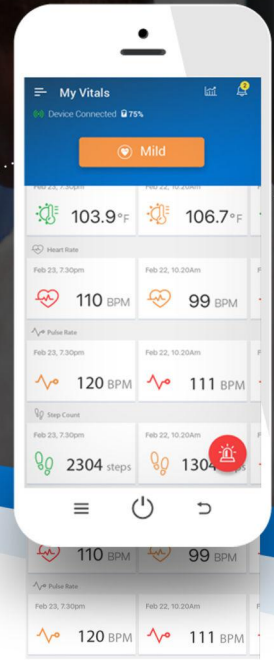


Wearable Technology - Saving lives by triggering proactive treatment at the right time.



About Health Sensei

HealthSensei India Pvt Ltd, is a tech-savvy group of medicine practitioners, and their aim is to reduce the mortality rate among patients ailing through chronic diseases.

Health Sensei's Requirements

HealthSensei, with an aim to redefine the way treatments for chronic diseases are given, wanted to use wearable devices to detect vital signs (Heart Rate, Body Temperature and Blood Oxygen Saturation) of patients, send panic alerts from a patient's mobile if the health vitals cross the normal values to doctors and guardians' so that medical professionals can reach out and save a patient's life at the right time.

The Challenge

Finding a perfect connectivity standard for pairing the wearable device with a patient's ID was a tough part as there weren't proper wearable devices in the market and proper connectivity standards for devices.

Creating an algorithm to connect multiple wearable devices with a single patient ID to extend the capabilities of health vital monitoring was a pioneering effort initiated by Contus.

Providing multiple options for setting off the panic alerts from a patient's smartphone to doctors, guardian and Health Sensei coordinators.

At A Glance

Health Sensei, a group of medical experts united by a noble thought of saving human lives through their human health activities, wanted to better the way chronic diseases are treated through remote monitoring and improve the opportunities of saving a patient's life by providing on-demand and emergency medical aid.

Using wearable technology and mobile apps, Contus etched a system that connects patients with doctors and their loved ones so that health status of a patient at any given time can be monitored and proactive help is provided where lives are saved at the right time.

Industry

Healthcare



Xamarin



DevOps



Microservices



AWS Cloud

Contus' Solutions

To begin with, Contus came up with mobile apps for 3 different tiers of users namely, 'Patients', 'Doctors' and 'Guardians' or 'Health Sensei Coordinator' with several utility features for patient's app and monitoring features for apps built for doctors and guardians.

In order to establish the connectivity between the patient ID (mobile app) and wearable device, Contus chose **Bluetooth Low Energy (4.2)** as it helps in seamless transfer of communication and control signals and with less battery consumption.

To achieve multiple device sync with a single patient ID, Contus derived a perfect solution which is creating an **'Independent' Bluetooth layer**. This layer was programmed based on an algorithm written by Contus' connectivity engineers in order to achieve compatibility towards any devices that's connected to a patient's mobile app.

Apart from the initial pairing and device settings, the app was given utility features like:

Medicine Adherence

Medicine Adherence helps patients have doctor's prescription in a digital format in the app. Every change of medicine or doctor's advice can be stored easily for any time reference. Complementing this feature, patients were given a reminder and alert settings feature to remind them of timely medicine intake.

Panic Alert

Panic Alert sets off alert messages to doctors, guardians and coordinator in charge of a patient, simultaneously. Based on the threshold limits set for each health vitals, the device sends an alert-triggering signal to the mobile app which in turn calls for the necessary help. The contact numbers can be stored in the app and alerts can be send as text messages and voice calls as well.

Key Result

With data on vital stats of patients, Health Sensei team are now able to act in advance to prevent diseases from aggravating and provide life saving help in case of emergency.

The medical experts team of Health Sensei are now able to monitor health vitals from multiple patients in a single dashboard and observe patterns in depth which improved their treatment techniques.

Team Health Sensei have added more devices to their portfolio of vital stats monitoring which paved way towards treating much more chronic diseases.

Technologies Involved

- OS - Linux & Android (mobile)
- Web Server - Nginx
- Database - Sqlite, Mysql 5.5
- Server side script - PHP 5.5
- Server side framework - Laravel 5.2
- Client side framework - AngularJS, Bootstrap
- Mobile Script - Android
- Web client side framework - Angular JS
- Data Interchange format - JSON
- Cloud platform - AWS Service
- Security - Access Token, CSRF
- BLE Connectivity - Device

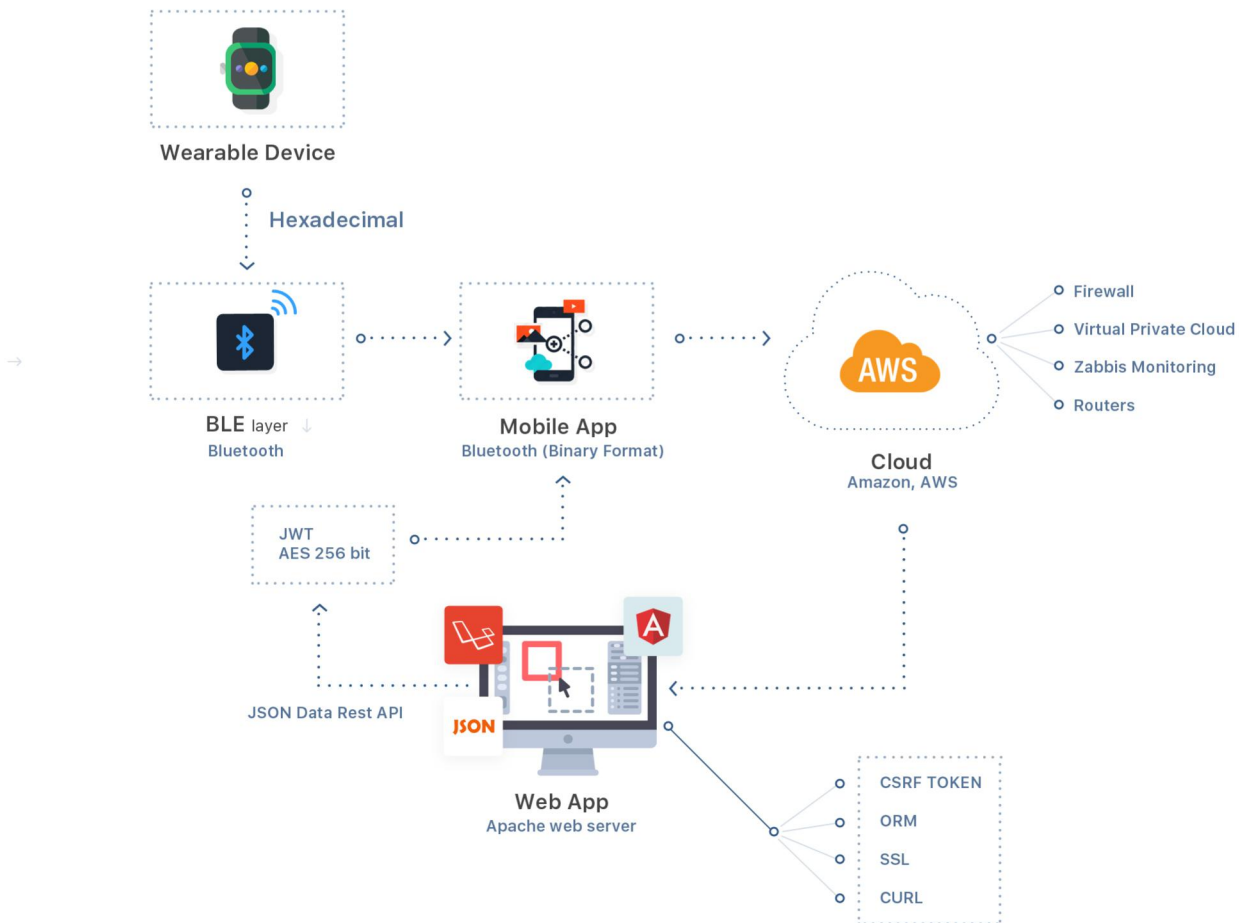
Google Map

When doctor, patient coordinator or guardian of a patient receives an alert call, the current location of the patient is indicated in Google Maps so that helpers can rush to the exact location of the patient.

Dashboard

Health vital stats sent from wearable devices to the mobile app are extracted and sent to AWS cloud. The web end for doctors was facilitated with a dashboard which helps in analyzing the accumulated data from different users for knowing patterns and understand changes better.

HIGH LEVEL ARCHITECTURE



Result

Achieving a sync between wearable devices, app and cloud for seamless exchange of information was a technical breakthrough.

The wearable technology based app developed by Contus met the complex demands of Health Sensei enabled the health care center to achieve continuous and remote monitoring of patients health, especially in case of chronic ailments and create an well-connected circle for on-demand medical help, 24/7.

Having achieved a flawless connectivity through a customized Bluetooth layer, Health Sensei is now having the freedom to try out different devices to monitor health vitals and eventually increased the number of devices that are paired to extend the capabilities of monitoring apart from Heart Rate, Body Temperature and Blood Oxygen Saturation.

About Contus

Contus is a SMAC company having its headquarters in Chennai, India and also operates from overseas locations including California - Sunnyvale and Georgia - Atlanta, USA. Delivering Mobile, Cloud, Social and Analytics solutions for companies ranging from startups to multinational corporations and public sectors through 200+ tech brains in 40+ countries, Contus provides advantage to its clients on scale, cost and geography.

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