



// Helping Starkey bring smartphones to millions of patients.



CHALLENGE

A lot has been accomplished in the field of audiology. In the last decade there have been vast improvements to the functionality of modern hearing aids; creating superior levels of audibility, eliminating feedback, increasing wearers' comfort and providing stereo streaming capabilities. Bluetooth capability is one of the most recent innovations in wireless interfacing for hearing aids to audio sources, such as TV streamers or MP3 players. But even with all of these advancements, patients are still unable to effectively communicate on the phone.

Current hearing aids cannot stream directly via Bluetooth to a mobile phone but rather do so through a secondary streaming relay device which is typically worn around the patients' neck. This body-worn relay device works as a microphone and must be kept in close proximity to the user's mouth in order to relay his or her voice back to the phone.



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CHALLENGE CONT.

With today’s proliferation of smartphones, wearing a device each and every day to use a mobile phone is a hassle. Starkey Hearing Technologies set out to work on a solution for hearing aid patients that eliminates the need for a body-worn device and that easily integrates into a modern lifestyle while still boasting superior audibility and affordability. To tackle the challenge, the company engaged Logic PD as a complete product design, development and manufacturing partner, and together, collected a team of highly skilled designers and engineers.



SOLUTION

Together, Logic PD and Starkey Hearing Technologies chose to focus on transforming the body-worn relay device into a mobile transmitter solution that would wirelessly connect with Bluetooth-enabled smartphones to make communication easier. The solution would require the Starkey Hearing Technologies’ line of wireless hearing aids to act as both the microphone and receiver.

In order to achieve the desired result, Logic PD and Starkey Hearing Technologies elected to utilize a user-centered design approach to study hearing aid patients to ensure that the end product would meet the functional needs of patients.

The first step in this process was to identify patient mechanics and to determine how users naturally interact with their hearing aids and how they use existing technology. Through this exercise, the team was able to identify the everyday needs and challenges of hearing aid patients and ascertain critical design elements to better understand how this device would be used in the real world. Several use cases were developed to ensure each step of the design phase correlated with end user usability.

The patients were invited back to participate in the user interface simulations that were the results of their first interaction. The design concept model was then refined based on insight from user evaluations and reviews with Starkey Hearing Technologies. This user-centered design approach was instrumental in ensuring that all of the needs and goals for the device had been addressed before moving into the development phase.

SOLUTION CONT.

As leaders in audiological research and technology, Starkey Hearing Technologies provided unmatched expertise that led to a highly collaborative development process with the Logic PD engineering team. To support ease of everyday use of the new technology by traditional hearing aid patients, the client wanted to evolve the aesthetics of a silver unit hearing aid remote that most patients were accustomed to using.



The new look would incorporate some design aspects of the remote, including similar icons and ergonomics, but would integrate a touchscreen solution that met the expectations of today's technologically savvy consumer market. The biggest technological hurdle to overcome was developing an antenna solution that provided optimal wireless performance and range. Starkey Hearing Technologies placed a high priority on creating a device that provided superior audibility while still maintaining a compact size – smaller than the average smartphone. Therefore, the antenna had to be small in size without compromising sound quality.

In order to achieve this, Logic PD partnered with Roke, a technology consulting firm headquartered in the United Kingdom that specializes in designing antennas and radio communication solutions. Roke was able to successfully meet the objectives and designed an antenna that exceeded the quality and size expectations of the client. By utilizing Roke's expertise and partnership with Logic PD, Starkey Hearing Technologies was able to speed the time-to-market and better prepare for the certifications required before going-to-market.

Reliable communication between the mobile phone, transmitter device, and the hearing aid would also be crucial to the success of the product. Increasing the Bluetooth range of communication would adversely affect battery life and, therefore, the user experience. Therefore, Logic PD recommended that communication between the mobile phone and the transmitter device occur over the standard 30-foot Bluetooth range while communication between the transmitter device and the wireless hearing aid would occur over a two-meter range. The two-meter range was determined by the ability of the hearing aid but provided superior audibility in all use cases. The chosen range for communication allows the wearer to conduct mobile phone calls with the transmitter device in-hand or in a pocket or purse nearby.

RESULTS

This product, named SurfLink® Mobile, went to market in the spring of 2012 and Starkey was able to provide hearing aid patients, for the first time ever, a completely hands-free phone experience. Hearing aid patients that were previously unable to use a smartphone can now use the new device as a transmitter to stream two-way audio between their Bluetooth-enabled smartphone and hearing aids.

Additionally, SurfLink Mobile solves the problem of needing more than one device to communicate effectively in any situation. SurfLink Mobile is a remote microphone, assistive listening device, and hearing aid remote control - all in one. Audio streaming for other Bluetooth-capable devices is also possible, allowing the hearing aids to act as highly customized headphones. This allows wearers to be up to 30 feet from an entertainment device, such as a TV or a radio, and still stream audio wirelessly through their hearing aids. Today, SurfLink Mobile is available in 17 countries and has opened up the smartphone market to millions of hearing aid patients.

In 2013, SurfLink Mobile won a Red Dot Design Product Design Award and was a CES Innovations Design & Engineering Award Honoree. In 2014, SurfLink Mobile went on to win a GOOD Design Award.

CUSTOMER PROFILE

Starkey Hearing Technologies, one of the leaders in advanced hearing technologies, works to make peoples' lives easier through innovation. The company pioneers audiological research and development efforts and is present in more than 100 markets worldwide.

More Information



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Logic PD Insights is a collection of blog posts and other industry news with a focus on the Internet of Things.

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About Logic PD

Logic PD guides clients through the full product development and electronics manufacturing process to accelerate their growth and capture value.