



# Helping to Restore Vision to Blind Patients

CASE STUDY

## Summary

A medical device innovator came to Beacon EmbeddedWorks to develop a solution to restore vision to people who are affected by blindness. Leveraging the Torpedo + Wireless SOM, the project succeeded in delivering a first-of-its-kind vision solution. With over 350 successful applications of the device, the customer has continued to work with Beacon EmbeddedWorks to develop their next generation solution.

## Challenge

People with retinitis pigmentosa (RP) experience a breakdown of cells in the retina. This can cause severe vision impairment, impacting patients' quality of life. Our customer develops groundbreaking implantable medical solutions that deliver useful artificial vision for patients with RP. The device utilizes an ocular implant that receives wireless signals from a pair of eyeglasses and subsequently stimulates remaining retinal cells to restore visual function.

The first-of-its-kind device required a powerful embedded solution. The microprocessor needed to deliver powerful processing to interpret data from the camera mounted on the glasses. Wireless capabilities would be essential to transmit impulses to the implanted retinal stimulator. The chosen SOM must also be compact enough to be embedded in the glasses that would be worn comfortably.

## Customer Profile

This industry leader in implantable visual prosthetics works with Beacon EmbeddedWorks to deliver multiple lines of neuromodulation implants. Their technology mitigates blindness, helping to restore vision and improve quality of life for blind users.

## More Information

### Beacon EmbeddedWorks Case Studies

Additional Case Studies are available through our website. [beaconembedded.com/case-studies/](https://beaconembedded.com/case-studies/)

### 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

The customer trusted Beacon EmbeddedWorks to deliver a SOM that would meet these stringent device requirements, but they further required a solution that would have an extended product lifecycle. Rigorous clinical trials, testing, and certification processes extend the time-intensive process of bringing a medical device to market. Once the solution made it to market, our customer needed to be sure it would be supported for years to come.

## Solution

The Beacon EmbeddedWorks Torpedo + Wireless SOM delivered the unwavering reliability, processing power, and connectivity to get the job done. The feature-dense chip was less than 1 square inch in size and could be fit into the glasses without compromising their compact design. Our SOM satisfied all project needs to develop an innovative solution that would meet stringent regulatory requirements.

All Beacon EmbeddedWorks SOMs carry long product life-cycles, including the Torpedo + Wireless SOM. But with the high potential to improve patient quality of life, our customer wanted to ensure the SOM would be supported for the long term. Our team worked with the customer to anticipate component obsolescence, taking advantage of a consignment inventory strategy to ensure long-term component availability and subvert component end-of-life. Our reliability and support throughout the entire product lifecycle allowed our customers to focus on their mission, restoring useful vision to the visually impaired.

## Result

The final device received approval by the FDA and CE for patients in the US and Europe. It was the first optical implant to receive regulatory approval and has since successfully restored vision to over 350 people. The success of the project and use of our SOM has facilitated an ongoing relationship between the customer and Beacon EmbeddedWorks.

Currently, the customer is developing its next generation implantable vision solution, with the help of Beacon EmbeddedWorks. This cutting edge solution will utilize an implant directly to the brain's visual cortex. This new solution will restore unimpaired vision while also serving a broader range of patients who suffer from blindness. Through bypassing the ocular system, the device can treat RP, glaucoma, nerve injury, and eye injury. The customer has accelerated the development process to bring this device to those who need it, sooner. Currently on track to gain FDA approval and a candidate for the FDA Breakthrough Devices Program, the project stands to further improve the lives of the visually impaired.

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