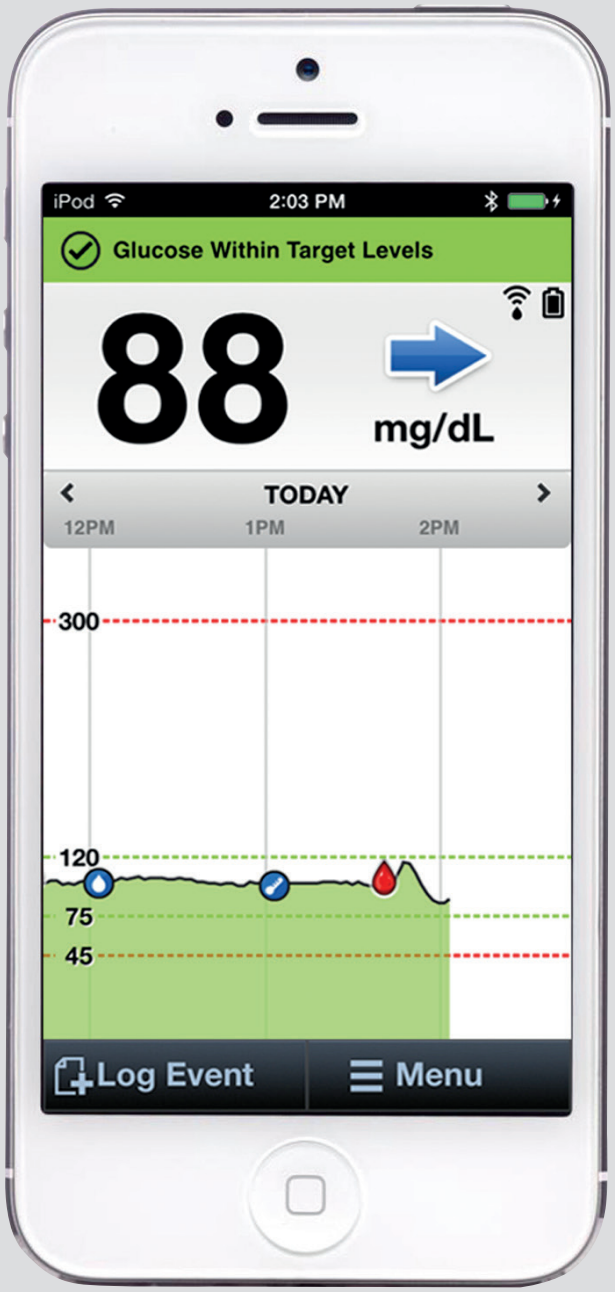
sagentia

Senseonics

Improving connectivity between a medical mobile app and an implantable sensor



a **science group** company

Senseonics partnered with Sagentia to rapidly resolve iOS Bluetooth Low Energy connectivity issues for Senseonics' medical iOS app which interfaces to a wearable Senseonics transmitter & implanted glucose sensor.

Background

Senseonics is developing a novel implantable continuous glucose monitoring system. The system consists of an implanted micro-sensor based on a fluorescent glucose-indicating polymer, and a receiver worn on the skin over the sensor site, which provides power to the sensor, receives the raw signal and processes the data using embedded software. The final glucose result is then transmitted via Bluetooth Low Energy (BLE) to a smartphone (iOS) app, where the user or the physician can review glucose reading trends in the context of logged events, such as insulin boluses and meal-times.

Challenge

Senseonics worked with various App development teams prior to partnering with Sagentia. The iOS app suffered from low bandwidth and poor user interaction for BLE connectivity. Sagentia was asked to solve the bandwidth and connectivity issues and provide possible solutions for enhanced user experience.

Approach

Working in partnership with Senseonics, we initially focused on the Bluetooth LE communications issues and conducted a system level review of the transmitter hardware, transmitter firmware and app software. Through this analysis, we were able to identify and resolve the origin of connection drop-outs and low data rates. We also recommended and implemented several UI improvements encompassing iOS design rules and medical device usability standards. As the app was intended to be regulated as a medical device, we contributed updates to the existing documentation required to ensure the FDA-regulated app was compliant with Senseonics Quality and with the relevant standards.

Benefits

The final system was delivered within three months in time for a clinical trial of the first generation product. During this programme of work, we resolved connectivity and bandwidth issues through fixes on the hardware side and the app itself. We established an extremely fast and reliable communication between the app and the embedded device, yielding a 10x bandwidth improvement.

"Sagentia provided tremendous value in the implementation of the novel Bluetooth Low Energy Technology utilized in Senseonics' Medical Mobile App. Sagentia offered to bring in the subject matter expert to meet the company's aggressive timeline & partnered effectively with a start-up medical device company like ours."

Tim Goodnow CEO, Senseonics

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