The Approach
To investigate how best to design the device to fit into and enhance users’ lives, Bresslergroup conducted three rounds of user research. Focus groups with experienced nurses and EMTs in different hospital settings yielded feedback on data management, product experience, and ease of use. Participants weighed in on their current routines and tools for administering fluids and taking blood samples.

Bresslergroup also tested different ways to integrate the device into these individuals’ workflow. The project team created storyboards to evaluate different scenarios and built prototypes to test with end users and experts. These insights drove early concept development for combined interaction and industrial design.

Two interactive prototypes were subjected to qualitative testing with ten participants to reveal the best configurations. One concept was consistently preferred over the other for all aspects except for controls, as most participants favored the tangible feel of the other’s mechanical buttons. Post-testing, our project team assessed these and other key findings in ergonomics, aesthetics, vein visualization, depth display, controls, and overall preference. Interaction and industrial designers worked in parallel to translate these research findings into device refinements.

The Solution
The resulting product is so easy to operate — ultra-compact, lightweight and via one-handed operation — that it has developed a secondary use as a training device and is even meeting an increasing need for ultrasound equipment among clinicians from non-radiology backgrounds.

Its immediate appeal might be best summed up by a medical reporter who compared it to “a remote control crossed with an iPod.” The Sonic Window’s “first-stick success” is improving patient satisfaction and offering time and cost savings for hospital systems.

Financial Value
The Sonic Window won a Gold in the Medical Equipment & Devices category of appliance Design’s 2015 Excellence in Design competition and was selected as a finalist in the IDSA’s 2015 IDEA competition. In 2016, the Sonic Window was honored with Gold in the Radiological and Electromechanical Devices category of the prestigious Medical Design Excellence Awards (MDEA).

Cultural Change
The Sonic Window provides value to the healthcare system by increasing the success rate of IV placements in difficult patients by fifty to eighty percent. That translates to a savings in time and materials of up to $1,250 for every hundred IV starts.

The reduced number of attempts increases department throughput and revenues. The device reduces liability from complications, inadvertent nerve and arterial puncture or damage.

Customer Value
Prior to the Sonic Window, there was no device specifically designed for vascular access and tailored to peripheral venous line placement.

Sonic Window improves patient outcomes by enabling clinicians to quickly and easily achieve vascular access at “first stick.” Patient benefits include less discomfort from multiple sticks, especially for difficult-to-stick patients; reduction of unnecessary central line infections; reduced risk of complications; and faster treatment and quicker advancement of the patient through the hospital system as a result of fewer failed sticks.

THE CHALLENGE
Out of an estimated 300 to 500 million IV placements per year in the U.S using traditional techniques of sight and palpitation, one in three attempts in adults — and one in two in pediatrics — result in failure.

BK Ultrasound, part of Analogic Corporation, a recognized leader for advanced imaging technologies, came to Bresslergroup with the ultrasound technology to overturn these painful stats. It gives users a real-time view of tissue layers up to three centimeters beneath the skin. And unlike with competing products that need to be tethered, the technology allows for a rechargeable battery — and true portability.

Our designers took this game-changing technology and figured out how to bundle it into an appealing, usable device.

DESIGN VALUE
BK Ultrasound Sonic Window
A Window Through the Skin