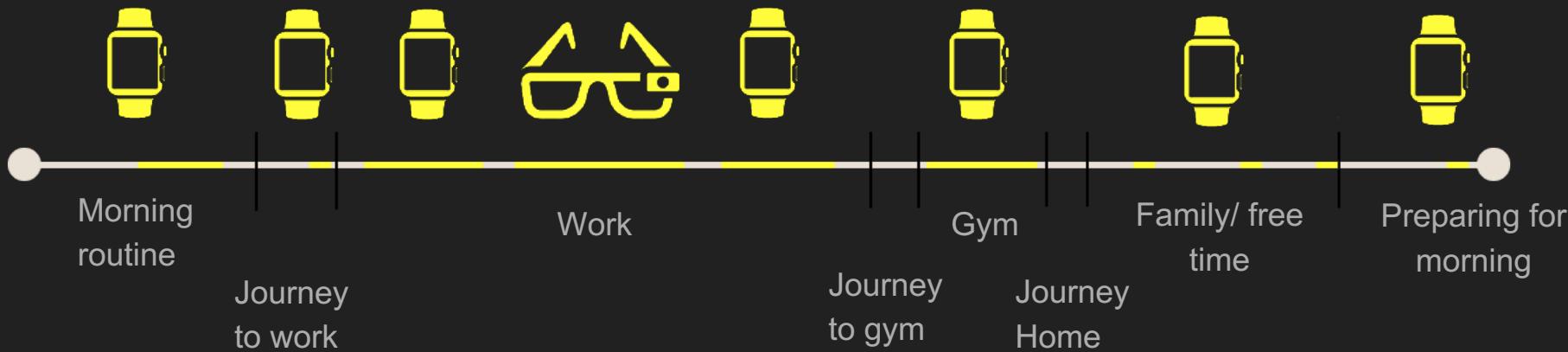
https://intelligence.businessinsider.com/the-wearable-computing-market-report-growth-trends-consumer-attitudes-and-why-smartwatches-will-dominate-2014-10?utm_source=House&utm_medium>Edit&utm_term=M-WearablesUpdate-2014-01-07&utm_content=link&utm_campaign=BIIMobile

Wearable users

Barry is a 32-year-old Doctor who uses wearable technology to keep track of his patient's health. Having his patients use wearable technologies makes his job easier and provides more accurate data. Having the ability to monitor real-time data and stored data allows Barry to keep track of how his patients are doing. When Barry is in theatre he is also able to see patients information via his smart glasses, this allows him to preload the information/x-rays without needing to use another device or break concentration. By using this technology Barry has been able to keep more accurate data regarding his different patients. It gives him accurate times, dates as well as the data collected.

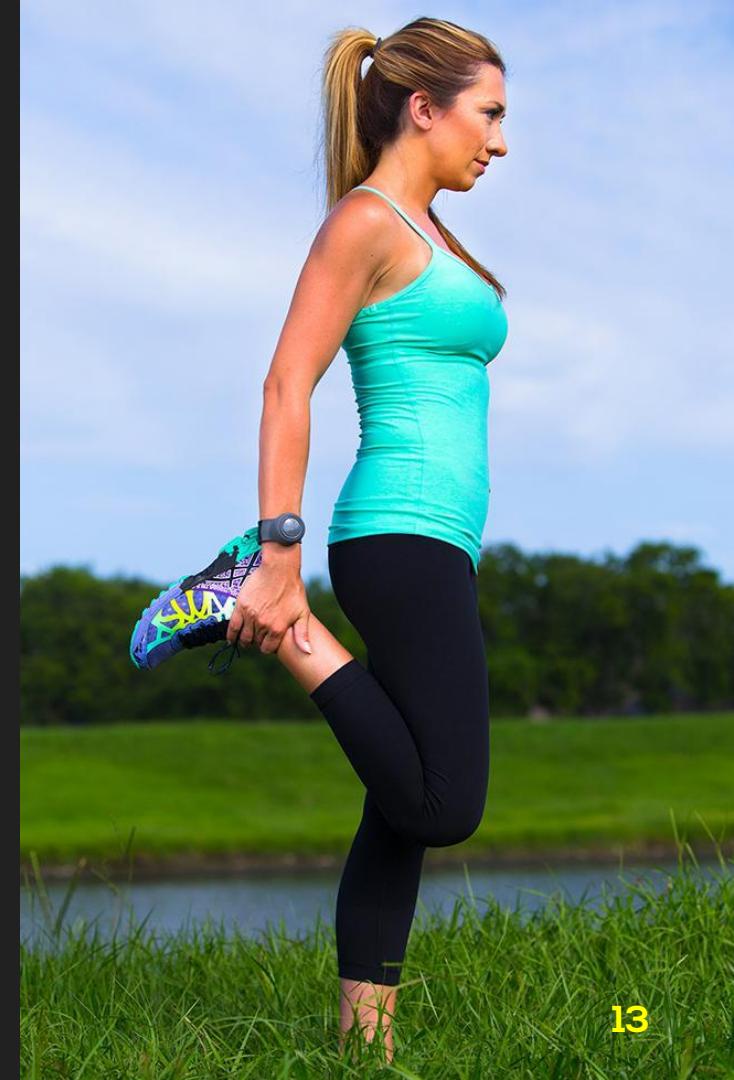


Barry's Device Journey

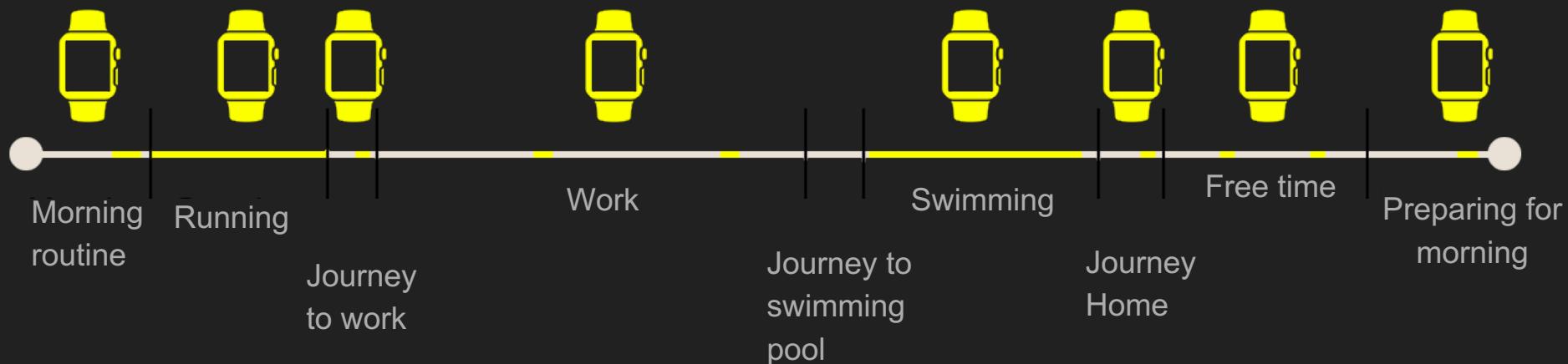


Melissa

Melissa is 25-year-old Admin assistant. She is a keen athlete, she particularly loves swimming and running. Melissa has owned a Fitbit for just over a year. Over the year she has been able to keep track of her fitness level and compete with her previous scores. As she is able to view her previous times Melissa has become more motivated to beat her own scores. Being a competitive athlete she has a number of apps that allow her to compete with other people as well as her own scores. This has made her fitness routines more interesting as she always has someone to compete with. Since the Fitbit has had a positive impact on her fitness journey Melissa is looking into different technologies that will allow her to keep track off other health aspects. She would recommend using wearable technologies to her fitness friends as this has been a big help with motivating her to improve.



Melissa's Device Journey

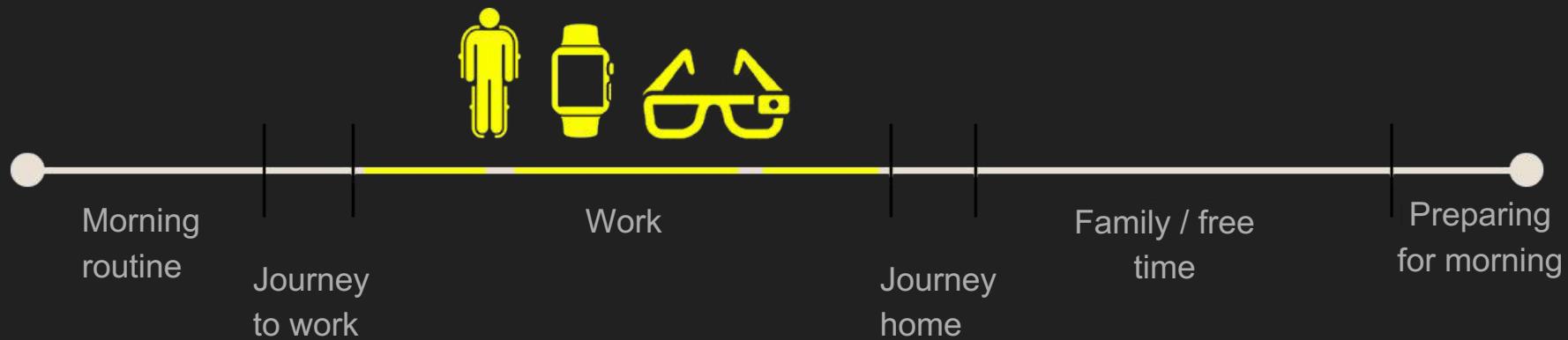




Kevin

Kevin is a 56 year old warehouse manager, he has recently started using wearable technologies to help with the productivity in his warehouse. By using smart trackers he is able to find the inventory with ease as he is able to scan and store data with his smart devices. By having a shared connection with his employees, they are able to find stock with no hassle. He has also introduced his employees to the exoskeleton; using this he has noticed that his employees level of productivity is actively higher than before. Using exoskeletons help fight muscle fatigue when employees are moving stock. By using wearable technology Kevin has noticed an increase in productivity and a decrease in inaccurate data.

Kevin's Device Journey



**'51% OF PEOPLE SURVEYED
CITED PRIVACY AS THEIR
BIGGEST CONCERN WITH
WEARABLE TECH'**

http://www.rackspace.co.uk/sites/default/files/whitepapers/The_Human_Cloud_-_June_2013.pdf



Market Research

Failed wearables

To get a good understanding of what kind of wearables there are we decided to look at current wearables on the market and some of the less successful wearables. Doing this will help us understand why some products failed and this could help us avoid facing the same issues with our own design.



Ring - Smart ring

Overly big design, inefficient wireless charging and confusing gesture based interface.



**Neptune Pine
wrist watch**

Design was clumpy and quite big for the majority of the users.

Google Glass

Poor internet connectivity, unclear functionality /market and unappealing aesthetics.



Fitbit Force

Highly uncomfortable, sometimes causing rashes and blistering.



Failed wearables

The key insights we got into researching failed wearables is to avoid using overly big designs. Whatever our product might be we have to ensure that the user will be comfortable with the size and feel of the product. If it is possible we have to make sure we can adjust the product so it is accessible to all users. Another consideration is to avoid using confusing interfaces, we will need to provide an interface that will be user-friendly and easy to understand for our target market.

Successful wearables

After looking at some wearables that have failed and gathering information that we should avoid when designing a wearable. We then decided to look at successful wearable products to understand why they are successful and what features/ design aspects that we could integrate into our design to make a successful wearable.

Quell - Pain Relief



Simple and easy to use.
Fits comfortably to the user and has a specific target market.

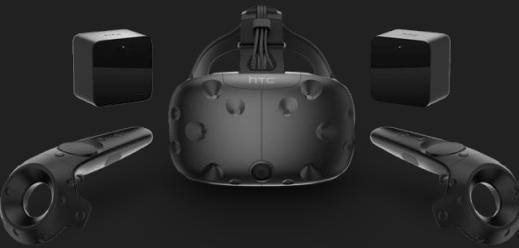


Zepp Golf

Subtle, smart style and design. Has a useful companion app to store data. It has a specific target a

HTC Vive - VR Headset

Lightweight, ergonomic and has a wide range of uses and applications that can be used for numerous forms of media.



Fitbit Force

Fashionable sleek design. Simple and clear user interface. It has the clear function to track fitness.



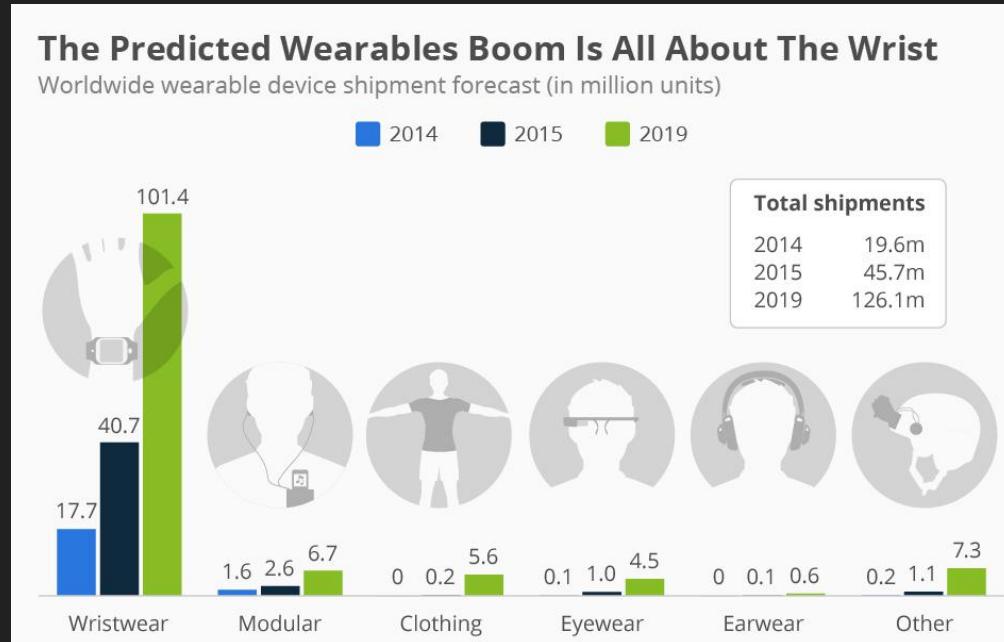
Successful wearables

Looking at successful wearables we were able to gather useful information that we should take into account when we are thinking about our wearable intelligence. We will need to design a visually appealing, easy to use interface. The product needs to be comfortable and not damaging to skin. We also found it important that our wearable has a specific target user as this is one of the main reasons that other wearables had failed.

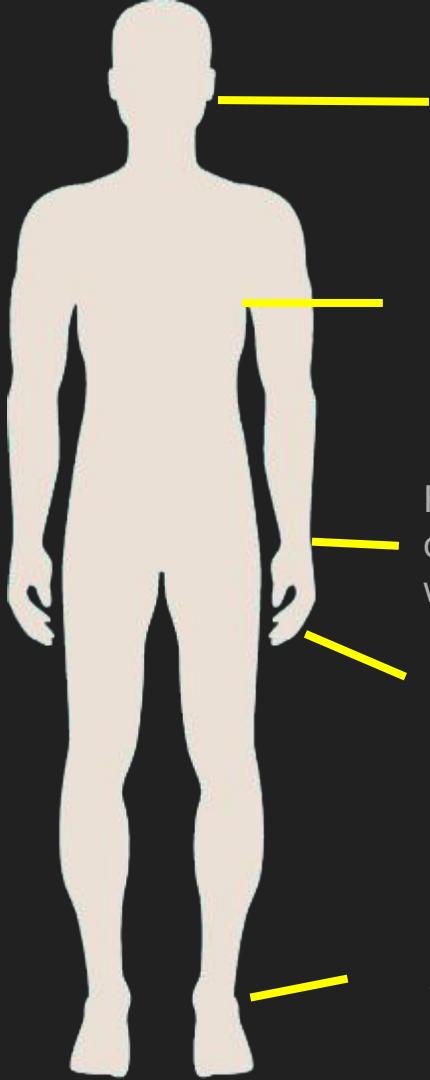
Opportunities

What opportunities are available for us in our design area?

On the graph seen to the right, it's clear to see that wristwear is the most popular choice for wearable technology. As designers, it's up to us to decide whether this is an indication of what type of wearable device to design, or if it's pointing out a potential gap in the market. Due to the over saturation of wrist wearable technologies, it may be useful for us to explore other areas for which a wearable device could be worn, as well as how it could be used.



<https://www.wearable-technologies.com/2016/01/the-most-successful-wearables-for-consumers/>



VR headsets, glasses,
helmets/hats,
earpiece/headphones

Fitness tracking (shirts,
belts, bras), light
integrated garments,
exoskeletons

Fitness trackers, media
display device, smart
watch

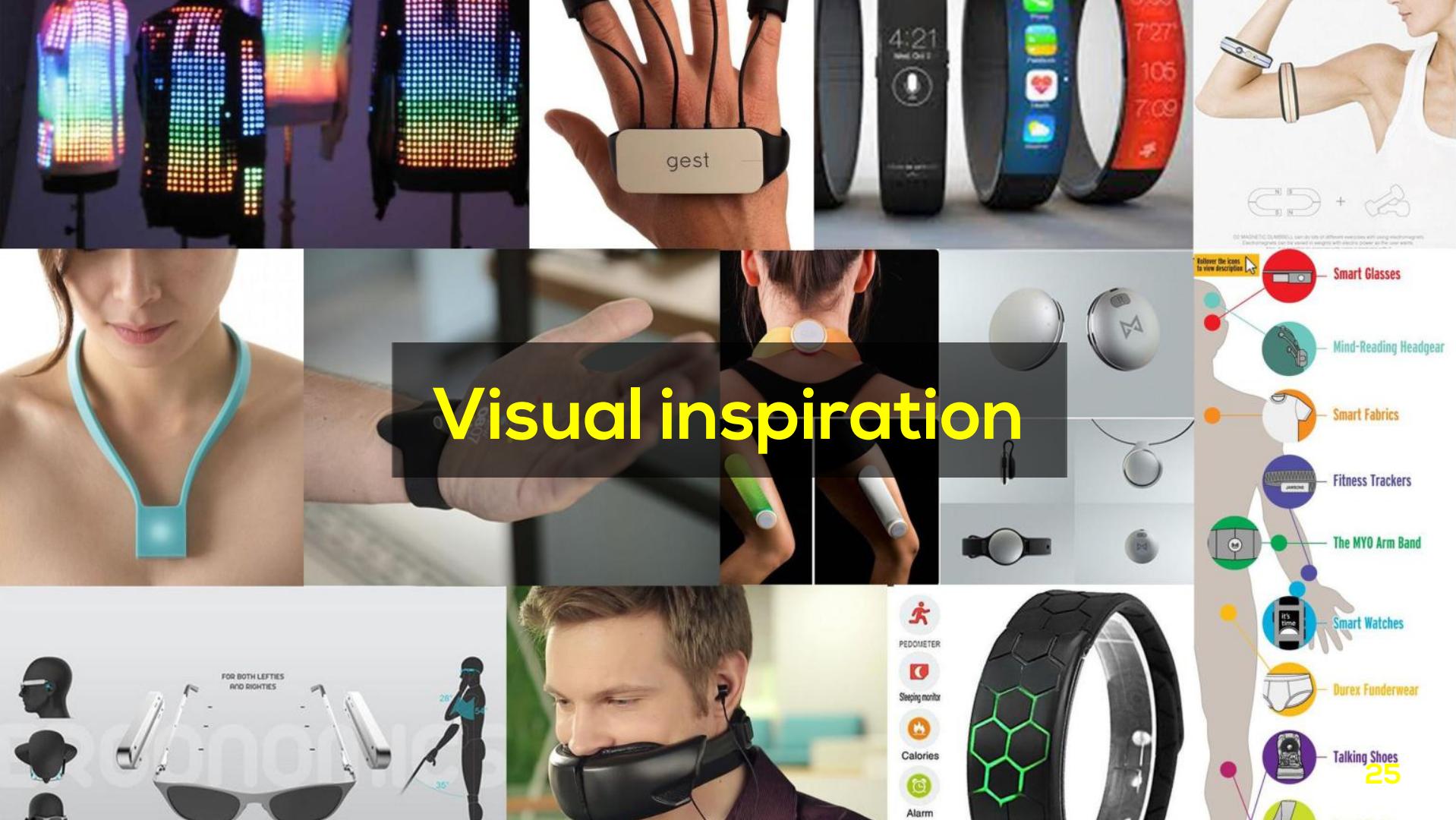
Health tracking rings,
product scanning rings,
sports performance
trackers (tennis, golf)

Fitness trackers, sports
trackers, pain relief
bands, smart shoes

What Wearable?

What are the different wearable technologies available for particular areas of the body?

There are a wide variety of wearable technologies to explore for different parts of the body. When thinking of a design solution it will be key to look at what can be worn around the body and which of these will be most suitable for our chosen audience and the requirements/capabilities of the device.



Visual inspiration

The future of wearable technology





Research Insights

Overabundance of Smart Wristwear

Smart Wristwear is the current dominant leader in wearable technologies. This gives us the opportunity to think out of the box and create a wearable product that is not used on the wrist.

Happier and more productive workers

From our research, we thought that it was interesting that employees that used wearable intelligence had an increase in productivity and job satisfaction. We decided that employees would be a good target audience to market our product at. We believe this is a good target audience because it would appeal to the employees to make their job easier but will also appeal to the boss's as it will make happy workers.

Concept Generation

Idea Generation

After we done background research about wearable intelligence, we then began to come up with individual ideas that we thought we could design to meet this brief. We focused on how we could make life easier for the user or be able to reach a good target audience so the product would be a success. Initially, we came up with four concepts that we thought would be quite interesting to design.

Initial concepts:

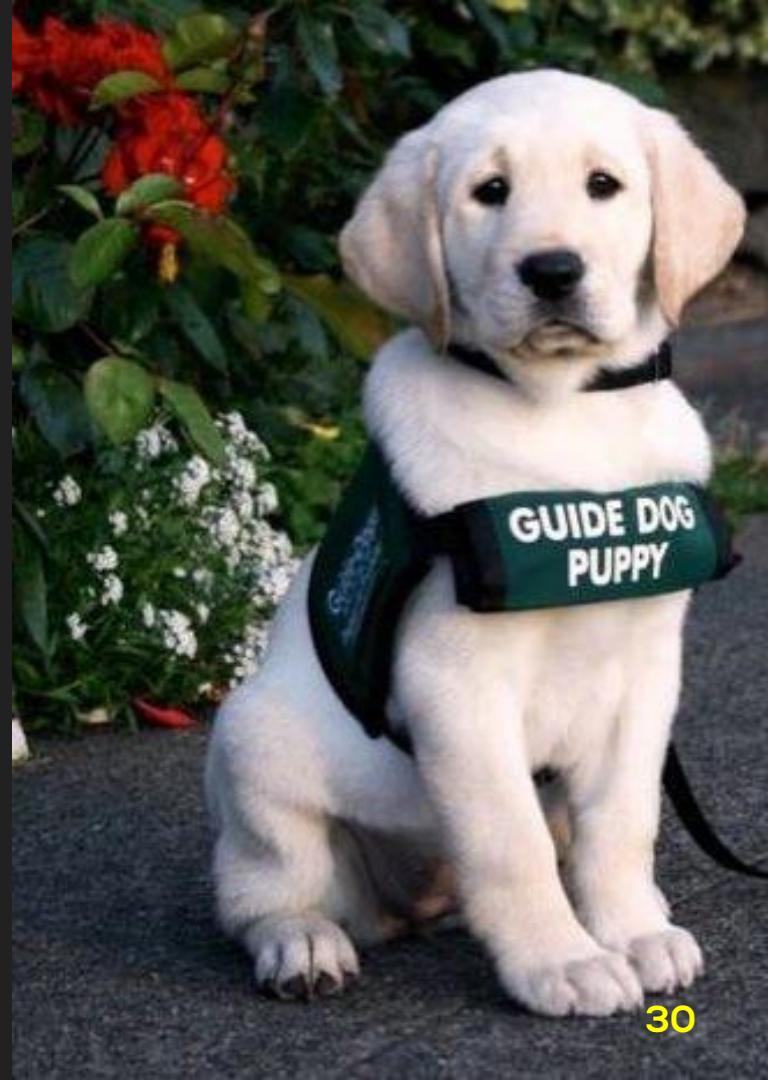
- Guide Dog replacement
- Anti muscle strain
- Blind shopper
- Speech to text glasses



Initial Concepts

Guide dog replacement

Using wearable tech to replace the use of guide dogs. This idea was going to be an item of clothing that could tug the user in the direction they would like to go. The clothing could be designed using polymers that would create a tug in the direction of the user. We decided that this concept would be quite difficult to do and there would be countless factors that we would have to take into consideration for this device to work accurately and safely.





Initial Concepts

Anti-Muscle strain device

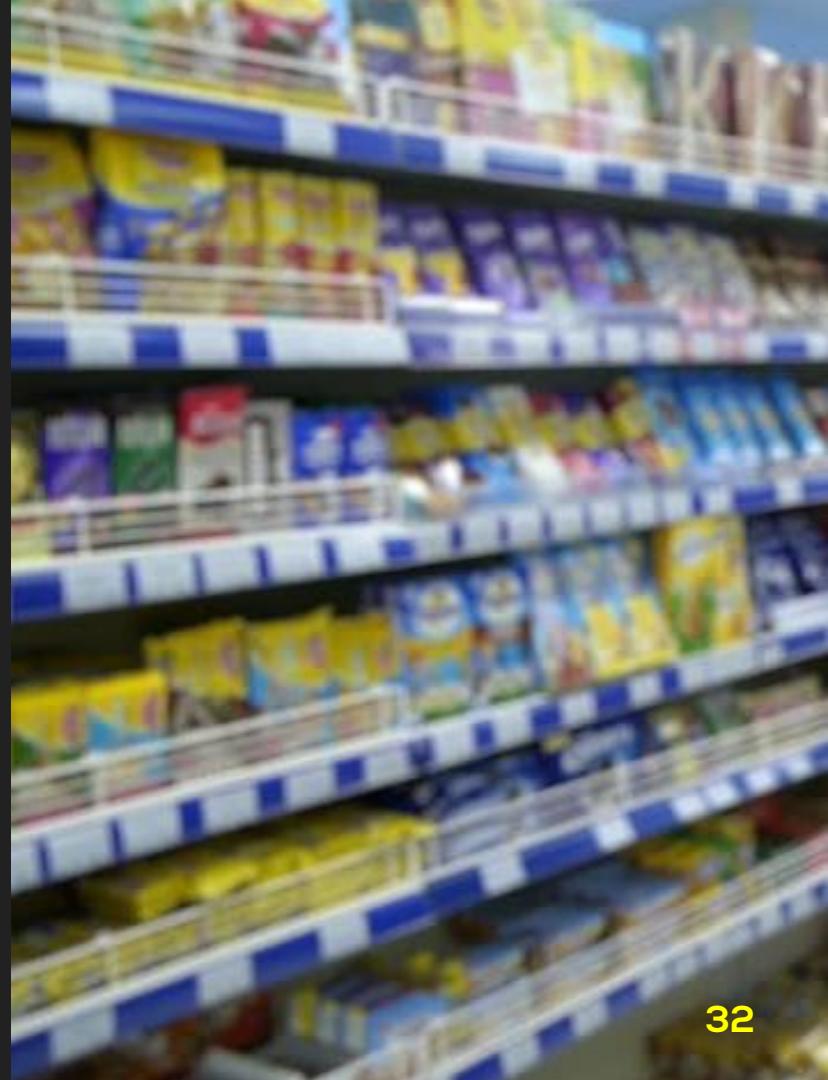
This device would help people using the gym, it would give feedback regarding the user's posture/ stance/ rep etc. Having a strap around both arms, thighs and a back device it will be able to gather the information to give useful feedback. With a companion app that will act as an electronic personal trainer to help motivate with workouts and give advice. It aims to prevent injury, improve fitness/ posture, store useful data and give user feedback. After researching competitors, there was already a product very similar to this idea.

Initial Concepts

Shopping Assistant for the blind

Using smart glasses to help people with vision impairments or completely blind to shop on the high street independently. The glasses are able to detect the product in front of the user.

Notifying the user with speakers or headphones. The glasses could come with a discreet earpiece to notify the user of the product. They would have the ability to preload a shopping list to the glasses so they can be guided to different in-store items. With speech recognition, the user would be able to ask the glasses to help them find a certain product.



Existing Services



Shop Assistant

An understaffed shop may be unable to provide the service. Can be highly helpful for the blind



Online Shopping

May require another user to sit and help them order or specialist equipment to say or enhance the images on screen.



OMOBY

Uses the camera to retrieve product information. Can guide users around the store. Can only be used by the partially blind (need to see buttons).



Existing Services Insights

The existing services available for blind people shopping requires a helping hand. However, there are no services for a blind person to shop independently.

After doing research on this product we decided that we should go another direction as there are similar products out there. This would also require the user to have some sort of sight as they would need to aim it directly at the product.

Initial Concepts

Speech to text glasses

Glasses for people with hearing impairments. Using speech to text technology to display on the lens. The glasses have lip-reading technology which recognises the shape of the recipient's mouth to enhance the accuracy. The glasses would provide a notification for sounds getting closer to the user such as a car approaching.





'10 million people (approx.) in the UK are affected by hearing loss (1 in 6)'

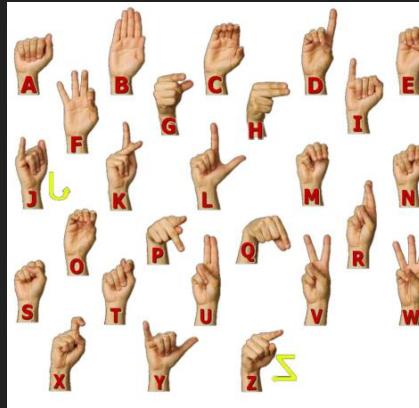
<https://www.hearinglink.org/your-hearing/about-deafness-hearing-loss/facts-about-deafness-hearing-loss/>

Existing Services



Hearing Aids

A helpful product that is very popular in the hearing impaired community. Doesn't provide a solution for extreme cases of deafness.



Sign Language

Good for communication between the deaf and carers, although a standard person on the street is not likely to know the language.



I See What You Say

I See What You Say

An application that allows users to send messages via an app to those with the device shown above. Highly useful although people without the app will be unable to use the product.

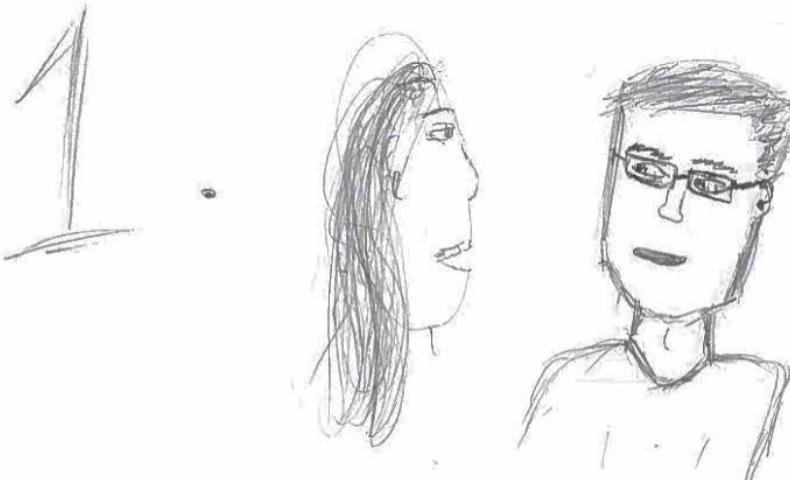
Without Smart Glasses



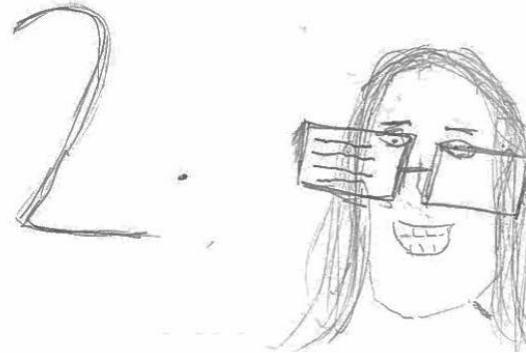
A person tries to have a conversation with someone who has a hearing impairment.
The user could misinterpret what the person is saying.

The user has to explain to the user that they have a hearing impairment. If the user is deaf they might not be able to have a conversation with the individual if the individual cannot use sign language.

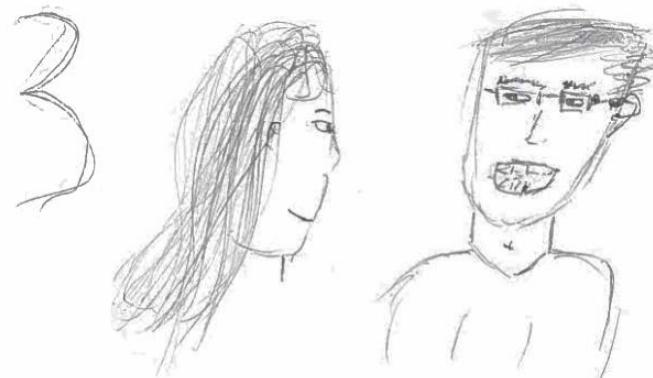
With Smart Glasses



Two people conversing both are confident they are understanding the conversation.



Using voice recognition and Automated Lip-Reading technology, the smart glasses allows the hearing impaired user to see what the individual is saying. Using both voice recognition and automated lip-reading technology allows for a more accurate interpretation of what the individual is saying. This allows the user to converse with an individual who doesn't know sign language.

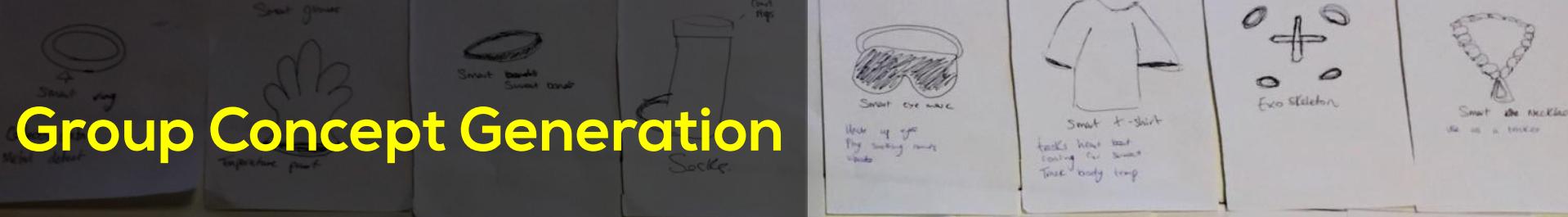


The hearing-impaired user can now respond confidently to the recipient.

Existing Products Insights

The products available on the market for deaf users all seem to exclude a certain audience, whether it be fully deaf users or the average person on the street. There needs to be a product for the whole spectrum of hearing impaired and something easily accessible to the standard person.





Group Concept Generation

After looking at our initial concepts we decided to generate concepts again as we wanted to find a wearable that there is a gap in the market for. We also wanted a target audience that we could target the product at.

We did a concept generation exercise by combining potential users with potential wearables. We managed to come up with a range of different solutions.

The main concept we developed from this exercise was smart gloves to work with electrics.

WEARABLE TECH

Sportsman



Deaf User



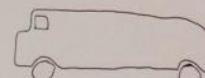
Blind User



School Children



Public Transport Driver



Police



- Glove: Detect, design and click
- Ring: Hidden reading device
- Glasses: Speak reader

Older User



- Pill: Mask, Sniff, heat up / cool (sugar, pain), track movement, encourage exercise
- Belt: Collar, pill, flag won't end to hair
- Hat: Heat up lead, tellage
- Ear piece: Translate slang words
- Ring: Track health

Dementia Patient



- Ring: Tracker
- Necklace: Tracker, emit smell for memory, panic button, track heartbeat, Eye mask: track sound and video stability during sleep or insure memory. Built in light to help sleep.



Smart Glove for electricians

From the 100 ideas generation from before we came up with the smart glove for electricians. We thought about useful features we could provide for people working with electrics. The features we came up with is the ability to detect voltage by using Digital Electrical Sensors. We will display this in a companion app, so for another feature, we wanted it to have touchscreen accessibility. This would allow the user to see important information without needing to remove the glove. The glove would be able to detect the different types of wires such as live, earth & neutral. This would allow the user to know what wires they are working with by just touching the wire. Magnetic effect so the user can pick up small screws or wires, we also came up with the idea of a pocket on the glove to store said screws for convenience. There is also the feature of being able to send a charge from the fingertips to test electronics for functionality.

**'ELECTRICAL WORKERS ARE
STILL IN THE TOP 10 MOST
DANGEROUS JOBS LIST'**

<http://www.tdworld.com/commentaries/electrical-workers-still-top-10-most-dangerous-jobs-list>



Existing Services



BM Polyco Electrical Gloves

Polyco glove is comfortable and prevents the user from damage such as electrics, cuts, and grazes.



R1800 Wire test

This wire tester checks the integrity and voltage coming from wires.

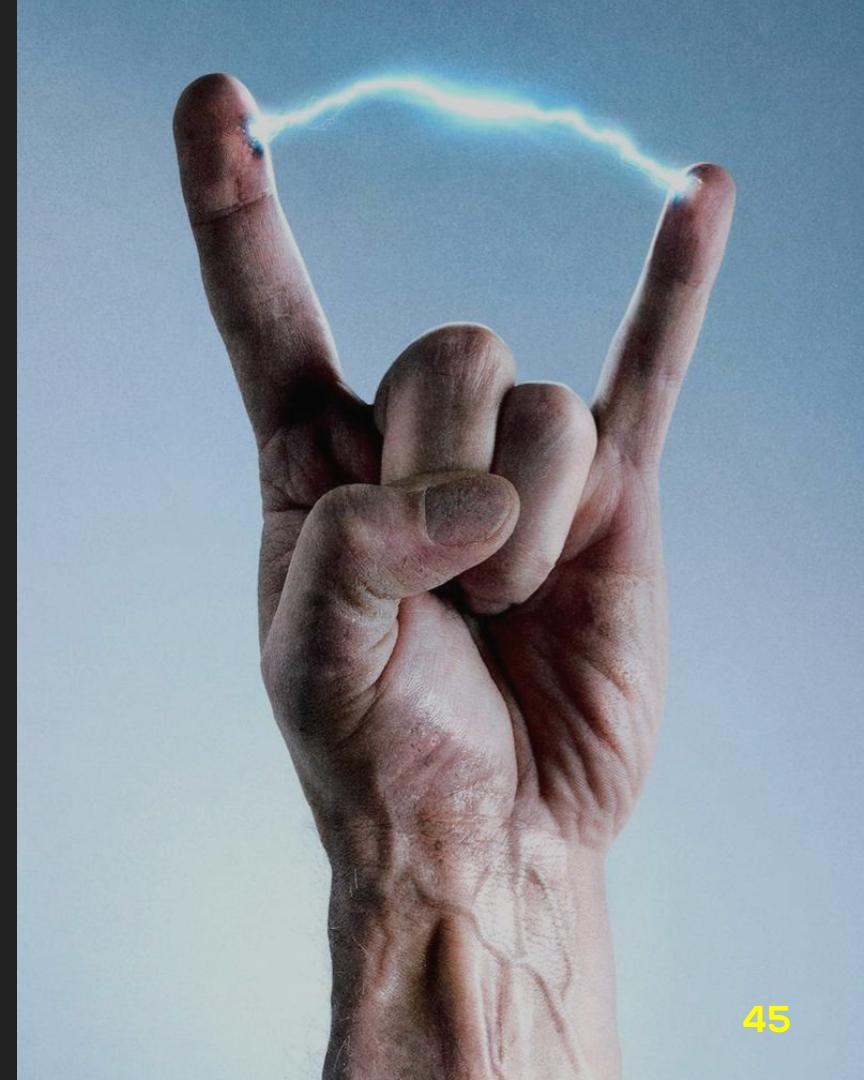


Carhartt Boots

Carhartt boots are highly durable and prevent electrocution.

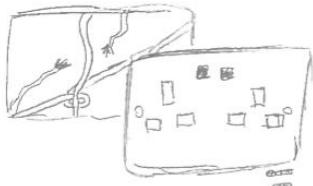
Existing Products Insights

From our research around existing products, we were able to gather that there is a gap in the market for smart gloves when working with electicals. From looking at existing products we can see that all the technology that we would need are already available.



Without Smart Gloves

1.



There has been a fault with the wiring in a plug socket. The user has had to unscrew the cover, although does not have a safe place to store the screws

2.



The user is unaware that the broken wires are still live.

3.



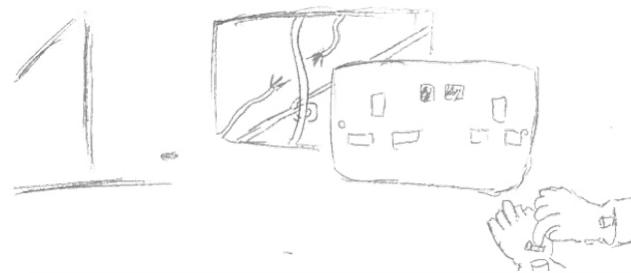
Without the right tools and knowledge, the individual gets electrocuted from the damaged wire.

4.

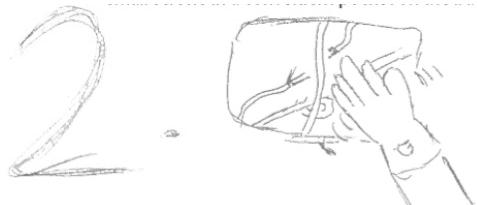


Individual is killed by the high voltage running through the wire

With Smart Gloves



The user has noticed there is a fault in the plug socket, they have removed the cover screws to check the damage. Using the smart glove, they are able to store small screws in a convenient pocket on the back of the glove.



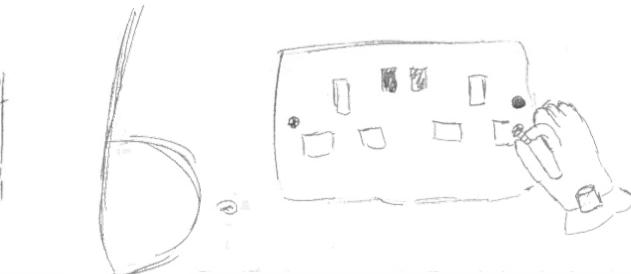
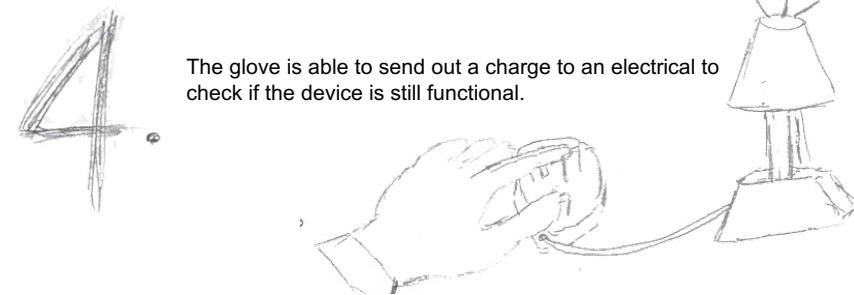
The user uses the wire detection feature to check if wires are still live. The glove indicates that the wire is still had currents running through it.



The user is able to repair the electrical problem safely using the smart glove.



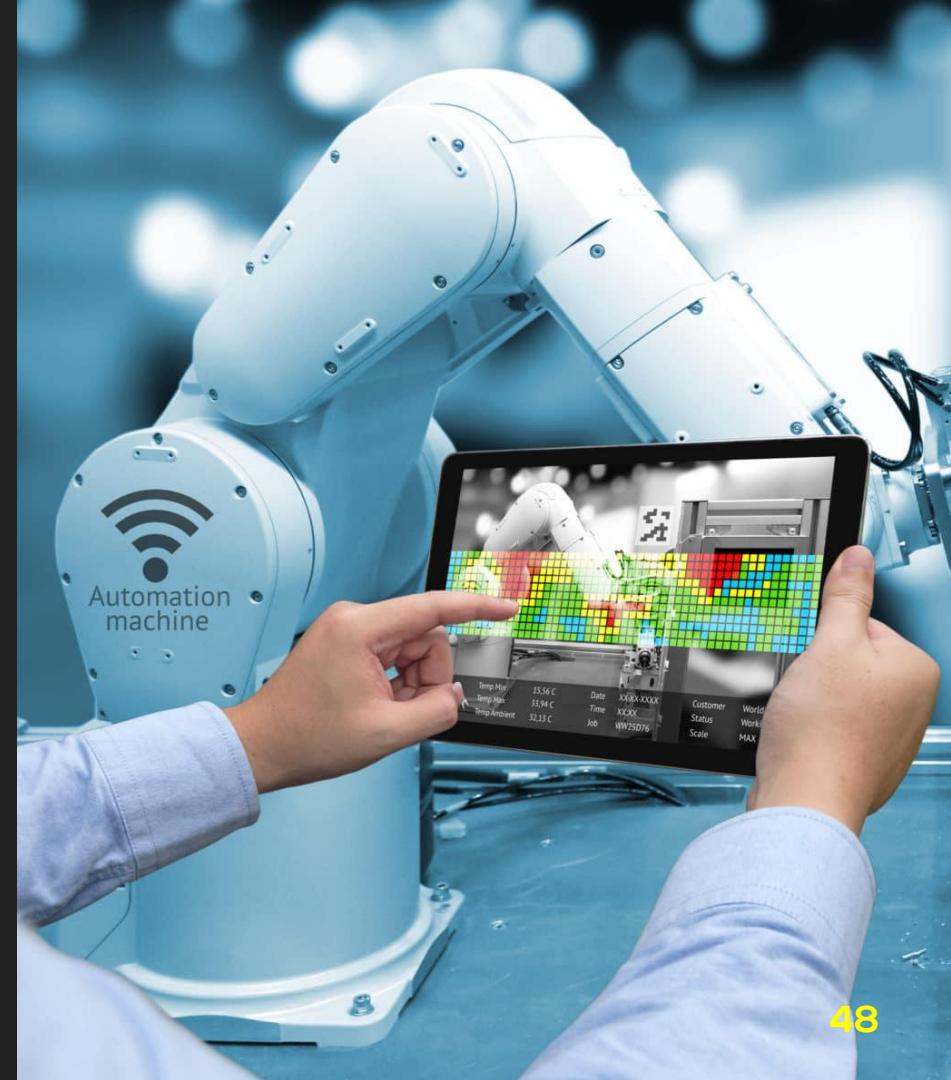
The smart glove sends the information to the companion app with relevant information. The smart glove is touch screen accessible allowing the user to look through the app without removing the gloves.



The magnetic effect makes it easier for the user to handle the small screws to put the cover back on the socket.

Industry 4.0

Industry 4.0 or the Industrial Internet of Things (IIoT) is the future of how factories will operate. Incorporating the IoT with the technology that has been available in the industries for years will create 'Smart Factories'. The ideology behind the IIoT is that machines are more accurate, consistent and record data better than humans. Thus allowing for companies to be made aware of problems or inefficiencies sooner. This will save time and money for companies in the future. We have to keep this in mind when coming up with ideas for our wearable as the industry is now changing. We could get employees ready for Industry 4.0 by incorporating the IIoT into our wearable.



Concept Development

Competitor Research

Proxxi

Proxxi is a smart wrist wear that detects electrical voltage by using digital electric sensors. The Proxxi band notifies the user by vibrations when they are close to a live electrical current. It uses smartphone connectivity to data sync in the companion app. This allows the user to view more information regarding the electrical current they are nearby and records the data.





Competitor Research

ProGlove

ProGlove is a smart glove that is marketed at industry. It is used to make working with industry more efficient. ProGlove features include the ability to scan barcodes, give real-time feedback, has wireless connection and can gesture sense. It is durable to keep user's hands safe from damage. ProGlove states it is the first smart glove for industry. Comparing our idea to ProGlove our idea has different features and operational functions this gives us a gap in the market we can focus on.

Professionals

Dave

Dave is a professional electrician who owns his own electrician company in the UK. His employee and himself are regularly working with live electrics which is quite dangerous. He also takes on apprentices with some people who have little experience working with electrics. He would like a product that can protect him and his employees from being electrocuted. He usually needs to have a toolbox with numerous tools to do his job. However, there are so many tools to remember sometimes him and his employees would forget a tool that they might need. He would ideally like a product that can reduce the number of tools he needs to carry with him but keep also keeps him safe.





DIY enthusiasts

Conor

Conor likes to be a handyman and fix things around the house. He learned how to do DIY from his dad so sometimes it isn't the safest way. Conor doesn't have much electrical experience so is unsure how he could deal with or fix electrical problems. He would like to gain more knowledge working with elecrticals as he is a DIY enthusiast. Conor doesn't like to pay for professionals as he believes with the right tools and knowledge he will be able to complete any DIY task himself. The smart gloves for electronics would be very beneficial to Conor as it will give him information regarding the electrics he is working with whilst keeping him safe. The gloves will be useful for him as he can use them doing any DIY not just working with electrics.

Chore Completionist

Leanne

Leanne is a single mum with two active children, she finds herself needing to fix things around the house as her children accidentally break things. She spends a lot on handymen and being able to complete the tasks herself would save her money. One task that intimidates her is working with electrics as she is unsure what kind of protocols she should follow to work with them safely.

Leanne would like to use the smart gloves as she will feel safer knowing that the gloves are made to protect from electrics but will also be able to give her a better understanding of working with electrics.

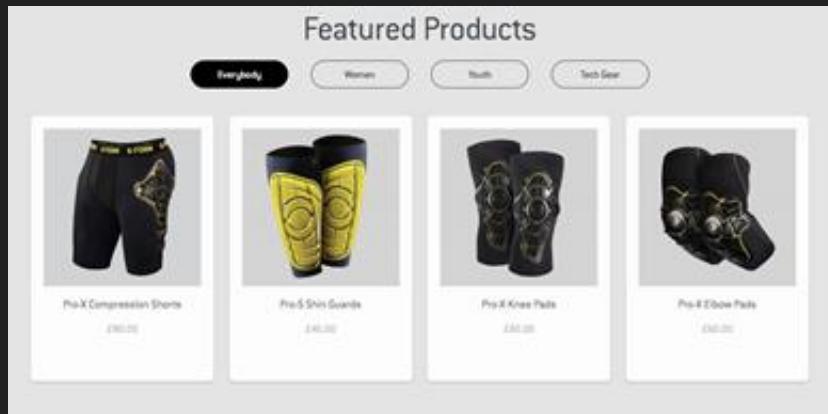


Material research

It is important for us to think about the materials that we would be using in for the smart glove for this we did research on existing smart wearable fabrics and technology.

By researching different materials we would like to get a better understanding of the materials that could be used for this product. As the glove needs to protect the user from electricity we need to think about what non-conductive materials we could use. Although, the gloves need to be able to release charge, make fingertips magnetic for this we need a material that can conduct and release electrical currents.

Material research



G-Form

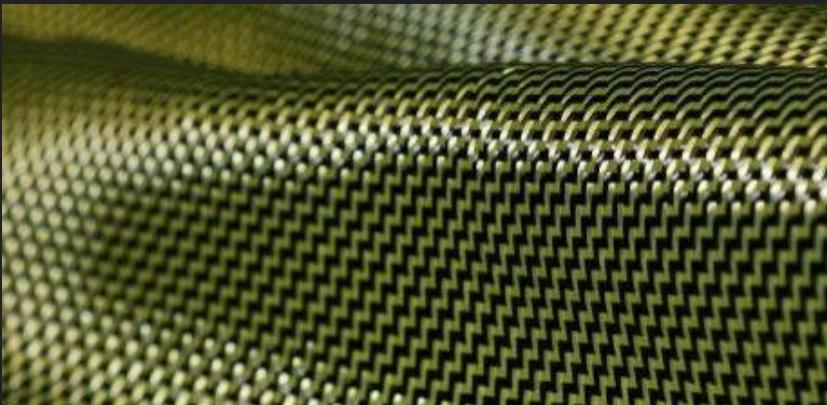
Soft, lightweight material that hardens upon impact. Provides a great level of protection. Could be useful for electricians that work on busy sites.

Heat sensitive	Thermochromic	Micro-encapsulated dye can change colour in response to heat (lasts for 5-10 washes)	children's clothes sports clothing firefighters' clothing wound dressings
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Heat Sensitivity

May be able to change colour to show that wires/bulbs are hot. Would combine well with heatproof gloves to prevent heat damage.

Material research



Kevlar

Kevlar is a high-strength, lightweight and flexible fibre. It is used on racing sails, bulletproof vests, and bicycle tires because of its high strength-to-weight ratio. Could be used to reduce impact damage to the user.



Waterproof solar cells

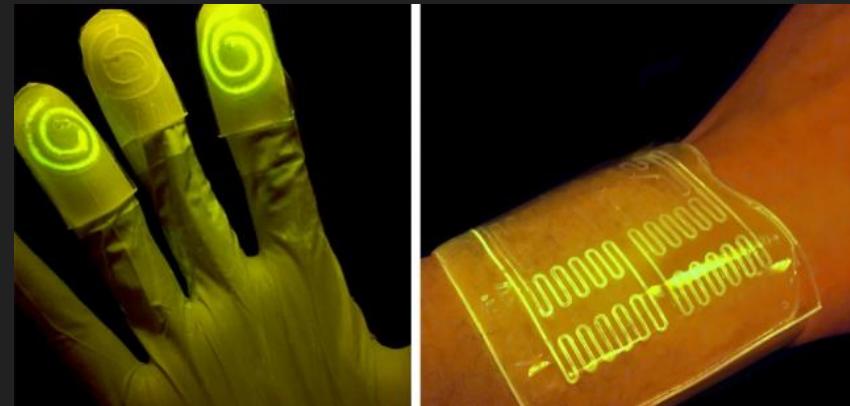
Could be used to power the glove through solar. The fact you can wash it makes it perfect for the glove, which could get wet.

Material research



Soft Sensors

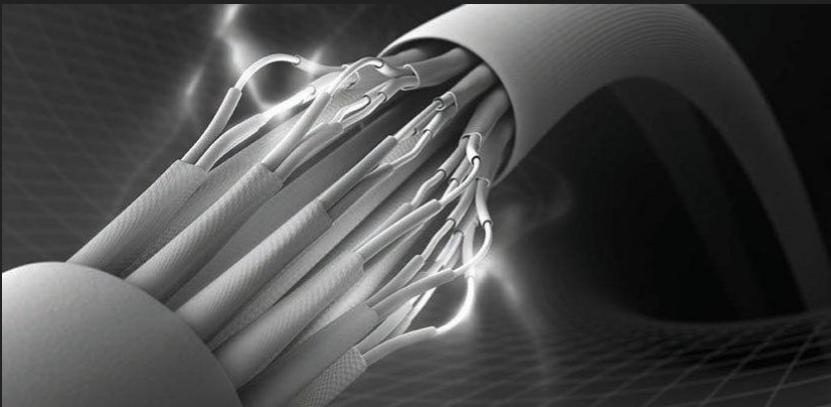
Could be used to integrate thin, soft light sensors to display different information such as is there a voltage and where the wires are in the walls.



Chemical Sensors

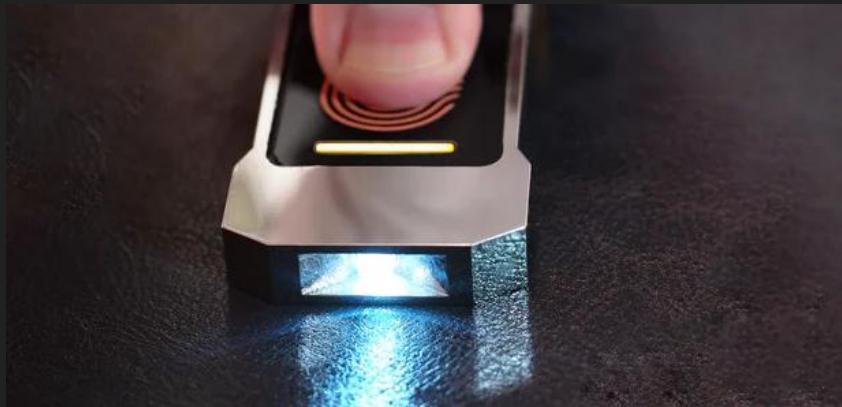
Sensors that change colour when they detect certain gases. Could be useful for electricians that work on dangerous sites and may be exposed to toxic gases.

Material research



Electro-conductive fabrics

Could be used to conduct electricity to charge the glove up. When touching live wires the glove would automatically charge itself, creating a seemingly endless battery span



Body heat to electricity

This could be used as another method of charging the glove in an effective manner that would make its battery last much longer. As well as body heat we could also utilise heat coming from hot wires and bulbs to charge the glove.

Material research



Fabric like LED's

Thin, fibre like LED's will allow us to display the information we need without being too heavy or inflexible.



Motion powered wearable

The gloves could be powered through Kinect energy created by movement in the hands.

Brand Development

Name Generation

After we came up with the idea for the smart glove we started to think about names that would go would make the product memorable and original. To do this we would made a list of related words to the product such as electric, shock, spark, handy, glove touch. From here we generated numerous different names.

We thought **EMITTS** was the best name as it stands for electronic mitts (gloves) but also using a play on the word emit

Lightening G

Touchicity

VolTouch

Spark Shark

Smart Spark

Spark

Electglove

EMITTS

Powersurge

Zeus

EM[⚡]TTS

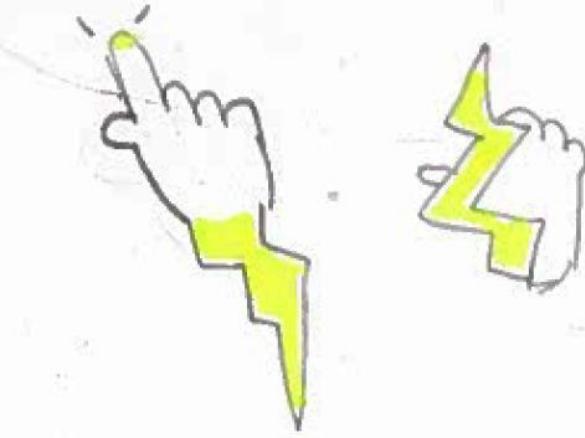
Electroglove

Bolt

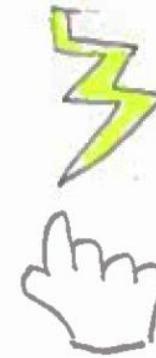
Saftey Spark

Protectric

Thor



ENⁱ_E⁺_G⁺_S



Logo Sketches



EMITTS



EMITTS

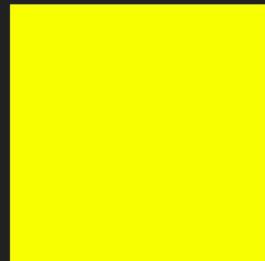


63

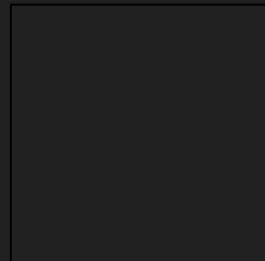
Creating the brand

After thinking about how we would like the logo to look, we then decided to look through different colours and fonts to see which worked best. This was important as we wanted the Emitt to be memorable and distinctive. We used a bright yellow and dark grey as this was eye-catching. For our font we used NexaBold.

Our colours



#f7ff00



#212121

Our font - **Nexabold**

The quick brown fox jumps over the lazy dog

The quick brown fox jumps over the lazy dog

The quick brown fox jumps over the lazy dog

The quick brown fox jumps over the lazy dog

Branding

Primary Colours

Secondary Colours

Plain Text

EMITTS

EMITTS

Logo No Border

EM⚡TTS

EM⚡TTS

Logo Border

EM⚡TTS



EM⚡TTS



Product Development

USP

Having found a gap in the market for a smart wearable and also finding a specific target audience we believe that **EMITTS** has a unique selling point as there is no other product like it on the market.

By using a range of unique features we believe that this product is original and would sell well to not only electricians but to others who might work with electrics. By making this product safe, innovative and doing research we have designed an interesting product.





Key Features

- Ability to use touchscreen
- Heatproof for hot wires and bulbs
- Illuminates
- Detects live wires and what type of wire (live, earth, neutral)
- Sends charge to detect faults
- Prevent electrocution
- Detect wires within walls
- Companion app
- Magnetic to hold wires/screws
- Pocket to store screws and other small objects

Tech Specifications

Bluetooth is used to connect the Emitts with the companion app to provide in depth diagnostics.

The glove will have a layer of OLEDs built in so that the glove is able to illuminate and display graphics.

The glove will contain a rechargeable lithium ion battery so that the user will have enough power to work throughout the day.





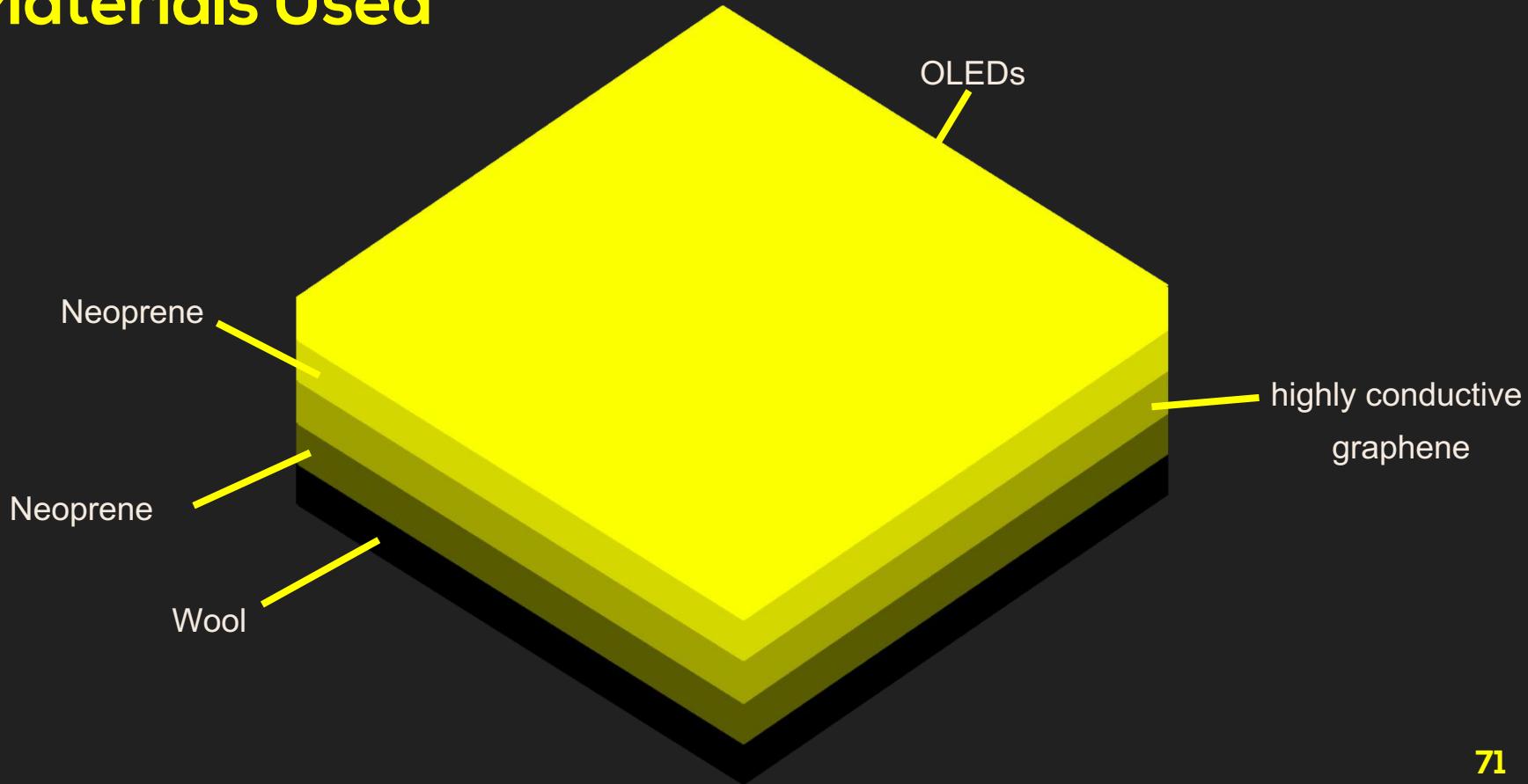
Tech Specifications

Digital electric sensors allow the glove to detect wires and their voltages.

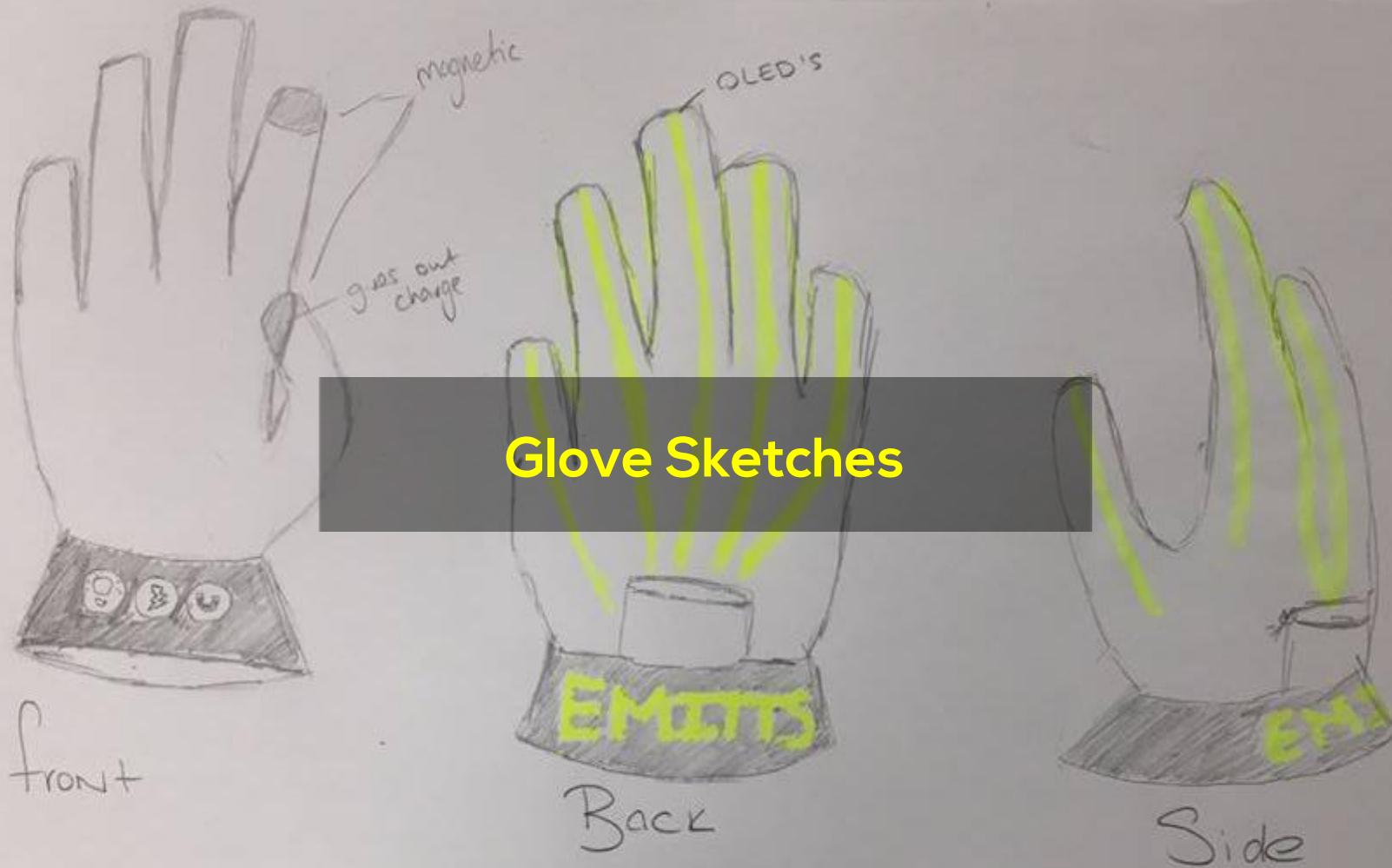
Electromagnets will give the user the ability to control the magnetic feature

Digital multimeter technology provides the user with information regarding voltage, currents, and resistance.

Materials Used



Prototype Development



First prototype

After the Prototype sketches, we then decided to make the gloves. Doing this we would be able to see how the Emitts would work and how they might look. For this, we bought some gloves and printed off the graphics that we would attach to the glove to show the aesthetics/ features.



First prototype



This is what the first iteration of the Emitts prototype looked. We initially wanted the OLEDs to go up each finger so it would produce more light when illuminated whilst also looking aesthetic.

Button Uses



Magnet

Allows users to pick up small wires and screws with ease



Charge

Sends a charge out the fingertips to test for electronics



Light

Illuminates the glove so the user can see in dark places



Wire Detection

Detects wires in the walls and displays them to the user

Magnet



Allows users to pick up
small wires and
screws with ease



Light



Illuminates the glove so
the user can see in
dark places



Charge



Sends a charge out
the fingertips to test for
faults



Wire Detection



Detects wires in the walls and displays them to the user



Additional Features

Item pouch



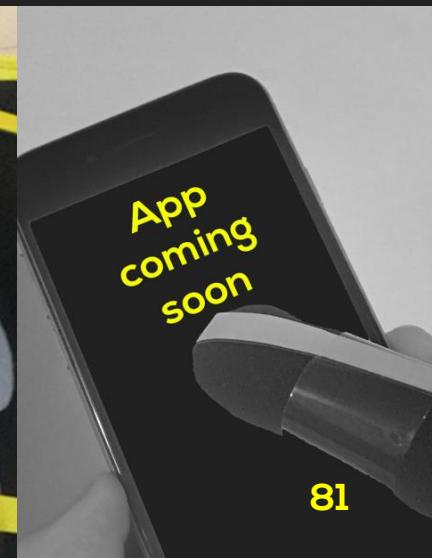
Touchscreen
compatible



Heatproof



Companion
application



Hero Images

For the hero images, we used the pairing of live photography with green screen use. By using green screen we could cut out and alter aspects of the glove to make it appear as a real product. These images will appear as the main advertisement for our product so it's important to ensure they are of high quality.



Prototype development

After looking at our first iteration of the glove we discussed if there are any aesthetic changes we would like to make so it is more appealing to the user.

After discussing how we would like the OLEDs to be displayed we decided that it would be best to remove them from the fingers as this could make the glove less flexible. Having OLEDs on the back of the hand and across the palm would still produce enough light to complete work whilst providing more movement in the fingers.



Prototype development

When producing the final prototype glove to be used in our video we had to bear in mind the practicality of filming. To help improve the ease of filming we hand sewed velcro into the glove, allowing us to easily change the graphics on the glove. This meant we could change between green, grey and yellow icons quickly in order to shoot the scenes we required. The only problem we encountered was that the added velcro made the glove very tight and so cuts had to be to allow our hands to fit inside.



Prototype development

Whilst thinking about the new aesthetic of the glove we also revamped the buttons to make it more sleek by using a flat design that will illuminate yellow when the button is active. This will allow the user to see if the feature is active.

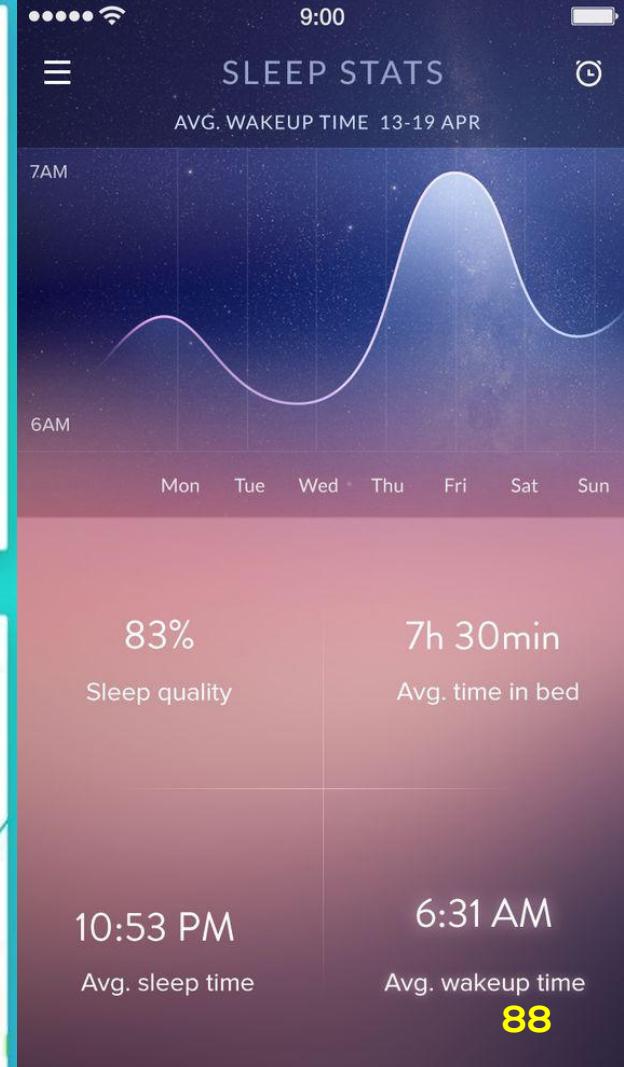
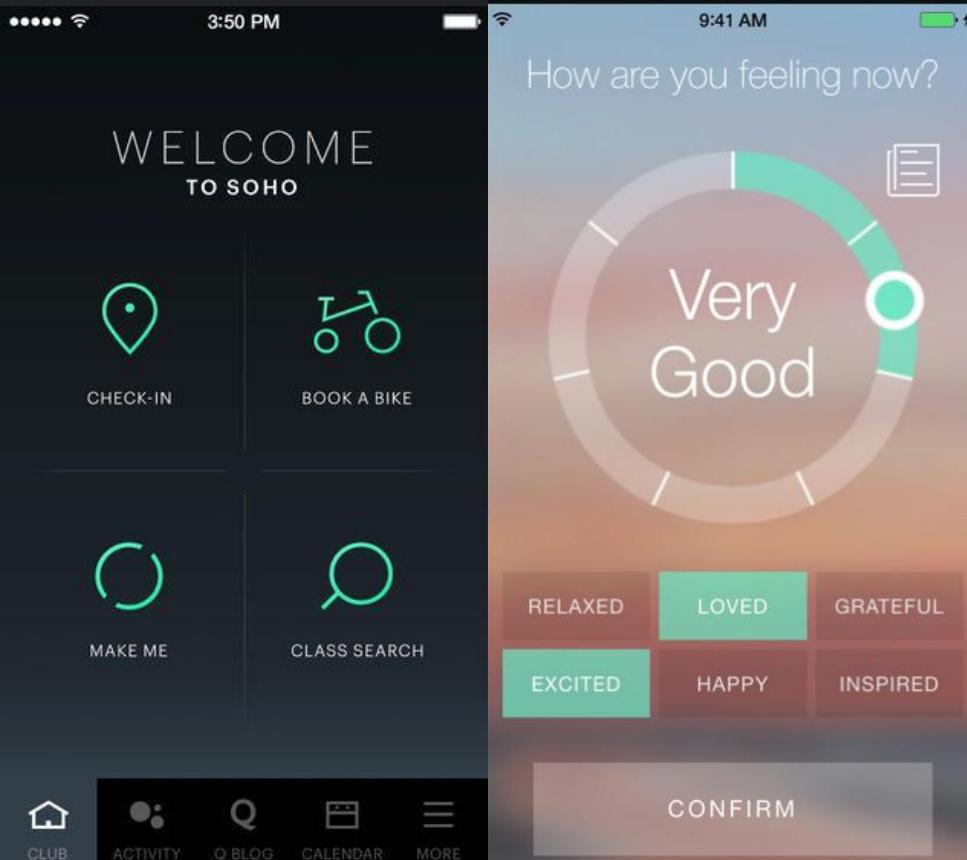


Electrical work made safe and simple



Application Development

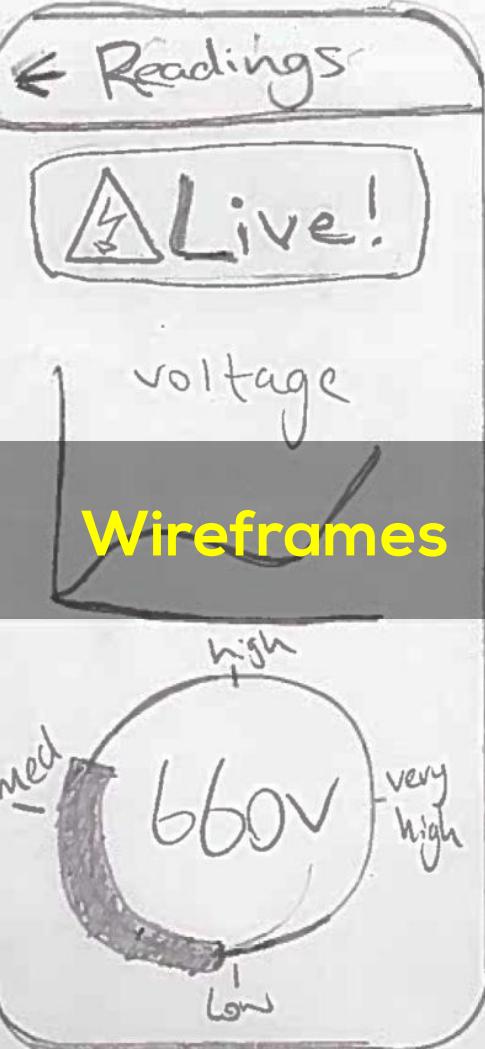
Visual inspiration



EMITTS



72%

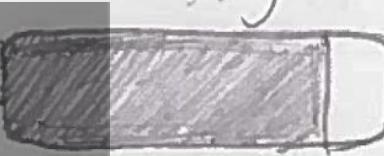


Settings

Lights Brightness



Sensitivity



Charge output



Advanced

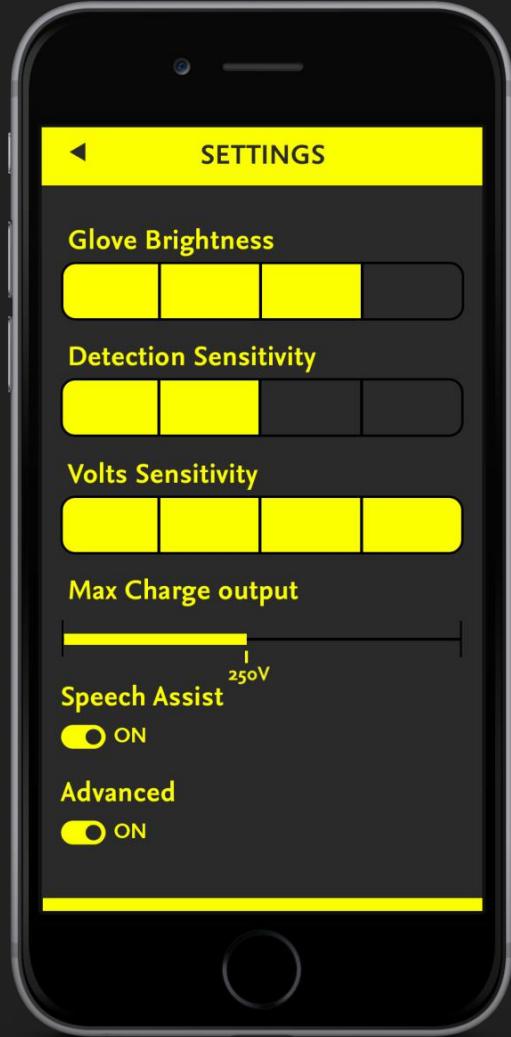


App Screens

As we had the wireframes drew for our app screens it made it easy for us to digitise this in photoshop. Using our brand colours and visuals we were able to create a professional looking application.

The application allows for the user to see how much power is left in the glove, view meter readings from the glove, and teach the user how to work with electrics.





The settings section of the app allows the user to control and set limits on a number of the Emitts features.

As you can see the user has the ability to change the illuminating brightness, allows the user to set sensitivity for detecting voltage through walls, it also gives the user the ability to change the charge output.

We have added speech assist as the application can talk out loud to users whilst they work so they don't need to check the phone for information.

The advanced setting allows the user to get more information regarding electricals that most nonprofessionals would not need to know.

Video

Injury fact



How we can
this number

EM~~TTS~~
^{smg}

EM~~TTS~~
^{smg}



Making Electrical
work safe and
simple.



with a range of
innovative features



torch drops.
Clicks
.Magnet button

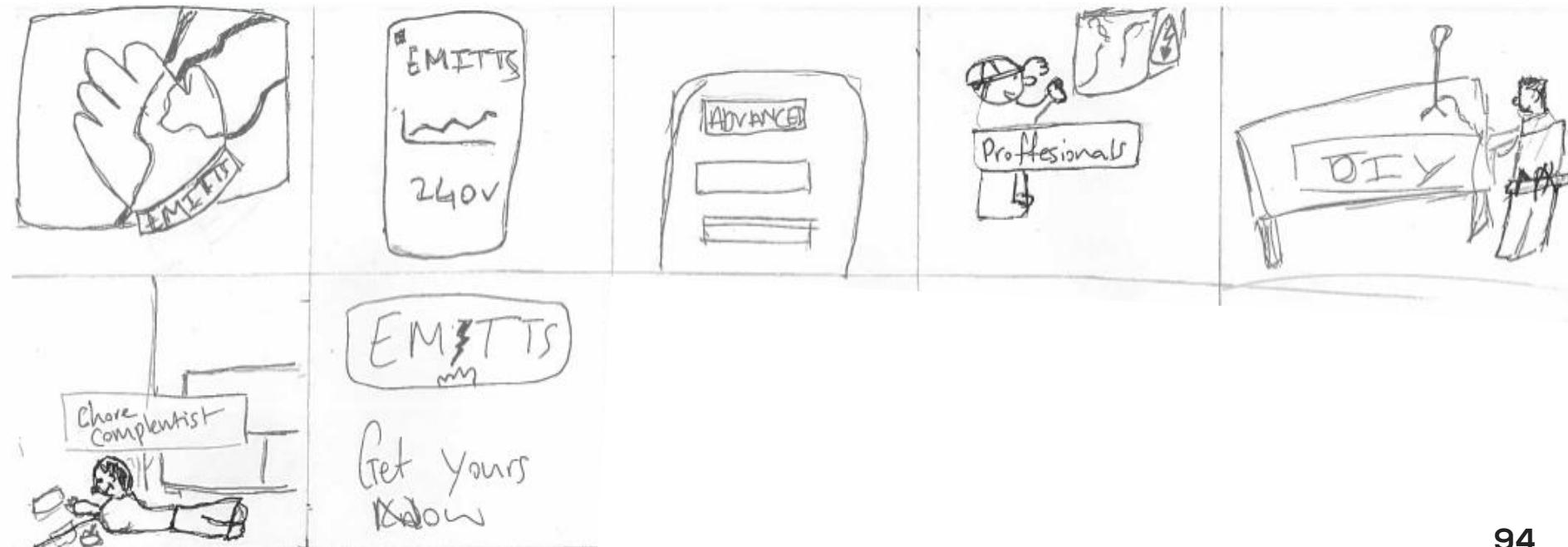


unable to pick
up with glover

Storyboard



Storyboard



Filming

After creating our storyboard we then moved onto filming the footage for our video. As we wanted to use the prototype in the original footage we recorded the majority of the footage ourselves.

We decided to make a comparison video to promote the Emitts. We filmed what situations people would be in without the Emitt then situations with the Emitts to show how useful this is when working with electrics. This also allowed us to show off the features of the product.



Filming Challenges

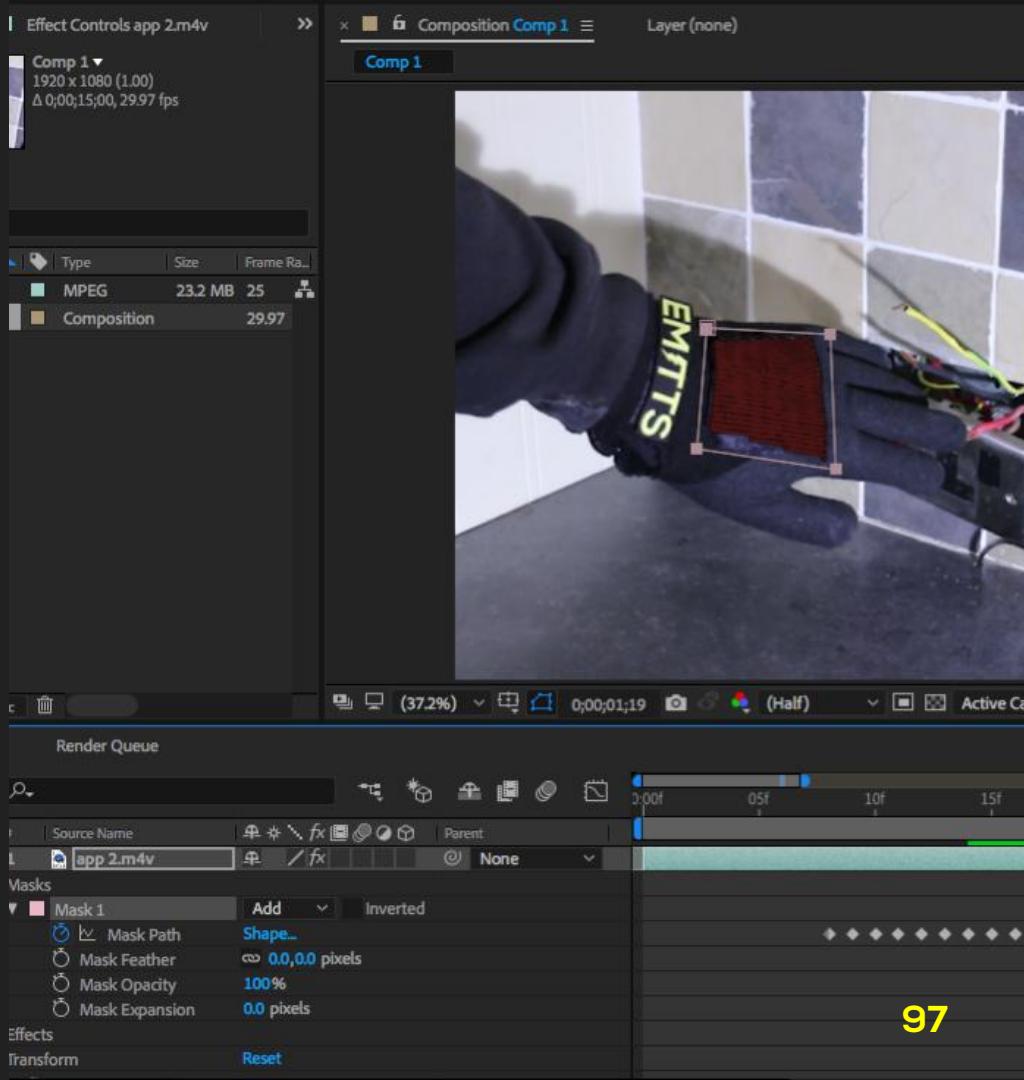
When filming we encountered a few problems that we had to overcome. Most of the problems were to do with the lighting, particularly for the glove (as we were using keying). Because the graphics were paper, at certain angles (as seen on the right) it would reflect the light which would, in turn, affect the keying. Because of this, we had to be highly particular about the shooting angles, as well as the direction of our lighting.



After Effects

As we were using green screen to make the video, After Effects played a big part as we needed to use the keying tools to remove the green screen and place our own visuals.

Throughout this project, we have used After Effects to display how we would like our product to look as it would be quite difficult to get all the technology to actually make the Emitts. By using a combination of keying, masking, and animation we managed to make a believable demonstration of our different key features.



Voice-Over

When thinking of our voice over we had to keep our audience in mind. Originally, it was going to be a serious and straightforward voice-over explaining each function in detail. We revised this and decided that this would make it less accessible to our lesser advanced users.

Instead, we decided to add slightly humorous lines to create a more relaxing atmosphere, making the product feel less corporate and intimidating to certain audiences.

Notes

Electrical accidents cause over 350,000 serious injuries per year. This can be due to a lack of visibility and knowledge, incorrect personal protective equipment and easily avoidable mistakes. But how can we reduce this number? Introducing, emitss. Electrical work made safe and simple. Perfect for the professionals, the DIY enthusiasts and the chore completionists. Turn them on and begin solving your electrical problems with our 4 key modes. So let's see what they can do.

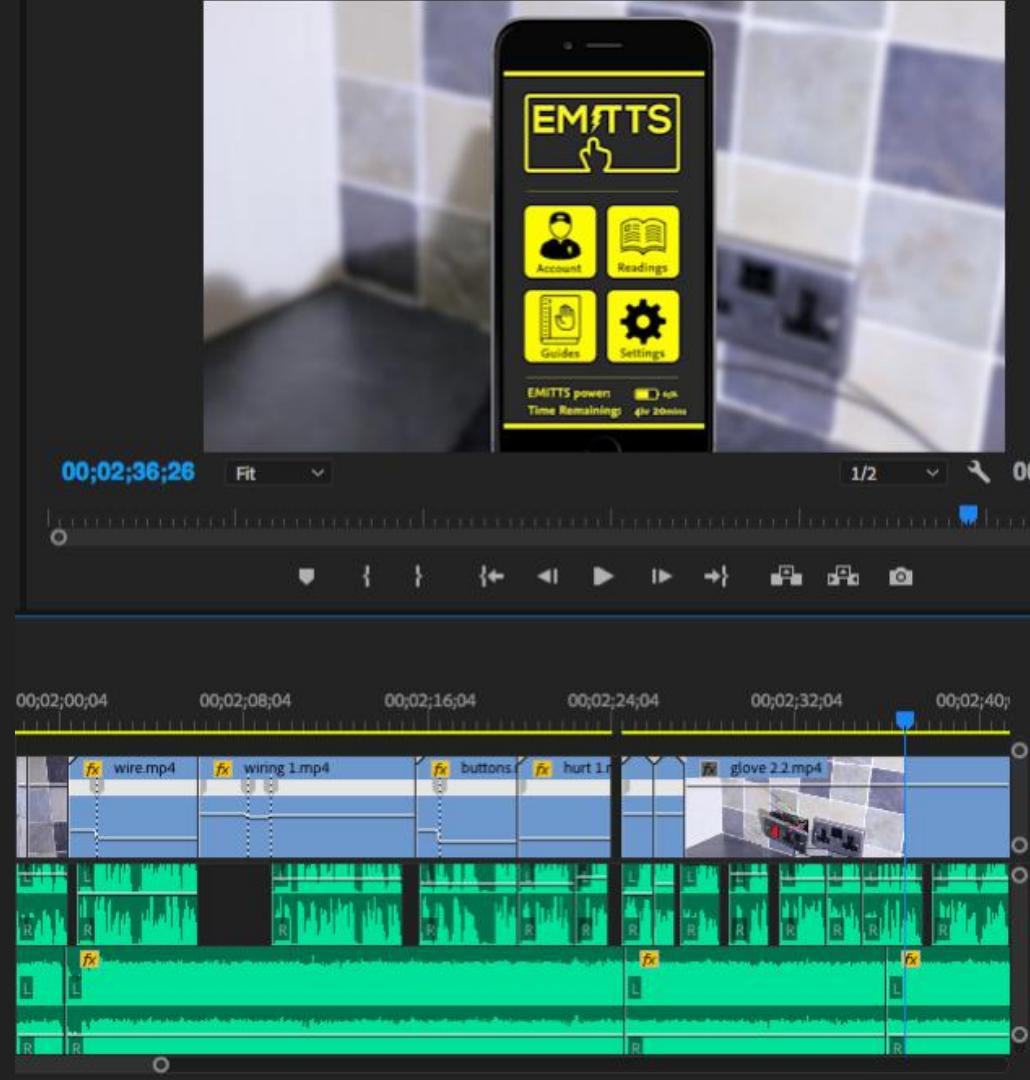
Picking up small items can be a pain when wearing protective gloves. Oh he's still trying, yeah just give up I recon. And that's

Premiere Pro

After we had finished editing our footage using After Effects we then had to use Premiere Pro to piece the video together.

Once the videos were imported we added in the relevant voiceover clips, along with the backing track. With these audio clips, we could now properly time our video pacing. By cutting and altering the speeding of the clips we could begin to see a concise, final version of our advertisement.

Once we were happy with the editing of our video it was time to publish and gain feedback from potential users.



Evaluation

User Response

In order to get some user feedback, we posted our finalised video onto Facebook, encouraging viewers to give feedback on the concept and presentation of the video. From this, we gained numerous detailed responses. It's useful to gain feedback like this as for most it was their first time viewing the project. If a viewer is able to grasp the idea in a 3-minute video this demonstrates the clarity of our concept and the success of our storytelling.

This is mine and Jordan Hamilton final Collaboration project video for EMITTS: A smart glove for electrical work. If anyone could give feedback on the concept and video itself it would be highly appreciated



User Response

 Really great Liam, like the idea. The video was fun and engaging, really like the work you've done for this. Have you thought more in depth about how this glove will work or is this just purely conceptual?

Like · Reply ·  1 · 6 January at 13:14

 This is a really cool idea!! I like the catchy name and logo for the glove  I like how you've made it accessible for everyone so like not just tradesman but your average DIY guy. You've identified the common problems when dealing with electrics then neatly explained how the glove would resolve this problem (with a bit of humour alongside which is always good). I like how you've designed the app so it matches the features of the glove and how you've presented its uses. The only criticism I could give is that when you're talking about the regular problems that electricians experience you say the problem "is a pain" like 3 times I think so maybe use a different adjective I dunno but that's me being really picky 😂😂😂 super cool idea tho and clearly explained! Over n out 

Love · Reply ·  2 · 6 January at 13:46

 Mate I was actually laughing throughout this. You made the video really engaging and fun. Concept is great, and the creation of the video with the effects and media used was great made the glove seem like an end product. Good one

Like · Reply ·  1 · 6 January at 16:28

Positive comments on both the idea and video engagement.

Appraisal particularly for the product name and logo, as well as the accessibility for different users which was a key focus for our video. Perhaps reviewing some of the scripting for our video could further improve its engagement.

It's nice to see viewers enjoying and engaging with the video which is key to selling a new product as such.

User Response

 [REDACTED] Love the idea, particularly the use of the app to support the glove, great name/logo and found the video very engaging. Well done

Like · Reply · 1 · 6 January at 14:24

 [REDACTED] Awesome idea could've done with a pair earlier when changing a light switch in the dark! Would be really useful for DIY people without specialist equipment or knowledge!

Like · Reply · 1 · 18 hrs

 [REDACTED] I love this idea and I think how you've put the video together really showcases the product clearly and effectively! I love the fact that you are the one talking through the video, it makes it more personal and also funny for the person watching 😊 well done Liam! X

Like · Reply · 1 · Yesterday at 11:15

 [REDACTED] This Idea is a great concept for anyone who does DIY. It has been carefully thought out and that is clear within the video. My dad actually does a lot of DIY around the house and always complains about screws, The magnet is an amazing idea. This is something Id love to buy for my dad as a present. I could see this working within the working environment very well. Would defo recommend to family members and businesses

Like · Reply · 18 hrs

Support for the idea, application, video and branding. All key components of our project.

It's nice to see users identifying uses of the glove with their own problems. This proves that it is needed and something that would sell.

Further positive comments on the video structure and clarity.

Another identification with one of our key features; magnet mode. She also mentions buying the product as a present, showing that it could sell if available on the market.

User Response

Below are some additional responses we received:

- [REDACTED] Fantastic idea, carrying less tools about. Safety feature is great on it and loving the torch too. Brilliant
Like · Reply · 1 · 6 January at 13:25
- [REDACTED] As a handyman around the house I think this is a great idea. Less tools and less hassle in small space etc 🤝 this product would defiantly be top on my Christmas list for Santa
Like · Reply · 1 · 6 January at 15:51
- [REDACTED] Great idea mate killing two birds with one stone
Like · Reply · 1 · 6 January at 17:01
- [REDACTED] I think this is a fantastic idea! The safety aspect of this product is definitely unique and would make every professional/DIY enthusiast's jobs less hazardous 😊😊
Like · Reply · 1 · 6 January at 18:20
- [REDACTED] Brilliant any handyman and an electrician would definitely would buy these including companies.
Like · Reply · 1 · 6 January at 19:54
- [REDACTED] A very well thought-out design and concept. A key product that any customer or employee would benefit from when working with electrical equipment. This would be great for preventing accidents and providing safety. A tool to detect and avoid potentially dangerous areas thanks to the smart gloves design, sensors and features.
Like · Reply · 22 hrs

- [REDACTED] Definitely a good idea for people who have no clue about electrics and are wanting to get into it. Makes DIY so much easier than calling an electrician for something you can now do yourself. Great idea for idiots like me who would definitely mess it up
Like · Reply · 18 hrs
- [REDACTED] I like the idea of it and I can see it doing really well and the torch thing is good because then u don't have to wear one on ur head
Like · Reply · 13 hrs

User Response

We also received an in person response from an electrical business owner of over 20 years. Here are some key details they mentioned:

"I would pay up to £100 for this product"

"These would be something I would consider buying for me and my colleagues"

"Some of the features like the torch and wire detection alone sell the product"

"It's highlighted a lot of problems I didn't realise I had been avoiding for so long"

User Response Reaction

As a whole, we were overwhelmed with the number of positive responses we received on our concept and video. We gained two key sources of feedback:

Facebook responses:

In this response, we received positive comments on all aspects of our project, such as our idea, branding, application and video structure. It was great to see that people were understanding and really engaging with the product after only seeing the 3 minute video for the first time. There were also comments suggesting that people would buy the product for themselves and others.

Electrical business owner:

It was good to see that a 20-year professional was impressed and engaged by the product, and would be willing to spend up to £100 on it. It's also mentioned that he would consider buying the product for his other colleagues which presents the idea that the glove could be sold in bulk to large companies that engage with electrics. This opens up a potentially massive market for us that could garner a lot of success.

Evaluations

In summary, we were very happy with the final product and video we managed to produce. We received copious amounts of positive feedback on all aspects of the project, making us believe that, if commercially available, the product could be a successful one. With the amount of support we have gained toward the project it is potentially something we could develop beyond this module to make into a real marketable product. The project has been a massive success and we are both very happy with our end results.



The future: EMITTS 2.0



There is always the need to look to the future when designing and, within a few years, our design could look very different. There are a number of potential advancements that could further improve our product.

One development that could be utilised is with liquid graphene. This ultra-thin, conductive material could be applied throughout the glove to transmit power across to the different functions.

Another upcoming advancement is magnet polymer gels which could further the magnet function of our glove. These extremely lightweight, magnetic gels could help reduce the overall encumbrance of our product.

Any key developments in our product would be weight reduction paired with increased flexibility.