ALL EARS

Nikolaj Hviid
Founder and CEO, Bragi

Nikolaj Hviid has always been a busy man. A mechanical engineer by training, he has spent his entire career developing and growing startup companies — six to date. So he's no stranger to rushing around, trying to keep up with phone calls and ultimately feeling frustrated by the burden of multitasking.

"In 2012, I was an equity partner in an industrial design firm when I realized that personal technology had not kept pace with what was happening in my own life and in the lives of my colleagues," Hviid recalls. "I would try to answer phone calls while doing something else, and it was impossible because the smartphone was not built for multitasking. It demands too much focused attention."

"The things I was doing with my phone — like listening to music or making calls — were serial immersive experiences," he continues. "I realized that parallel immersive experiences would be much more efficient — say, if I could answer a call without actually holding a phone or looking at a phone.

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I could have my hands free to accomplish something else. I could be anywhere. All that was missing was a new technology solution that would enable parallel immersive experiences."

In March 2013, Hviid started up a new company, Bragi, to fill this market void. The company launched a Kickstarter campaign that attracted nearly 16,000 backers and raised $3.39 million — setting a record for European Kickstarter fundraising efforts. Today, Bragi has 176 employees and delivers personal computing innovations to a global market from its headquarters in Munich, Germany. Bragi's flagship product, called The Dash, is marketed as "the world's first wireless smart hearable."

"I envisioned The Dash as a kind of personal assistant that fits into the ear," Hviid explains. "You can listen to music, dictate a message, measure your steps, monitor your heart rate while exercising or answer a call with a simple head gesture — freeing up the rest of your body. For the first time, you can immerse yourself in numerous tasks in parallel, without the need to hold on to a phone or keep looking at a device on your wrist."

While wristwatch-type computers are making headlines today, in Hviid's opinion "hearables" make much more sense than wearables, which tend to have limited functionality and are somewhat clunky physically. In contrast, Hviid points out, The Dash is elegant, practically invisible and deceptively compact — while delivering a huge amount of functionality.

"The Dash is much more than just a wireless earbud," notes Hviid. "It's a micro-computer that functions as a headphone, headset, tracker and human input device." Crammed into a device the size of a fingertip are 150 microcomponents, 27 sensors, 4 GB of storage and a 32-bit processor. And underlying its robust functionality are proprietary algorithms developed by Bragi's engineers, as well as a custom operating system that understands multiple languages.

As a hands-free wireless solution, The Dash must perform reliably under a broad range of conditions to fulfill its customer promise. "Signal integrity and electronic noise reduction are engineering concerns that are especially critical to our product development team," says Hviid. "As we introduce future generations of The Dash, consumers will be looking for a smaller and smaller footprint — with more and more functionality. We need to make sure our antennas remain optimized under these new and increasingly challenging conditions."

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Today, the Bragi engineering team relies on the power of ANSYS HFSS to ensure that antenna performance is maximized in future product releases. "Engineering simulation is an absolutely essential component of our efforts to create next-generation hearables," Hviid states. "We can only prototype and test a finite number of configurations, and we need to account for a wide range of human bodies. Simulation is really the only way to move forward quickly and optimize our products across all conditions. In addition, simulation will help us ship better-performing products and reduce our potential warranty obligations."

"If we'd had access to ANSYS software when we were engineering our initial product, we would have been able to cut significant time and costs out of the development cycle by reducing the need for lab testing and physical prototypes," notes Hviid. "I'm delighted that this state-of-the-art design tool is accelerating our future product releases and improving product quality — not just for new iterations of The Dash, but for a number of other consumer solutions currently in development at Bragi."

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