An IoT Based Health Assistance Mobile Application for a Healthcare Organization

Customer: A not-for-profit healthcare system committed to patient care, research, teaching, and service to the community locally and globally.

Industry: Non-profit healthcare organization

Services:
Custom Software for enterprise mobility, Internet of Things (IoT), Microsoft .NET

Business Needs

The not-for-profit healthcare system creates and validates technology-enabled solutions that empower patients and providers to transform healthcare service committed to patient care, research, teaching, and service to the community locally. They leverage smart devices like smartphones, tablets, wearables, sensors, and remote health monitoring tools to deliver quality patient care outside of the traditional medical settings. They used various medical devices and applications to capture patients' health data like blood glucose level, blood pressure, weight, and other activities and update them on the Validic portal, a cloud-based healthcare data aggregator that connects patient-recorded data from digital health applications, devices, and wearables manually which is further used by healthcare companies. Validic also has its own marketplace where patients can find various devices and applications for capturing and storing their health data.

The healthcare system's major requirement was to automate the process of collecting patient generated health data and updating it on Validic. They wanted to develop a mobile app that easily integrates with various medical devices and health applications, captures and updates patients' health data on Validic automatically such that doctors, wellness centers, and pharmaceutical companies can

consume the data for further research. Moreover, they also required a custom middleware web application for managing hospitals' and patients' records as well as their health data which can be used by their executive team for various analysis.

The mobile app also had a requirement to integrate with various medical devices including VitalSnap devices, Bluetooth Low Energy (BLE) enabled devices, and HealthKits (Samsung and Apple).

The desired end-result was to provide an additional channel of communication direct to patients who visit their numerous facilities resulting in improved patient care.

Solution and Approach

In order to avoid manual entries on Validic and automate the process of syncing patients' health data, Synoptek developed two separate mobile apps for the healthcare system – native Android and iOS apps.

We consumed APIs exposed by Validic to sync the health data automatically using the mobile app.

Initially, when the mobile app is installed on the patients' mobile device from the Google Play Store or Apple Store, they need to register themselves, a one-time process, filling their general profile details and their medical record number (MRN). The MRN numbers as well

as a few standard details of all existing and new patients already

exist on Validic and the healthcare system's database. Therefore, once the patient registers on the mobile app his/her details syncs with the existing details on Validic through MRN.
The major functionality of the app is to capture readings of a patient's health like blood glucose level, blood pressure, pulse, weight, and other activities like steps, and others from medical and smart devices and sync them with Validic. The app is integrated with various VitalSnap devices, Bluetooth devices, Samsung and Apple HealthKits, and Validic marketplaces. The app also supports other devices like Omron Series, Abott, A&D UA-651, Life Scan OneTouch, and marketplace apps like Dario Health, Fitbit, Garmin Connect, iHealth, Jawbone UP, Misfit Wearables, Nokia, Omron Wellness, Polar, Striiv, and Telcare.

The app captures/scans the health data readings from these devices using the camera of the mobile device and sends it to the Validic portal using APIs and updates the patient's data automatically. Here, the concept of IoT comes into picture, when the readings are captured. IoT enables real-time monitoring of the patient's health, automating the entire patient care workflow.

Synoptek also developed a .NET based web application for the healthcare system which is again integrated with the mobile app. Like Validic, the web application also stores a patient's records including their MRN. Then the patient's health data are synced with the web application through the mobile app. This data is utilized by the healthcare system's management to perform various patient health analysis and provide insightful inputs. The web application is also used for master data controlling, device management, and hospital management. It can be used to communicate with a group of/any particular patients belonging to any hospital (which are registered under the integrated healthcare system) by sending notification messages on their mobile devices.

Business Results

The mobile app can be considered as a revolution for healthcare, which can be used for proactive monitoring, quicker action for patients, and accurate and timely diagnosis, ultimately saving lives.

Using Validic APIs all the latest features can be incorporated in the mobile app which has made it useful for patients, doctors, and hospitals, ensuring complete control over their health data stored at a centralized location.

The data on both Validic and the web application can be used for medical analysis using reports, checking a patient's health history, and real-time remote monitoring and consultation.

Doctors can view their patient's health data in the EHR and have round-the-clock visibility into how their patients are doing and can catch early signs of problems and take preventive actions. In some instances, they can assess cases and provide care without the need for a real-time or live interaction.

Patients can easily synchronize their readings in online and offline modes to enable data continuity and technical interoperability.

The concept of IoT has proved to be a boon for the healthcare system. It captures the data accurately and prevents data loss, helps in decision making, and provides on-time treatment, generates analytics and data-driven insights, and builds end-to-end connectivity between patients and doctors.

With this mobile app, the healthcare system positions itself as a forward-thinking organization that provides the highest quality of services and care for its patients.

About Synoptek

Synoptek is a Global Systems Integrator and Managed IT Services Provider offering Comprehensive IT Management and Consultancy Services to organizations worldwide. Our focus is to provide maximum "business value" to our clients enabling them to grow their businesses, manage their risk/compliance, and increase their competitive position by delivering improved business results.