Candidate 1

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2. a). Irons have evolved over the years. From first being a slab of heated iron to iron out the clothes the function has become alot more complicated with integrated 'steam' technology and a thinner sole plate being the first major change in the more complex steam irons such as the 'Phillips Comfort 200'. This change meant burning of clothes was less likely and you could control the amount of steam coming from the sole plate. With this technology Phillips also allowed you to adjust the temperature and then in 2nd generations of the Comfort 200, you were able to spit hot water out the front to provide efficient ironing out of creases. These earlier models such as the Comfort 200 included a red light to indicate the iron was turned on as a saftey warning. Whereas more recently, the Phillips Azur Steam Iron includes, brightly coloured cables to warn of trip hazard, 'Warning Boiling water' warning stickers and reinforced assembly with glue and screws to stop boiling water leaking. Later models also have a lighter and less chunky build which reduces strain injuries on the user. For example the 'Ceraglide' iron has a streamline shape and weighs only 1.2kg to ensure the user, especially women, arent hurting themselves with continued use of the iron.

External factors,

b) [redacted] has influenced the evolution of irons. With many customers struggling to use the heavy and clunky ~~cast~~ earlier models of irons, causing strain on their arms and back, this has influenced later models to be lighter, by using less metal and lighter plastics. Also has been achieved by having a thinner sole plate. Other external factors such as Climate change and environmental concerns has influenced companies to use less plastic.,

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which is environmentally harmful and unsustainable which has led to irons with smaller builds to reduce material waste and alternative materials to single use plastic to be used such as carbon fibre which is featured on the 'Bosch Steamglide iron'. Customers struggling to grip many of the straight plastic handles of earlier iron models such as the Philip comfort range, influenced later models to have thicker handles and integrated silicone moulds into the handle grip to ease the experience for the user, silicone grips are now found on most commercially sold irons these days particularly from companies such as Bosch, Phillips, etc. The introduction of wide spread electricity among homes and the accessible electricity technology through plugs, cords etc. Allowed irons to drastically change from just a heated soleplate to electrically heated water to provide integrated boiling steam into the soleplate which provides more efficient ironing as its quicker to heat up and lasts for longer periods of time, this technology is now the base of all irons. Wireless and dock charging technology has allowed cordless irons to be made particularly in 2018, irons designed such as the 'steamglide' iron. could be docked and charged then used in a cordless manner. and for extended periods of time which is more efficient for the user.

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c) Possible future developments of commercial irons could include a touchscreen interface for temp controls, steam etc. This is likely to happen as touchscreen interfaces have already been applied to many other household products such as fridges, kettles, toasters and provides a more efficient and more capable user interface. With higher tolerances & drifts, kitchen handles with more silicone grip will made to help them grip the iron properly and use it.

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3. a) The actual seat of the snow wheel would have to be soft to an extent to provide comfort for the user and support to their back. It will also have to be soft / flexible enough that it can fold in place as the ~~the~~ wheelchair is collapsible. The wheels would have to be made of a strong / robust material as it will be rolling on hard ground and may come in contact with rocks, grass, hard obstacles hidden in the snow, so it shouldn't break. The wheels should also be made of a material that is water proof and weather proof as it will be exposed to snow, water, outdoor conditions and shouldn't rust or corrode when in contact with them.

b) The wheel includes intricate patterns and shapes for grip so ~~so~~ would have to have a process capable of producing accurate detail, ~~accurately~~ it would also have to be a repeatable process to achieve the exact same pattern everytime so

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a process with a cast or mould would be suitable. The long handle / lever would have to have a process suitable for metal as it looks like it's made of that and also one the keeps the materials strength and robustness, perhaps an extrusion, as the lever will be under force from user and used to control the whole weight of the wheelchair when collapsing it. The wheel frame would have to use a processes that can bend material, most likely metal while still maintaining its structural strength, as it has to hold the weight of the user and stop the wheels from collapsing in on itself, a process utilising heat to bend; may be suitable.

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e) Composite materials allow are collective material to be made, while having the advantages of multiple materials e.g. the water resistance of metals and the flexibility of silicone plastic. When the product is designed for a specialist environment, it means the material can be composed of materials

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that have advantages in the specialised environment e.g. non slip and extra grip in snowy conditions.

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d) In initial stages of design of the snow wheel, quick 2D sketch models could be used to capture the rough function of the product / certain components and to help explore new ideas and give rise to designs. down the line, physical models could be made of cardboard or foam to explore further the snowheels function e.g. how it collapses, axis of the wheels, and can be used to refine down any unessasary/unfunctional aspects of the design. Test models of certain components or the snowheel could be made to test certain features. These are more complex models and could be used in test rigs to test material / structural strength, component mechanisms or just to test the wheels aesthetics and colourways. Scale models could be used to help determine properties of certain components and the full properties of the snowheel, e.g diameter thickness of handle, width and height of seat e.g. Prototype models are fully functional or sometimes partly functional models of the product, these could be used in advertisements

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and marketing of the product, test rigs and even put out on user trials to source problems with the design and refine it down to its most effective structure/function etc.

4.a) A patent could be used, this can protect the ~~physical~~ visual design and stop other companies selling ~~products~~ a similar product that looks the same as the 'UV radiater'. It also can protect the invention and technology used. e.g. the ~~use~~ modular technology featured that allows ~~customised~~ customisation, this ensures competitors can't sell similar 'modular heating systems' that use the same technology. The Patents can stop companies from selling similar designs & technology etc. for a certain number of years to get a head start in the market or can be permanent and indefinite and that the design / modular technology becomes the companies property forever. The Patent could also be used to protect the certain colour(s) used in the design to prevent copying from competitors.

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4b) The components should be made of metal that is able to be molten to allow it to be cast in shape, successfully. The components ~~or~~ mould should also have no cuts, cracks or holes that the molten metal can escape into and ruin the cast. The components should not include ~~cast~~ tiny and intricate detail as it is difficult to die cast and the molten metal may not fill in accurately, leaving an ~~cast~~ unsuccessful cast. The components should not include sharp/thin edges as they can be liable to snap or not cast fully and properly.

5.a) i) When focusing too much on one of them, it can hinder the effect of the other one. Focusing too much on how the product looks to the eye can start to negatively effect the actual proposed function of the product, and vice versa.

ii) To achieve a balance, constant trialing of the product amongst the designer(s) and the public can provide efficient feedback on

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the effectiveness of function and aesthetics individually and highlight if they are hindering one another and must to focus on for the time being. Brainstorming amongst a/the design team can provide a range of opinions about the function ~~term~~ and aesthetics relationship with the product and can provide multiple solutions with arriving at the perfect balance.

b) Iphones, an everday product includes Software providing a text to speech function which allows blind people to effectively interact with the phone and ~~interpret texts~~, emails, websites on the screen. It also includes vibrations during phone calls, notifications, alarms so deaf people can be alerted aswell as they can't hear the sound effect. Water bottles, specifically sold in commercial goods stores such as John lewis include soft silicone coats and moulded surfaces to help customers with athritis the hands grip more tightly to the surface, making it easier than straight plastic/~~glass~~ smoother surfaces. Recipe books aswell as product instructions include braille on them to allow blind people to interpret values and foods aswell as how to use certain products.

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6a) The total weight of pod would have to be suitable that most people could lift it, turn it over, transport it into the water and not too heavy that its unusable. The straps of the pod should not be so physically demanding that it takes too long to unstrap and convert to boat mode, the flood may carry the person away if taken too long. The life jacket and medical kit are in a bright orange colour, seperate from the green boat, that highlights them to the user and draws there attention to use. Bench mode usually already looks like an upturned raft / kayak / boat which leads the user to know to turn the bench over inorder to turn it into boat mode, which simplifies the experience for the user.

b) research into the physics of a boat floating would be needed. The expected weight to float on water, the surface area that should be in contact with water, the shape of the boat to provide the most effective travel through water (aerodynamics etc.) could

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all be researched. and analysed as the boat should be able to be afloat for a long period of time and be suitable for travelling through the water with paddles. Information on Anthropometrics of humans could be gathered for a range of both male and female percentiles, e.g average weight, height, torso length, leg length, grip diameter, arm length etc. could be gathered. This is needed as the buyer will need to accomodate a range of sizes of people, it needs to keep afloat a range of weights. The boat also may become unbalanced if someone uses it that's taller than expected, Hand grip diameter for the paddles.

Design

7a). Opportunities can be identified through analyzing market and consumer needs, This could be through focus groups, online questionnaires etc. Apples 'Airpods' were the first wireless earphones and was created by consumers wanting a simpler user experience, listening to music with earphones on the go without having to untangle wires, Apple could identify this consumer

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need. through have market research e.g focus groups and develope arpods. Design opurtunities can also be identified by analyzing market trends - and whats in fassion. For example Adidas' range of predater and nemisis football 'sock' boots was a design opurtunity created by the rising popularity and trend in youngsters of football 'sock' boots, initially started by nike. This includes football boots with an intergated sock rising from the heal for an ankle support.

b) Companies can launch the product on a pre-order basis, meaning only the minimum amount of stock needed is made. So that if it is recalled, there is no wasted stock of the recalled product.

Companies can make sure that all the wants and needs of the market are thoroughly researched and analysed, so that if a product is recalled the company can effectively respond to the market. Another strategy is ensuring the product ~~[illegible]~~ has a range of design alternatives already in the company so that they can quickly alternate/ change the design and then bring it back to market, without wasting too much time completley redesigning it. Another strategy could be is choosing manufacturing methods that are easily changeable for the product e.g. only requires a change of mould or cast. This ensures the manufacturing process is easily adaptable to any changes made.

c) On relaunch the company could use celebrity endorsements to help promote the product again. This includes using a celebrity in the niche to promote the product to their audience and can help bring in initial sales and have a successful relaunch. Another way could be relaunching the product on an initial discounted price/sale to attract buyers and boost the initial relaunch sales. Another strategy could be to use specialized algorithms marketing on social media, this can be used to promote the products relaunch to specific customers in the niche through what the person already interacts with on social media. This helps boost sales on the relaunch and provides targeted marketing.

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