ISHIR provides Remote Patient Monitoring (RPM) to a Healthcare device manufacturer

Client
The client is a leading medical and health care device manufacturer in U.S.

Challenges
The client wanted to enhance healthcare services, and scale beyond physical beds and in-patient care by allowing patients and clinician/hospitals to be equipped with smart healthcare devices. They wanted these devices to be managed remotely via smart phones and tabs. They had the following requirements:

- To deal with increased number of 30-days hospital readmission cases due to Patient's negligence after discharge
- To increase accuracy, frequent data monitoring, which is a major challenge in traditional approach where monitoring can be done for IPD (In-house Patient Department) cases only
- Reduce the scope of human errors due to dependency on manual intervention
- Reduce the challenges faced due to travelling to remote locations, and reduce the need for physical presence of patients
- For critical cases or illness, if there is any demand for a second opinion or some expert advice, then there are too many challenges on how to share the Patient's details/vitals with the specialist at remote location
- Reduce the increased medical expenses

Solution
ISHIR's IoT team built a Remote Patient Monitoring (RPM) system for the client. It is frequently used for the elderly and the chronically ill, two groups of people who have high levels of medical need and require regular medication. Remote monitoring techniques allow these patients and their physicians to closely monitor medical conditions and, if need be, intervene.

The team built a solution by using Azure's IOT capabilities that was capable of enhancing healthcare services to scale beyond physical beds and in-patient care by allowing patients and clinician/hospitals to be equipped with smart healthcare devices to be managed remotely via smart phones and tabs.

High-Level Architecture

Architecture
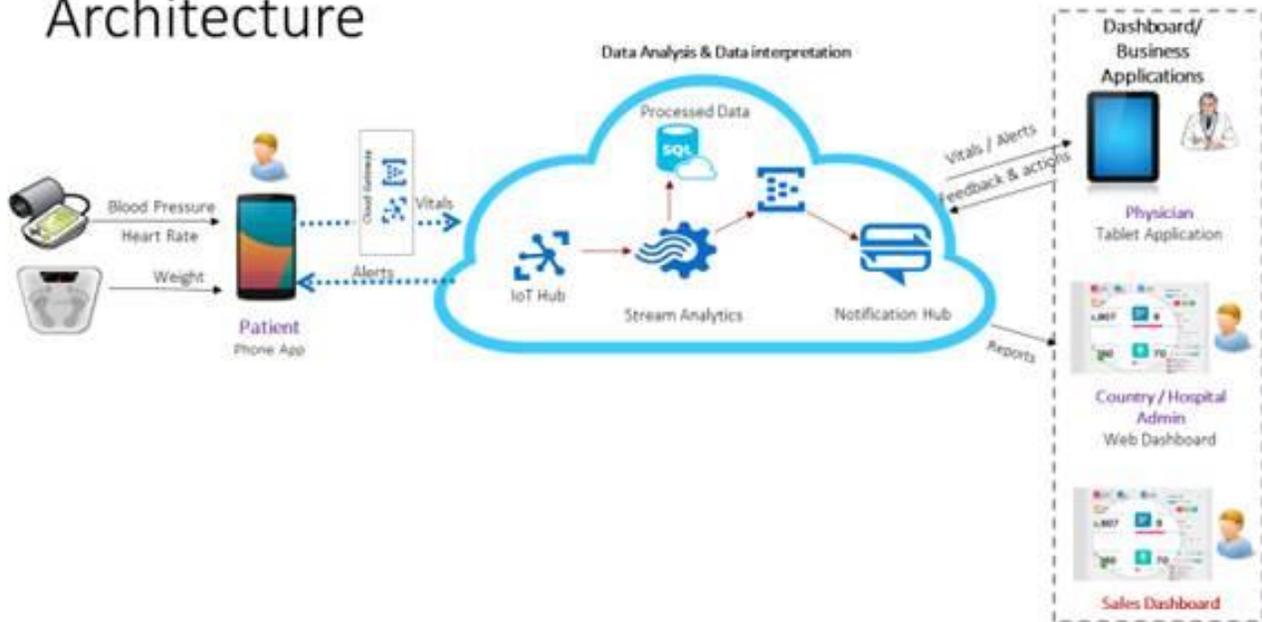
The solution consists of the following key components:

- Patient App
- Physician app
- Hospital admin web dashboard
- Data Analysis & interpretation Services

Patient App Dashboard

Mr. Jonathan
Diabetic, Heart Patient, 35 years

SCHEDULE

ALERT

REPORT

VITAL

MY PROFILE

PRESCRIPTIONS

APPOINTMENT
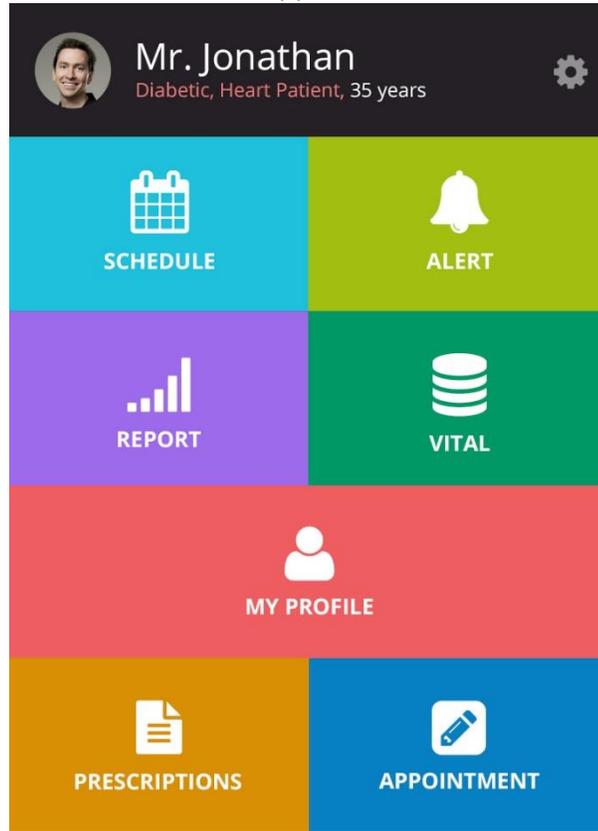
Physician App Dashboard

Dr. Cameroon
Heart /Cardiac Specialist

SEARCH

ALERT

MY PROFILE

8
CRITICAL PATIENT

PATIENTS LIST

5
APPOINTMENT

UPCOMING APPOINTMENTS

Bruce 35 yrs   9:00 AM
Left Leg Broken

Alice 57 yrs   11:00 AM
Heart Problem

George 30 yrs   2:00 PM
Eye Visibility

Kayne 48 yrs   4:00 PM
Stress

Jenny 38 yrs   8:00 PM
Right Hand Broken
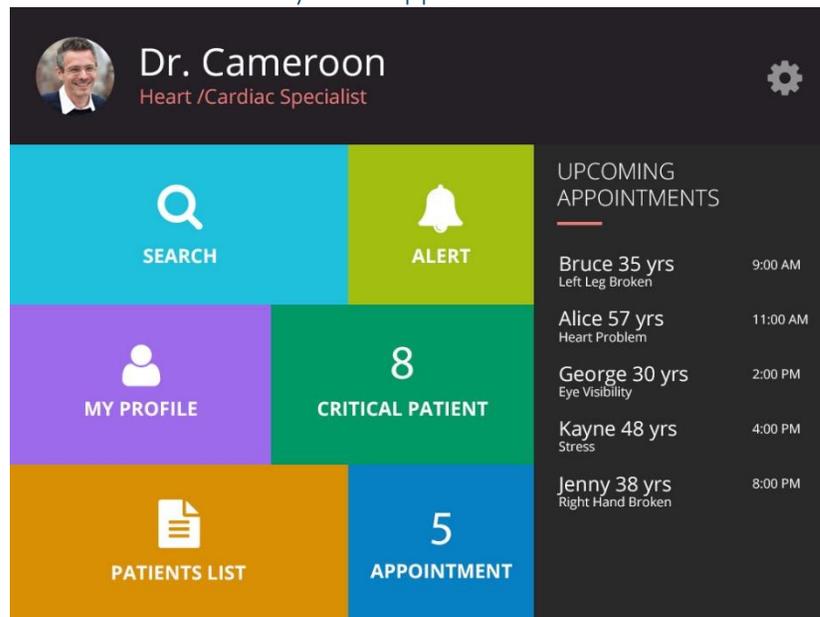
RPM Solutions includes daily monitoring devices such as glucose meters for patients with diabetes, and heart or blood pressure monitors for patients who receive cardiac care, and activity tracking devices. Data can be sent to a physician's office by using a smart device or by using a special software application installed on the patient's Internet-capable computer, smartphone or tablet PC.

The data that is sent by patient gets used for real-time analytics to generate alerts and notifications in real time to take quick actions, if any anomaly gets detected. Data also gets stored in a persistent relational database so a healthcare professional can view the data as a specific instance or as a trend based on historical data. This data can get used in any kind of historical analysis as well, whenever needed.

Every industry has to comply with certain standards and healthcare industry has to adhere to the following standards that are most critical. The devices usually come with an inflated cost to market as the cost incurred on regulatory approval process has to be included in the device cost.

The ISHIR team ensured that the following standards were adhered to.

FDA approval: For any medical software or device (meant to cure diseases or prevent a disease), it is essential to gain FDA approval according to language in section 201(h) of the Federal Food, Drug, and Cosmetics Act.

HIPAA: The data that RPM stores or transmits is accessed or owned by a HIPPAA compliant entity, then it adds an additional need to be compliant to HIPAA. Remotely transmitting of data needs high level security and any breach can cost as high as $ 50,000.