



←ILUMINO→

Take responsibility for your safety

Process Book Contents

1. Product Features + UPS Breakdown

2. Design Process

3. Empathy + User Data Collecting

4. Ideation + Sketching

5. Prototyping

6. Testing + Finalising The Design





Process

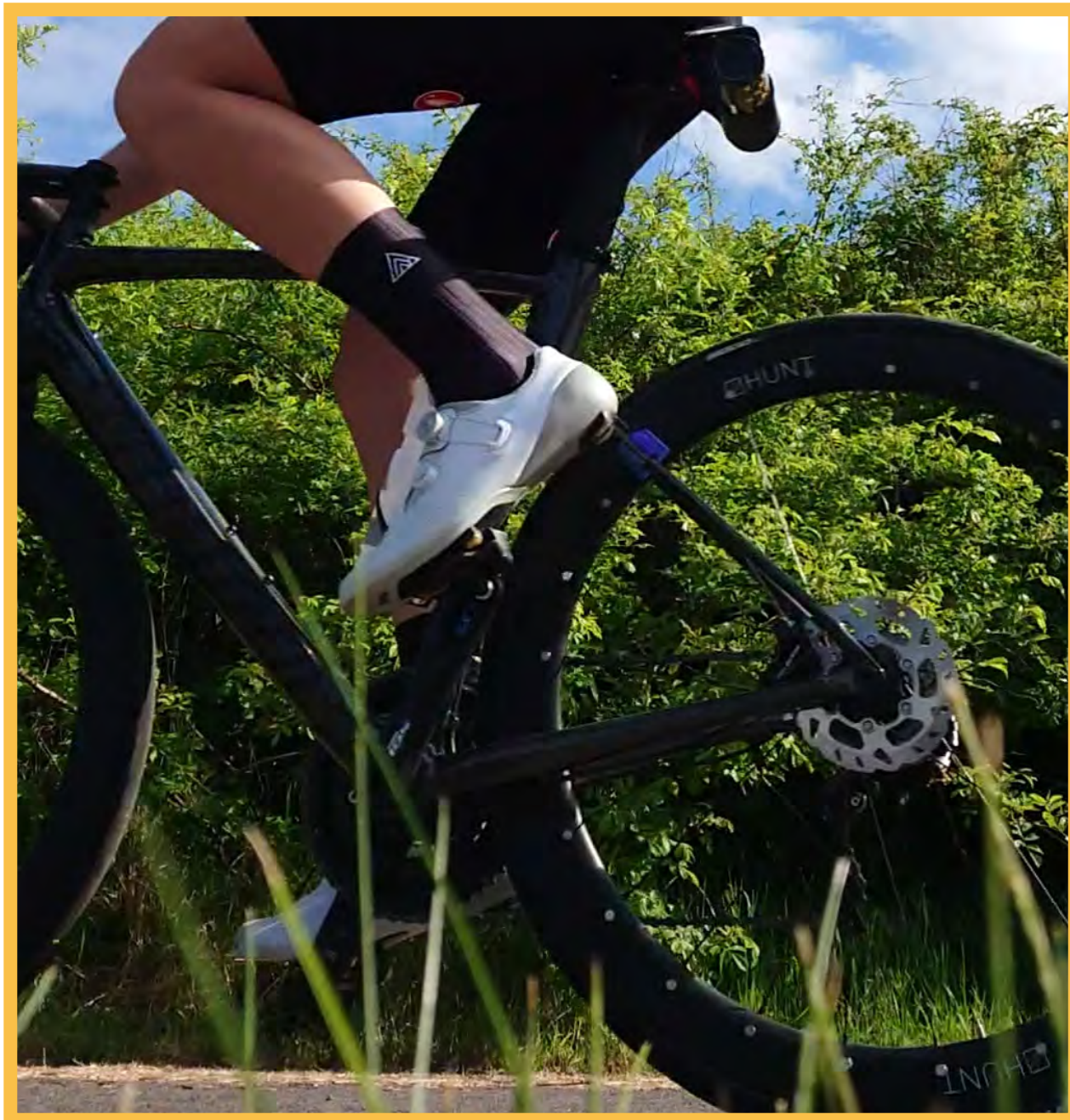
Introduction

Project Goal: To solve the issue of cyclists not using the personal safety equipment available to them which can prevent accidents and save their lives.

“The only way to respond to these needless deaths and injuries on our roads is through action not words”

- Liz O'Donnell (Chairperson of RSA)

Illumino is a “fit and forget” safety system for cyclists which once set up, requires zero input or maintenance from the user by generating its own power and operating using the normal inputs of riding, steering and pedaling a bike.



Product Features (Dynamo)

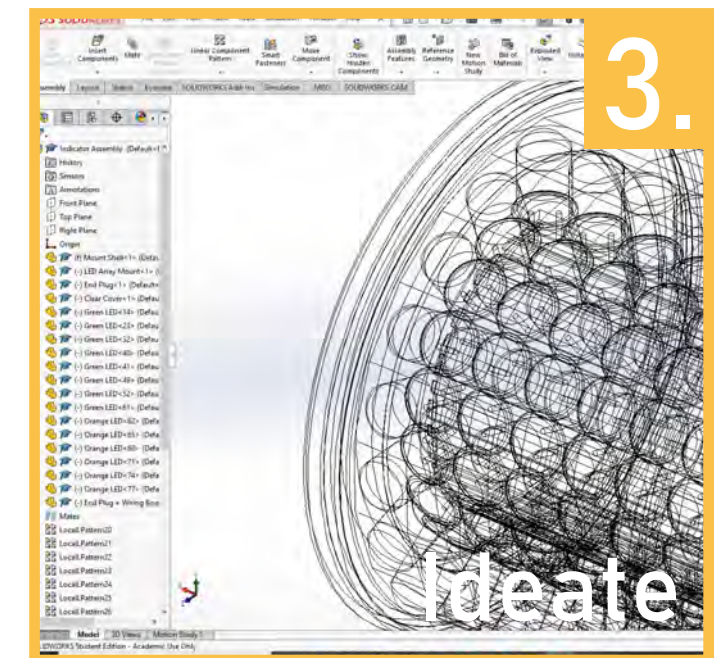
4. Illumino dynamo does not use the traditional method of engaging a roller to the wheel rim to spin a magnet inside a copper coil of wire to generate electricity, instead the magnets are outside the dynamo and attached to the rim, so as the wheel spins, the magnets passing by the coil inside Illumino dynamo to generate electricity via the same principle.
5. The benefit of this system is both the dynamo and the rim will not wear out as there is no contact points to degrade.
6. Illumino dynamo also has the same advantages of the indicator by operating without input or interference from the user and requiring zero maintenance.



Product Features (Indicator)

1. No part of the system interferes with the rider, there are no buttons or switches on the handlebars, and no excess cables hanging loose on the frame, it also operates without any sound.
2. By simply using the leaning forces from the bike, when entering a corner or navigating a roundabout, the indicator body will slide through its shell to display lit directional arrows to give a heads up to other road users.
3. When the indicator body is resting in a neutral position, power is constantly being fed to it from the dynamo, allowing it to function as a constant rear light.

The Design Process



Empathetic Research

Key Insights

By following the proper design process, I first began by collecting good quality data to set the base for my design. I began with observational studies of users in real world conditions, then I carried out contextual interviews with lead users who could give the richest insights. The last step for this process was direct immersion to take the data I had collected so far and validate it by experiencing the feedback for myself.

The key insights that I found which I would base the rest of my design process on was that cyclists often felt invisible out on the road, especially in busy areas where lots of traffic block people's view and makes it difficult to scan and assess hazards on the road. Both motorists and cyclists appreciate how difficult it can be to stay safe in these kinds of environments and believed there was room to improve how well all road users can communicate intent and information to each other.

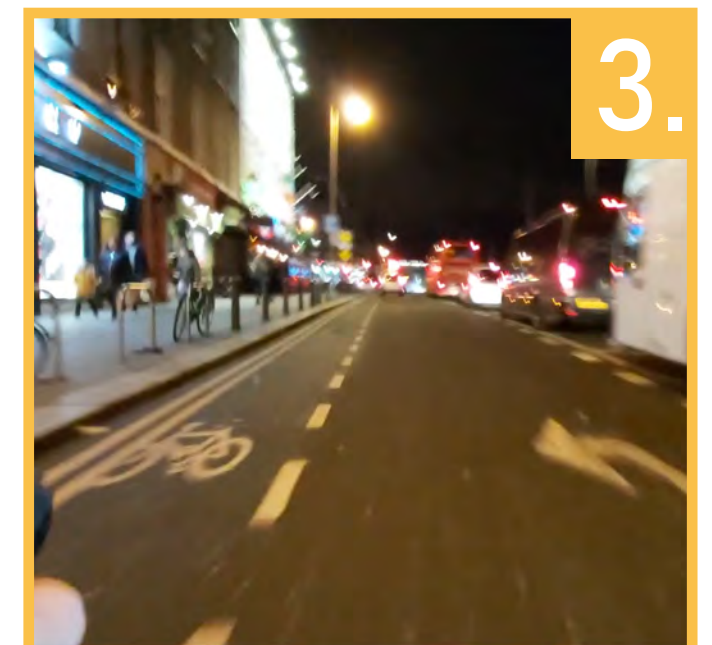
Survey/Observational Studies



Interviews



Direct Immersion



Market Research

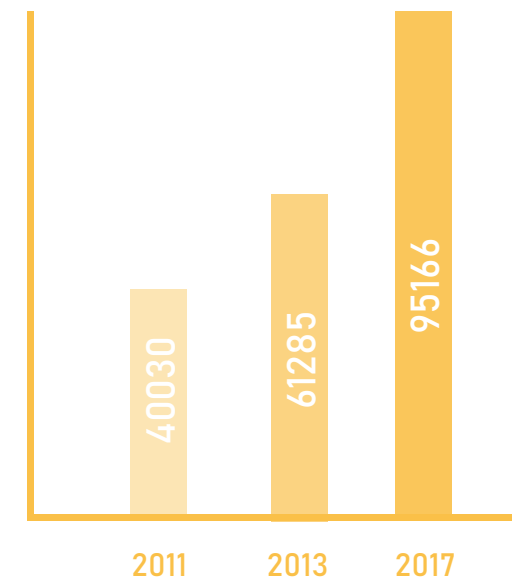
The popularity of cycling has been constantly increasing year on year since the early 2000s in Dublin city. Finding a sufficient market segment in the global user base would be no issue for any new entrant, the only challenge would be winning over customers who have been loyal to other brands.

From my primary research with lead users, backed up by statistics from the RSA website, it is clear that near misses and dangerous collisions are regular occurrences among cyclists who believe its not a matter of if they will get into an accident, but when.

The interesting insight that came along with this was the fact that very few people were actually availing of the products on the market that were designed to help them. This was supported with surveys which showed an inconsistency with the usage of safety equipment and devices, with some people forgoing them outright.

From this I decided to focus my efforts on creating a product with required as little interference with the user as possible so that after a one off set up, they could allow the system to work for them and not require any more of their attention, all the while keeping them safe.

Cyclists in Dublin City



Survey of 44 cyclists on the quays after dusk



A survey of 17 cyclists

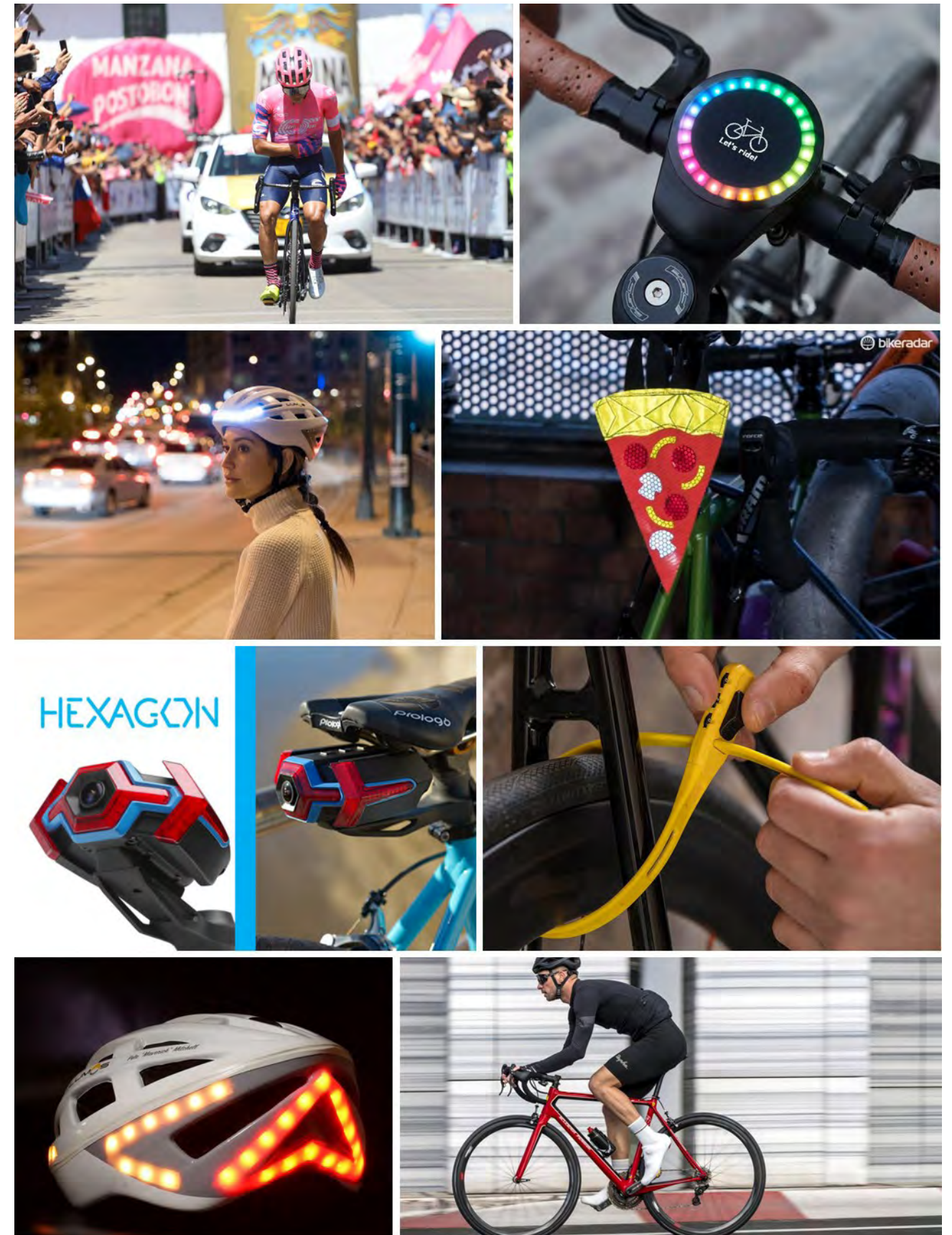


Market Needs and Competitors

The last part of the initial data collection was to look at what products are currently out on the market and seeing how well the companies that supply them are serving their customers.

All these products are trying to balance the aspects of utility, intrusiveness and aesthetics. If a product packs too many features into it, it would be too complicated for the user to understand and use. If it's too minimal it can sacrifice function while trying to make it as appealing the user as possible. And lastly if the product focuses just on aesthetics it will of course be appealing to buy but may not turn out to be as usable or useful as the customer would have thought.

The key to my project would be to balance these three key aspects to make a successful product that will appeal to my user base and provide them with what they really



Ideation

Development Process

Taking what I had learned from my research I applied my knowledge to developing three concepts

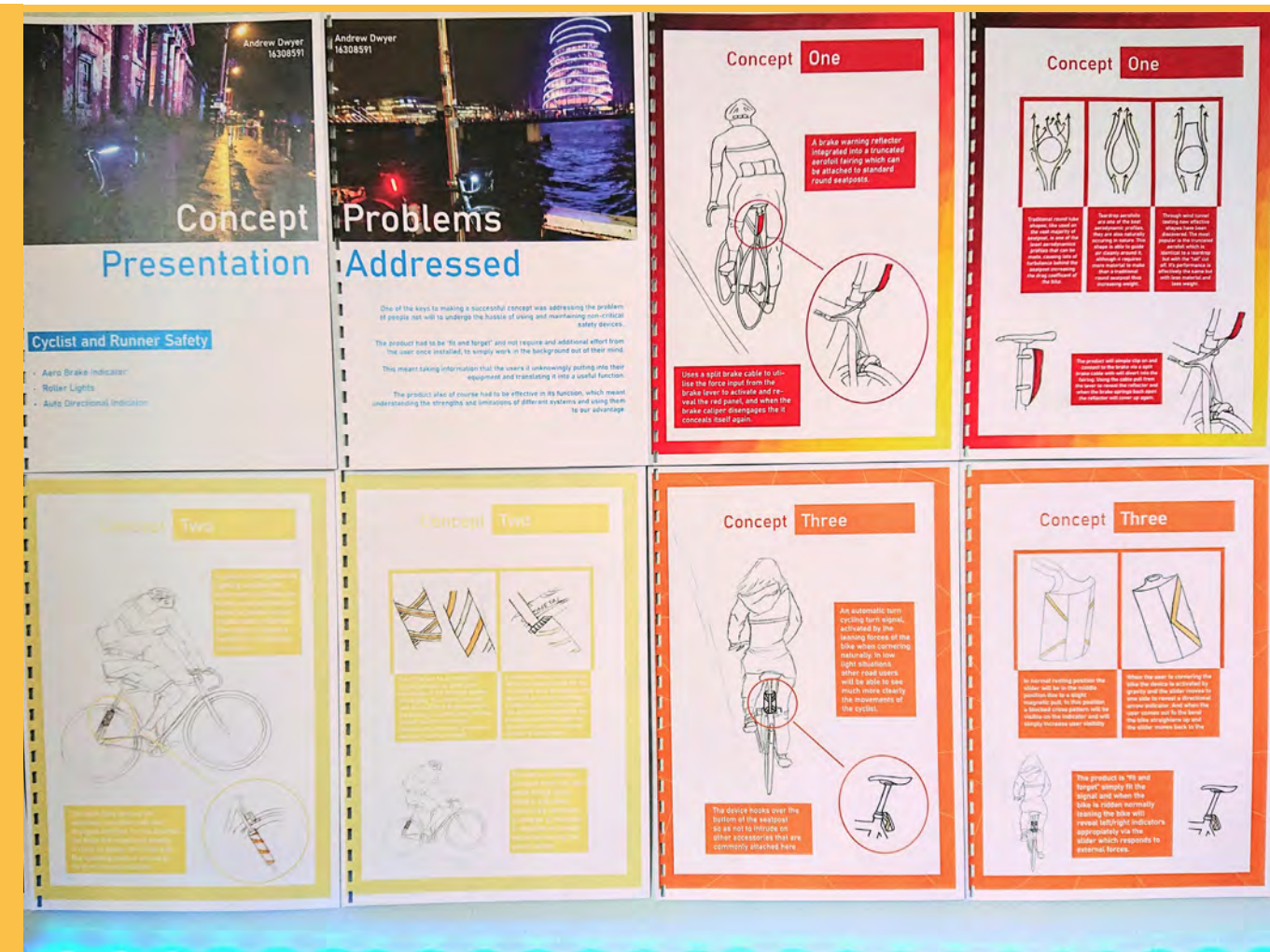
Concept 1: This was a brake light to be mounted on the seatpost of the bike. It would be activated by a split gear cable so as the user pulled their brake lever, the cable would slide back a faring on the device to reveal the red brake light. Another feature of this concept was the aerodynamic aerofoil profile which would increase the performance of the bike and appeal to more users.

Concept 2: This was the dynamo in its early stages, at this point its function was to be mounted to the seatstay tube and engage with the wheel rim to spin the whole physical device. It would be designed to have a high vis pattern, which the spinning motion would enhance, it was also of course self-powered.

Concept 3: This was the last concept and became the main component of the final design. It was an indicator mounted again to the seatpost, at this stage I had not designed it to be self-powered but the principle of its function was the same.



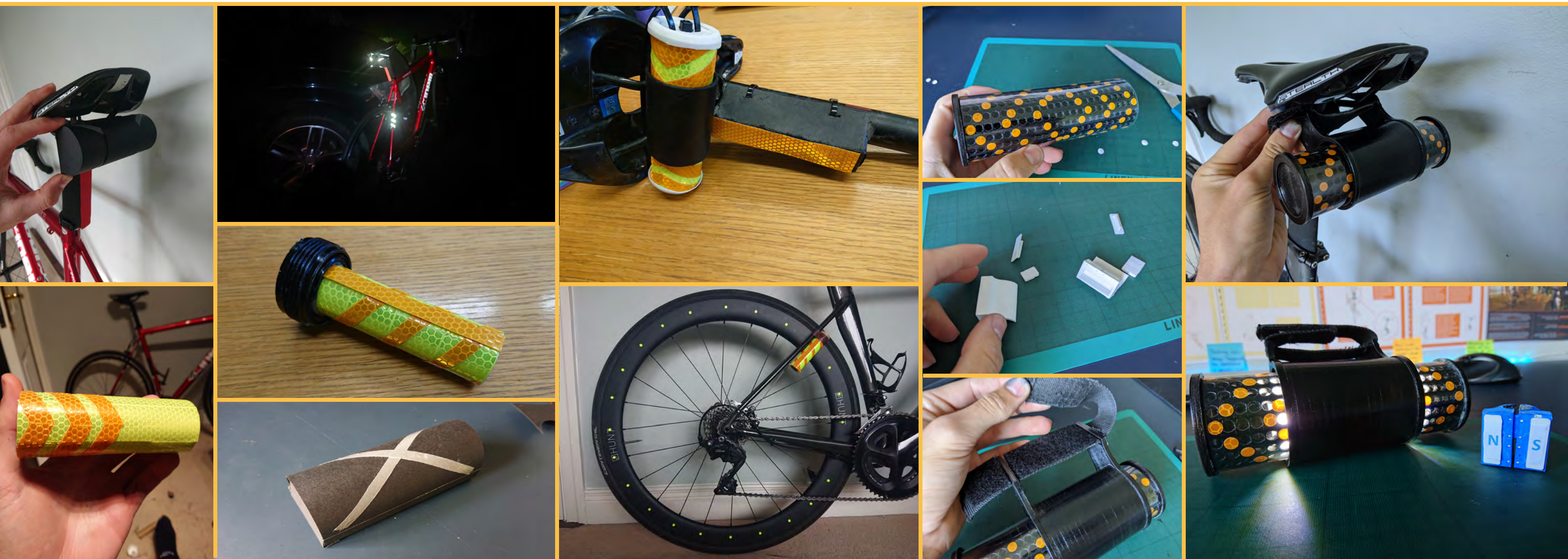
Concept Development



Prototyping

Prototyping began with making sketch models of the devices with card to understand scale and forms that I thought were correct and wanted to develop. At this stage I was also experimenting with different materials to find the clearest and most eye catching patterns. I also began test fitting the models to the bike to see how best to integrate them and ensure the bike would function as normal. I then moved onto more robust models which would function so I could test further and isolate more areas for refinement.

After this I started working on the final prototype with the highest fidelity I could achieve with the resources I had. I was able to achieve a high level of function for my indicator and closely match the look and feel I hoped for with the device. This level of prototype was robust enough to allow other users to test it more thoroughly and formulate clearer insights which I could then use to validate the product.





←ILUMINO→



←ILUMINO→

Thank you for for your time