



Helping to connect doctors with patients.

CASE STUDY

Summary

This medical device customer recognized the importance of creating a Wi-Fi connected defibrillator monitor that is small, rugged, and powerful. The new connected device would enable first responders to send vital information to doctors before the patient arrives at the hospital. This new functionality is possible through combining defibrillation technology with patient monitoring and network connectivity capabilities. To aid in designing and producing this revolutionary device, the customer chose to work with our team at Beacon EmbeddedWorks.

Challenge

First responders rely on portable and efficient technology, such as defibrillators, to help save lives. This technology is steadily becoming more complex and versatile. New defibrillation equipment combines traditional functions with other therapeutic capabilities including patient monitoring and vital signs. As a leader in the medical device industry, the customer envisioned a new defibrillator with a patient monitor that was smaller, more powerful, and more durable than any other device on the market.

Customer Profile

As a leader in medical device industry, this customer helps to save lives by improving technology and operational efficiencies in devices used by first responders.

More Information

Why choose a Beacon EmbeddedWorks SOM?

See what differentiates our SOMs from the rest.

beaconembedded.com/system-on-modules/

About Beacon EmbeddedWorks

Beacon EmbeddedWorks is a full-service provider of innovative System on Modules (SOMs). Backed by a suite of customization, security, and support services, our dependable, pre-certified, and feature-dense embedded solutions serve the most strenuous applications.

Challenge Continued

To further increase the functions and usefulness of the new defibrillator, the device needed to include the ability to connect to nearby data networks via Wi-Fi. With this capability doctors could review patient vitals before they even arrived at the hospital, allowing for better patient care. The customer needed to get the device to market quickly to cement their market share. With this time crunch in mind, the customer engaged our engineering and manufacturing teams to rapidly incorporate wireless requirements into the design and prepare the final device for testing.

Solution

Presented with a tight timeline, communication between the customer and our team would be essential to complete development and production on time. With the help of our design, electrical, mechanical, and software engineers the device was designed, tested, and prepared for the manufacturing teams.

With a more compact form factor and an increased battery size, the design left little room inside the device for the network connectivity component. Given the importance of small form factor and the need for exceptional quality informed our engineers recommendation of the Torpedo System on Module (SOM). The Torpedo SOM was chosen for its unique balance of small size (less than one square inch), unrivaled speed, and impressive power performance capabilities. The SOM allowed for creating a small processing board while maximizing device quality and effectiveness. Our software engineers then performed additional customization to ensure the SOM would be compatible with a radio to control network connectivity. Our electrical engineers worked on signal processing to ensure the wireless transmission of patient data was secure and reliable. First responders can now use the defibrillator monitor and send critical patient information to doctors and hospitals nearby.

Testimonial

"Across high tech industries, a lot of development efforts—maybe even the majority—seem to go over budget and past deadline. We had challenges along the way, but we made our goals, on time and within budget. Getting a whole team working together the way we did is a huge accomplishment.

There were some pretty aggressive milestones along the way, and when it took extra effort to achieve them, our people and Beacon EmbeddedWorks' stepped right up. What differentiates an effective partner isn't whether you have problems; it's how they deal with them, and the people we dealt with at Beacon EmbeddedWorks were always open, always had solutions, and were never adversarial. We would certainly consider Beacon EmbeddedWorks again for work on other products we have in the pipeline."

- Head System Architect,
Customer Development Team

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Solution Continued

As a lifesaving device, our team knew that new defibrillator monitor would be subject to the most rigorous testing. We additionally wanted to perform our own initial testing before even sending the boards to the customer. Our engineers developed a functional test fixture that would make sure that each board met all of the process requirements before the customer received the boards. Once the customer had the boards and finished assembling the defibrillator monitor, they returned to Beacon EmbeddedWorks to facilitate end unit testing on the new devices.

Results

Upon its release, the new Wi-Fi enabled defibrillator boasted a 60% smaller size and a 35% lighter frame than other products on the market.

With a successful device on the market, the company returned to our team to help on their second generation product. The second generation would add additional memory as well as audio recording capabilities. We have since made these updates by redesigning the board to include these additional functionalities. The second generation defibrillator monitor was released to the general public within 2 years of the initial design's release. Continually satisfied, the customer continued working with Beacon EmbeddedWorks on other medical device projects.

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