Transparent speaker

TAGS: Modularity, repairability, upgradeability.

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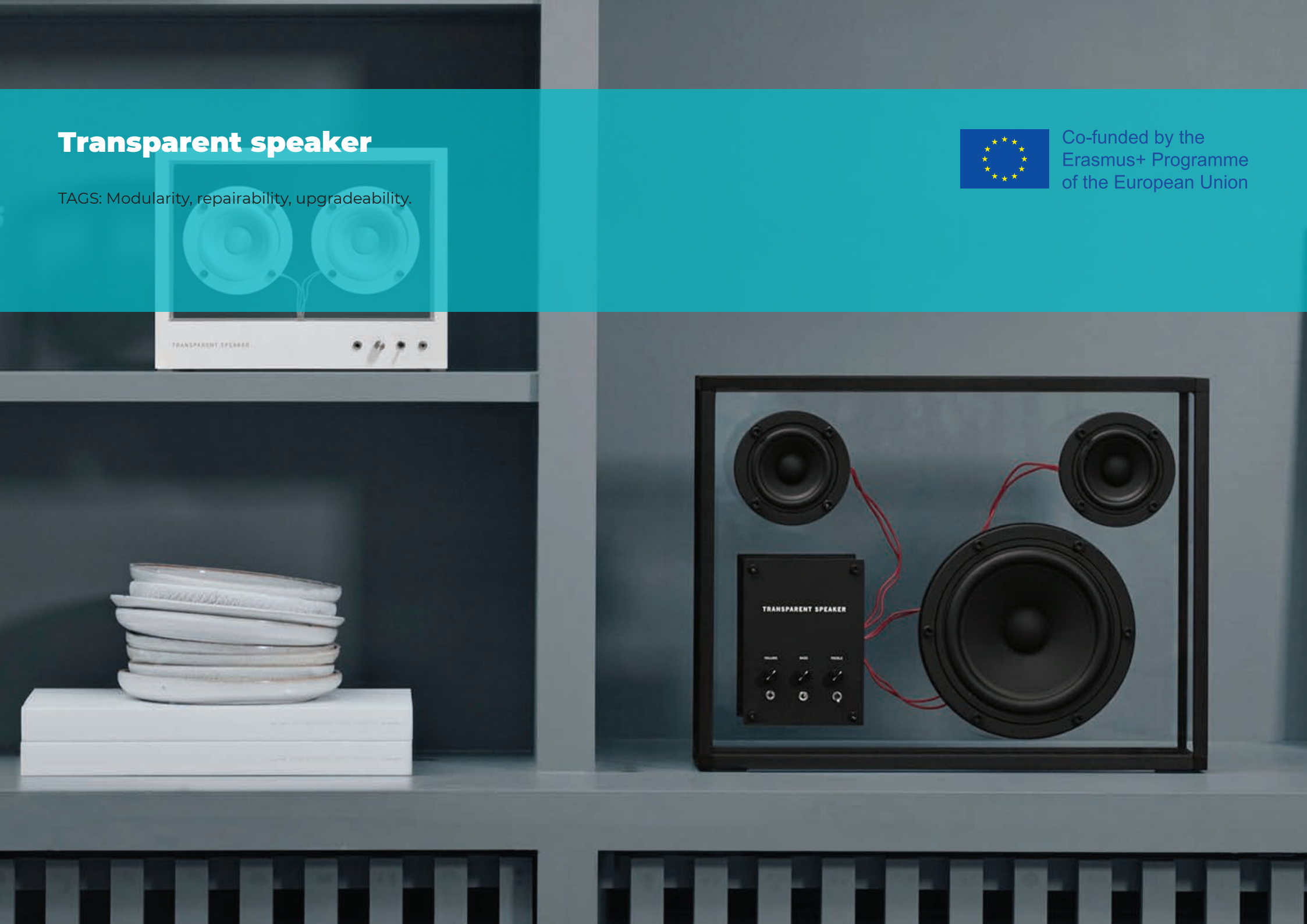


1. Project definition

Transparent speaker (Stockholm, Sweden)
2009 - 2019

In order to understand the values of the Transparent Speaker we need only pay attention to its name, which relates to sustainability, sound and aesthetic. The most obvious source of the name is that the speaker's body is made of glass, making it transparent and thus quite literally seamlessly blending into any space. This adjective is also used when referring to sound that is very pure and clean. Finally, the name pays homage to the ethical values behind the design.

The project was born from the idea to create a speaker that will last a lifetime. All the parts are designed with maximum durability in mind. The product became modular when the designers realised that it was specific components that usually failed, and that by replacing or repairing these, the life of the rest of the components could be extended. This feature also allowed for flexibility and upgradeability, which - in the tech market- is essential as standards quickly change and new opportunities and solutions constantly arise.

Transparent Sound is comprised of Martin Willers and Per Brickstad, both designers and entrepreneurs. They had met at Umeå University, and along with other of their colleagues, they founded People People, a product design studio in Stockholm. At this studio they used around 20% of their time to develop passion projects and that is how the Transparent Speaker was born. They developed it and uploaded it to the studio's blog. To their surprise, the project developed a following online, which allowed for them to turn the project into reality.
At this point Martin and Per founded Transparent Sound, an enterprise separate from People People. They developed the project in detail and designed for manufacture which proved very challenging, especially because they wanted the product to be easily disassembled.

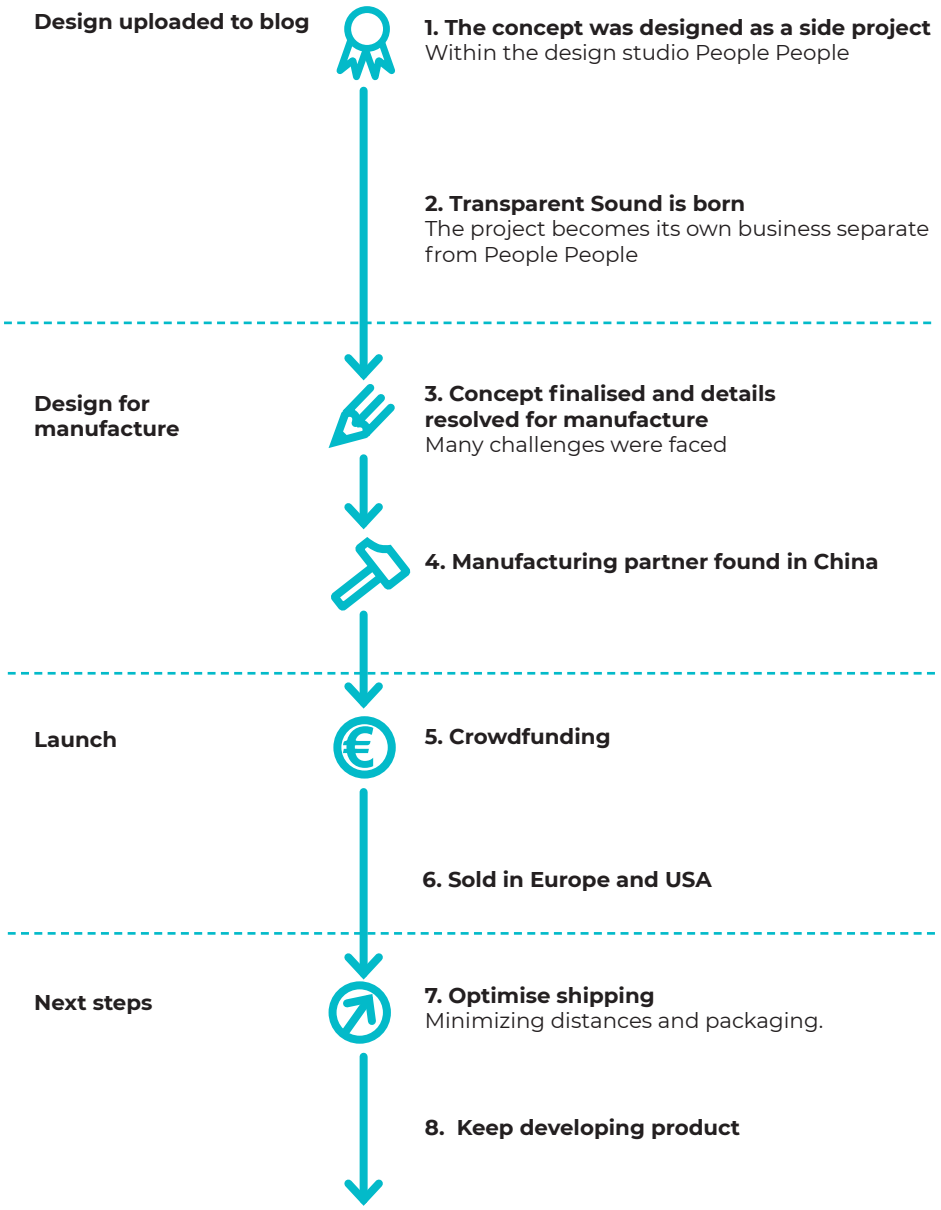
They travelled around the world thanks to a grant they won, searching for manufacturers to inspect the working conditions and the way they handled the product in detail. They finally decided to take their production to a factory in China with high standards regarding working conditions and quality. Additionally, they developed a document gathering a set of sustainability guidelines. They presented this to their manufacturers to make sure they met the standards Transparent Sound had set for themselves. They launched their crowdfunding campaign on Kickstarter once they had the infrastructure necessary to back the demand could arise. The crowdfunding found great success which gave them the jumpstart they needed to launch the company.

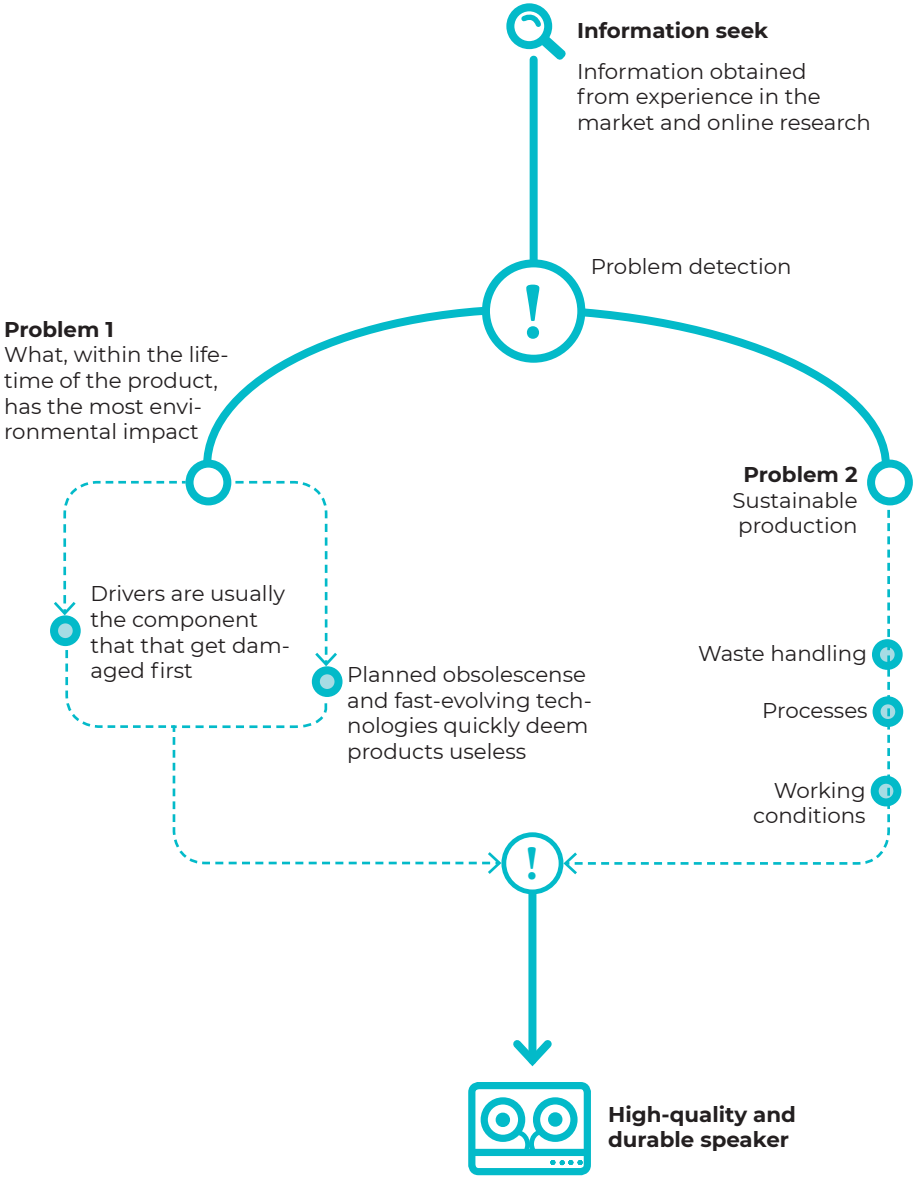
The product is now sold all over Europe and the USA and has found huge success, even within the music industry, being featured by leading artists such as Britney Spears, Will.I.Am, Robyn, Snoop Dogg, Steve Angello, One Direction, Oskar Linnros and many more.

The designers continue to develop the product and the infrastructure behind it to make it even more coherent with their sustainability values.

KEYWORDS: Durability, modularity, repairability, upgradeability, crowdfunding, DFM.

Timeline





2. Research

The timescale of the projects of the studio often did not accommodate for lifecycle analyses. This is why they developed a practice which they called “lifecycle sketching“, which consists of following the structure of a lifecycle analysis and predict where most of the impact will be based on research.

The research stage inspired them to use the circular strategies that they employed and which have ultimately made their product unique in the market. During this phase they identified the sustainability pain points at each stage and attacked them, resulting in the development the product. They found that it was certain components in speakers that got damaged most often which could be solved through a repairable design that allowed for replacement of parts.

Before launching the crowdfunding campaign, the designers decided to visit manufacturers and organise their production process. This would allow them to start production as soon as the demand began. They won a grant that allowed them to travel around Europe and Asia in search for a manufacturer. This opportunity enabled them to explore a range of options and evaluate important aspects first-hand: the conditions of the workers, the quality of the finishes, and product handling. It was essential for the company to ensure that the manufacturing was set to the same sustainability standards as they had followed in the design phase. They evaluated the impact of the factory as well as their waste handling methods.

After having done thorough research on sustainability of products and manufacturing, they decided to collect this information in a sustainability guide. This would serve as documentation for themselves but mostly to set sustainability and working condition standards for their manufacturers. It was essential for the Transparent Speaker to be as sustainable as possible at all stages of its lifecycle. This 26-page guide was also included in the crowdfunding campaign. Kickstarter was inspired by it and used it to develop a resource guide to encourage designers to develop sustainable products, thus being a positive influence on many projects published there.

One of the partners had experience in sound and speaker design from working at Nokia. They continued to learn about sound and how to provide the best possible quality, thus achieving transparent sound.

Despite the fact that this product has already found international success, the company is still developing it with the goal of making it even more sustainable and trying to improve its performance. They put a lot of value into direct communication with their clients, and this has fostered a closer relationship with them.

They acquire feedback from them that allows Transparent Sound to update the product, responding to existing needs. This relationship was enabled through their online popularity and crowdfunding campaign.

KEYWORDS: Life-cycle analysis, crowdfunding, manufacturers.

The designers developed a sustainability guide as documentation for themselves but mostly to set sustainability and working condition standards for their manufacturers. This has inspired a sustainability guide used for projects published on Kickstarter.

3. Analysis

The research of the market, sound, sustainability and manufacturers gave Transparent Sound a good basis to develop their concept further. It inspired them to make their product repairable as they saw that the drivers of the speakers were damaged overtime and it was usually what caused consumers to dispose of their speakers.

This repairability offered an opportunity for upgradeability of the product. In a market that is not only plagued by planned obsolescence but also fast-evolving, quickly deeming products irrelevant, upgradeability has proved a great solution to ensure the durability of the product.

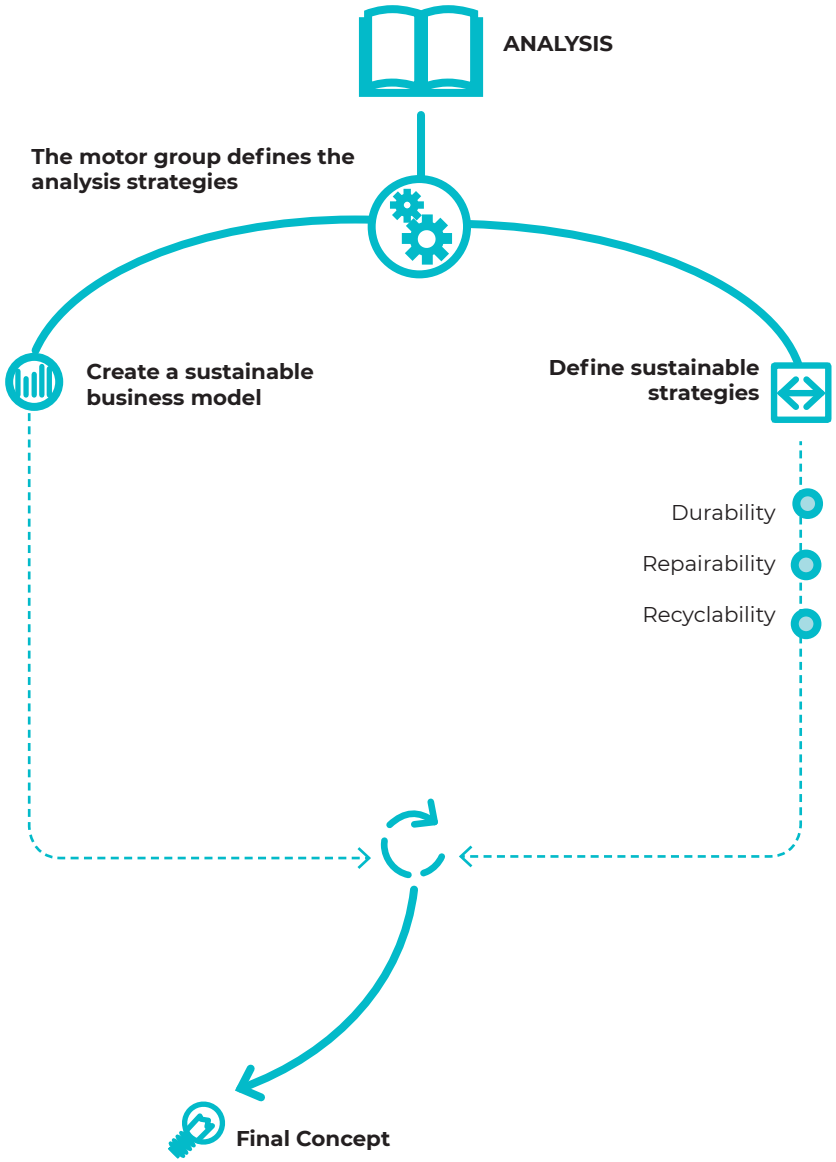
Although the product allows for the replacement of parts as new standards emerge, the design of the parts themselves is very adaptable, thus reducing the need for replacement.

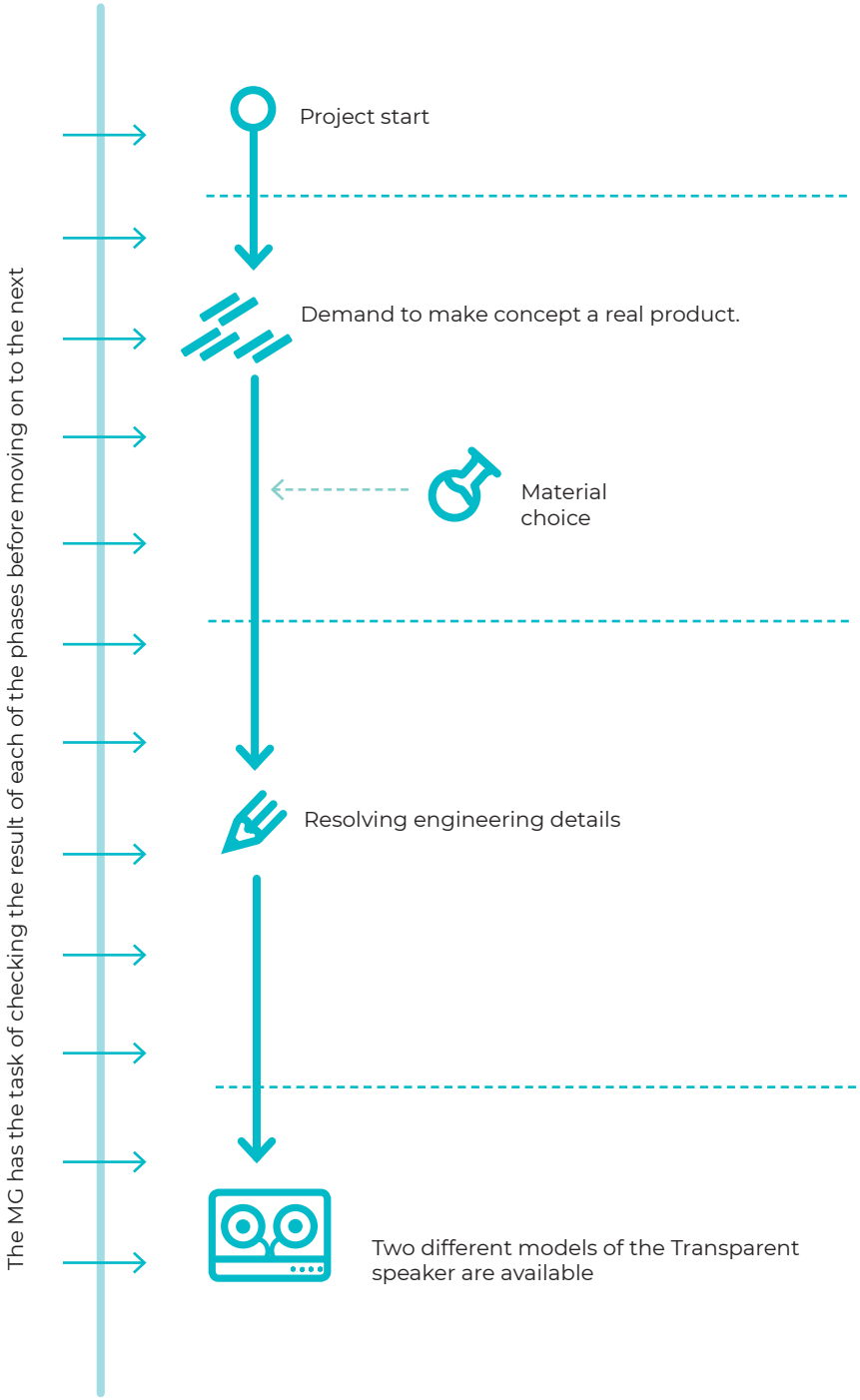
Unlike others in their market, Transparent Sound optimized their design for maximum sound quality, also known as transparency, instead of limiting their design to the current compression quality of music streaming. This enabled them to adapt to new standards, without having to change the design and while continuing to provide excellent quality, deeming them future proof. This is now paying off as the bitrate offered in streaming services like Spotify is surpassing the sound quality offered in traditional CDs. Other speakers now sound muffled and outdated.

It was very important to Transparent Sound to also have a business model that reflected their values. Planned obsolescence only makes sense for large companies with a large product offer, so they can have the customer purchasing their products repeatedly.

In the case of Transparent Sound, they only have two products that they offer and thus it is in their interest to have the product last longer and build their client relationship. Their sustainable business model is also focused on durability, making sure that the company will last as their product stays relevant.

KEYWORDS: repairability, upgradeability, planned obsolescence, sustainable business model.





4. Concept

Once the project was re-opened, the concept was improved and the details were resolved. One of the aspects that required definition was the material choice, as it would greatly determine the sustainability of the product, defining the impact due to aspects such as its recyclability, sourcing and its manufacturing methods. The second stage of development was resolving engineering details, that presented its own set of challenges.

Transparent Sound wanted to use materials that were also coherent with their sustainability values. This stage proved difficult as material choice often presents complex and contradictory interests. As an example, they were faced with the choice between glass and plastic for the body of the speaker. The glass presented more durability and quality perception, but its production required more energy consumption and it was also heavier than plastic and thus had a greater environmental impact during transportation. They finally opted for the glass as they prioritised durability and quality. A similar issue arose in the choice between aluminium and steel, as the former is easily recycled and lighter but is also more malleable and easier to bend than the latter. In this case they prioritised recyclability and decided on the aluminium.

Recyclability was a large focus in the material choice, in contrast to the common practices in the tech industry. The final design is fully recyclable, except for its PCB which includes some materials that are not yet recovered. It is currently easy to separate from the other components to be processed accordingly. Achieving the recyclability of this component is currently a focus for Transparent Sound.

The design for manufacture (DFM) was very thorough, as the concept had not initially been developed to the level of detail required by a commercial product. This stage presented a set of challenges regarding the feasibility of the project.

One of the main aims of the project was to develop a speaker that provided excellent sound quality. Nevertheless, this was extremely complicated because of the concept of the product, that was designed to be easily disassembled.

The development of a complete seal cabinet that could also be disassembled proved to be an engineering challenge that required a lot of extra work.

KEYWORDS: Material choice, engineering challenges.

The Transparent Speaker has found huge success within the music industry, being featured by leading artists such as Britney Spears, Will.I.Am, Robyn, Snoop Dogg, Steve Angello, One Direction, Oskar Linnros and many more, proving that it's possible to produce a really sustainable product offering very high quality, performance and an attractive aesthetic.

5. Prototyping

Since the design was developed as a passion project with no intention of bringing it to the market, the project became popular without any built prototype, just with renders and a radical concept.

The need for it became apparent though, as the design became more popular and Transparent Sound was offered a stand at the Consumer Electronic Show (CES), the biggest consumer tech faire in the world. For the first prototype, the glass was water-cut in Sweden and the rest was assembled by the designers themselves. The prototype was not fully functional.

The professional finish of this prototype gave them the idea of selling the product as a do-it-yourself kit with instructions that could lower the price of the speaker. They proposed this in their crowdfunding campaign, but that did not have a high demand, so it was not ultimately implemented.

A second prototype was developed for the crowdfunding campaign, this time fully technically resolved. This was used for close-up photographs and videos.

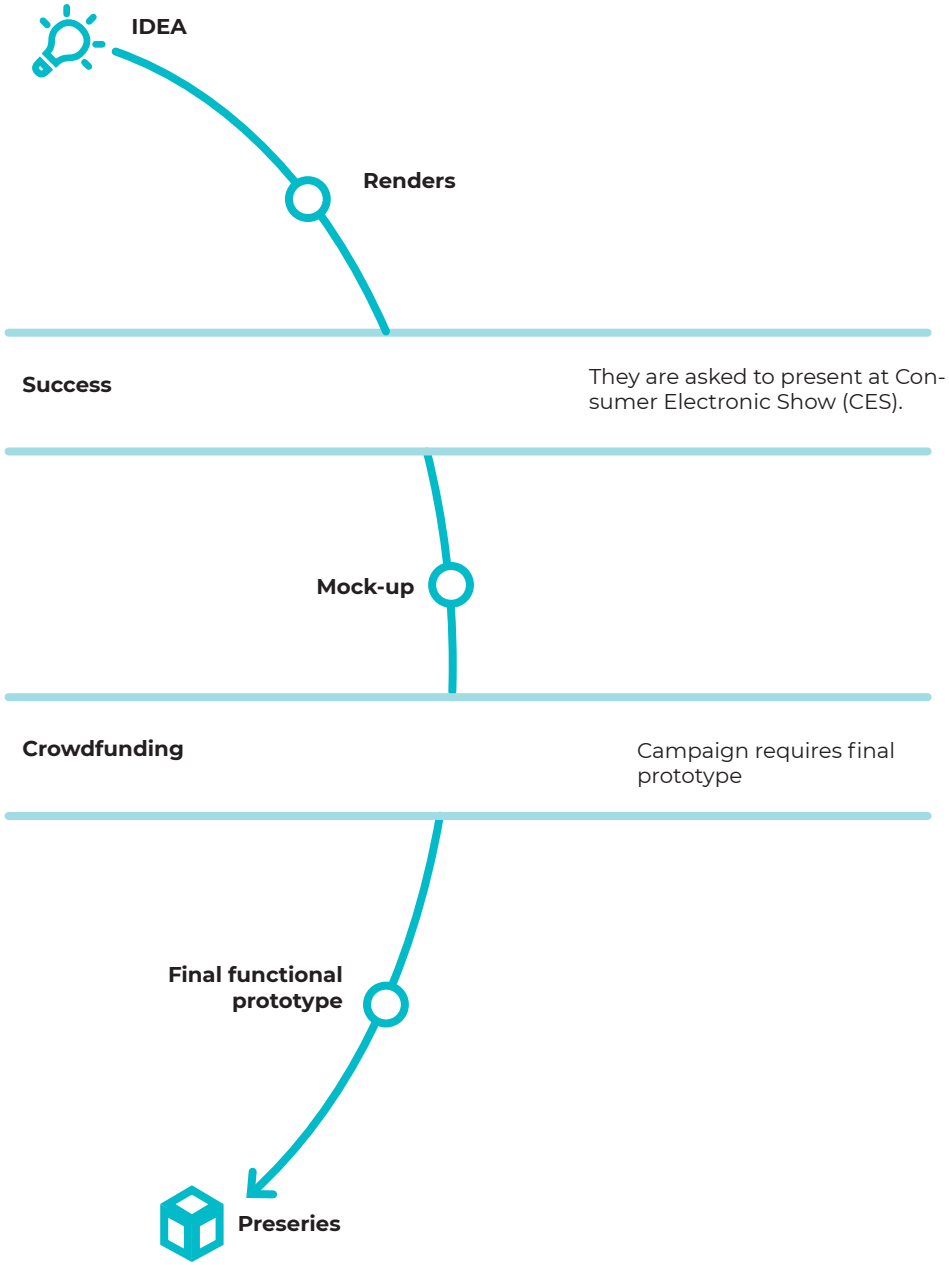
Once the crowdfunding campaign was launched and found success, the production of the first batch was initiated. Although they had already searched for the manufacturers and had set up all the steps for manufacturing, they still faced some challenges. In standard production, assembly is usually rushed as it represents a huge part of the manufacturing costs. As expected, this results in small flaws, which Transparent Sound wanted to avoid. Multiple aspects were improved at the factory such as the gloves of the workers handling the glass, as initially they left fingerprints on the product.

Other unexpected issues also arose with suppliers due to the small size of the company. This happened with fabric cables, which they could not acquire from any suppliers as they only needed a fraction of the minimum amount Chinese suppliers sold.

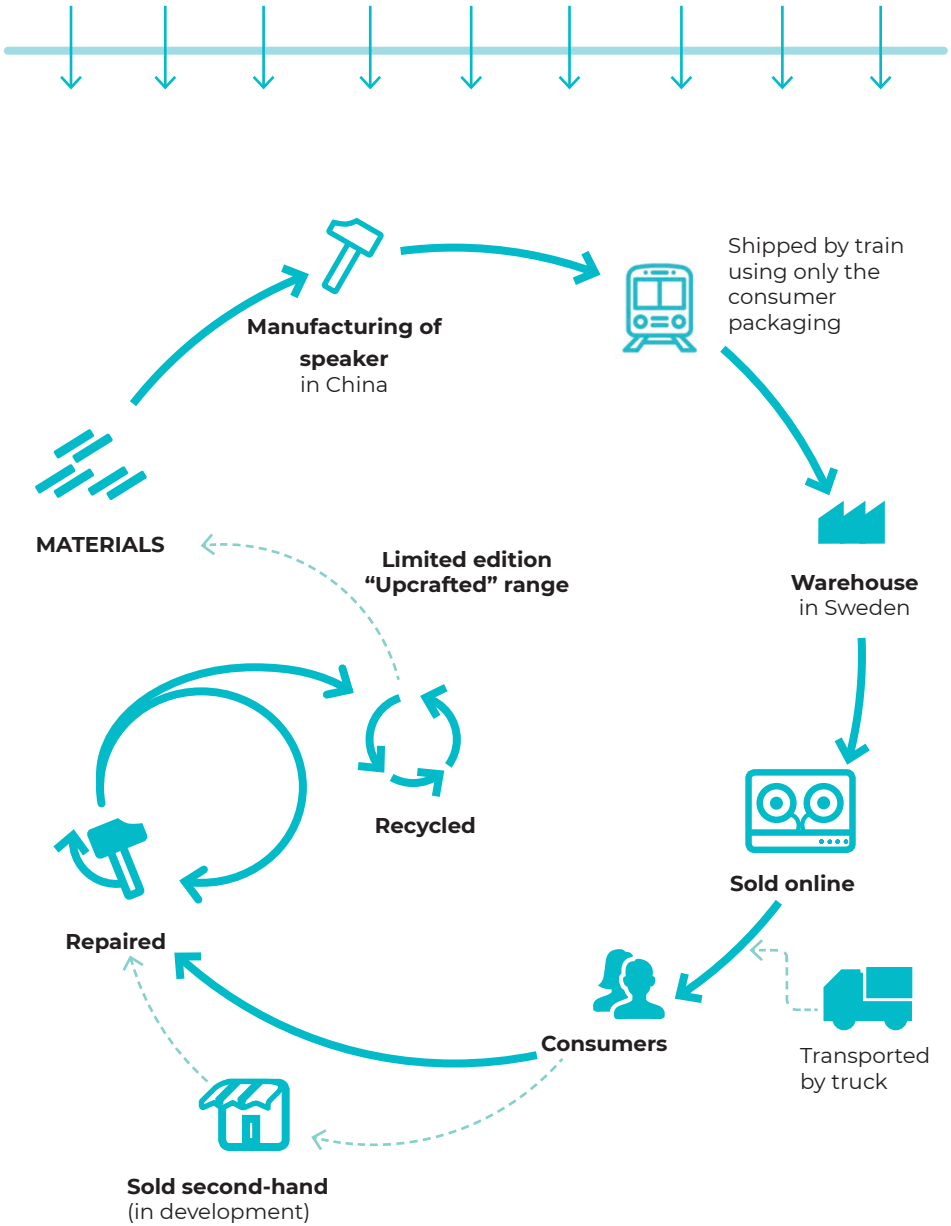
Certification also presented challenges. They discovered in this final stage that in the USA the wing nuts that they planned on using were considered a choking hazard for children. These acted as an affordance to indicate the product could be disassembled. They had to find appropriate ones for global certification standards which took months.

Fortunately, Transparent Sound overcame all the challenges they faced and the resolution of these have only improved the product.

KEYWORDS: Render, low-fidelity prototype, funtional prototype, pre-series.



Transparent speaker
The MG coordinates the project and the role of the different actors.



6. Project

The Transparent Speaker is fully committed to sustainability and coherent with this vision, achieved through careful examination of every stage of the life cycle. This is true of the aspects of the product that are visible to the client as well as those behind the scenes. The speakers are designed for repairability, durability, updateability and recyclability. The manufacturing process also reflects these values.

The aim of this project was to create a speaker that could last a lifetime while offering excellent sound quality. The speaker is repairable and upgradeable thanks to its modular design.

This modularity also allows for replacement of parts in case of a technical standard shift. This allows for more flexibility for the user to update the product and fights planned obsolescence. This adaptability has not only been good from a sustainability perspective but also from a business one, as the product has lasted through technological change and probably also will in the future.

Its success is in big part also due to the excellent sound quality they provide. From the beginning they designed for this in mind although the music compression standard then offered low bitrates and thus lower quality than is currently available. Their investment in components of a higher range proved worth it as music streaming now offers better quality.

The speakers are manufactured in China under fair working conditions, reviewed by the designers themselves. Their recent move of warehouse from the UK to Sweden enables the product to be shipped from the factory to the warehouse by train, which is least polluting of the transportation means. The environmental cost of shipping has also been a large focus for Transparent Sound which has brought them to make decisions such as reducing the packaging to only one used for both shipping and as the final packaging. Once the product is sold it is then shipped by road to their consumers in Europe using the same box.

Transparent Sound is open to criticism while being very critical with themselves. They continue to develop all aspects of the project to become as sustainable as possible. They are excited to see what the future has to offer in terms of technology that will allow them to further improve their sustainability commitment, such as robotics that could allow them to take the production to Sweden, thus minimising their transportation environmental cost. It is their plan in the next five years to create a take-back scheme. Currently, that is not feasible due to their scale and production volume. Their first attempt at closing the loop has been to develop a limited-edition range of speakers handmade by artisans using recuperated materials from production called "Upcrafted".

This product demonstrates that sustainability does not have to be at odds with the rest of the product's characteristics, and that the transparency and clarity of a product like this can be very attractive for consumers.

KEYWORDS: Repairability, working conditions, evolution, take-back scheme.