Plus Health System Vision Document

# Technical Report Version 1.0

# Revision History

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| --- | --- | --- | --- |
| Date | Version | Description | Author |
| 01/30/2019 | 1.0 | Preliminary version of the Plus Health Application. Has Stakeholder Needs and other documents | B. Ruwali |
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# Table of Contents

## 1 Introduction

### 1.1 Purpose

The purpose of this document is to collect, analyze and define high-level needs and features of the Plus Health App. It focuses on the needs of stakeholders, and the target users, and why these needs exist. Use cases and supplementary specifications define how the app fulfils the needs. This document also focuses on the app benefits the app owners.

### 1.2 Scope

This Vision Document applies to the Plus Health application. Our team will develop the Plus Health Applicaiton (PHA) which consists of client-server system to store patient data, host websites and apps. PHA makes it easier for a person to be healthy, makes it easier for hospital and doctors to directly track a patient's health and communicate with patients swiftly. PHA helps a patient to keep track of his symptoms and predict the disease according to it and makes it possible for patients to seamlessly schedule an appointment with doctors.

### 1.3 Definitions, Acronyms, and Abbreviations

PHA – Plus Health Application

App – Application

GCP – Google Cloud Platform

RNN – Recurrent Neural Networks

### 1.4 References

IBM Knowledge Center

## 2 Positioning

### 2.1 Business Opportunity

Patient and doctor relationship are an important aspect of any health services. This can involve doctor being able to access real time data about patients’ status automatically or when the patients enter it. Health Community includes many possible users including health enthusiast, patients, doctors and health service workers. Simulating their presence that open doors to many other possibilities. The primary users of PHA can enter their symptoms and get the name of probable disease in real time using RNN Machine Learning training already adopted in the market. They can view the possible medication and nearest doctor’s office’s location for the specific result. PHA is designed to be installed by hospitals, doctors, patients and health enthusiast.

### 2.2 Problem Statement

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| --- | --- |
| The problem of | A lack of software/application to track patients in real time and minimally disease and medication |
| affects | Patients, Doctors, Health enthusiasts |
| The impact of which is | Inability of know a probable disease or what symptoms imply beforehand and inability of keep track of patients with critical disease |
| A successful solution would be | Useful and cost-effective health monitoring interface for patients and doctors. The product will support simulating the presence of the health enthusiasts. The product will be able to correctly predict the disease with a list of symptoms and recommend medication according to it. It will be able to refer closest doctor’s office of a kind of diagnosis or as specified by the user. |

### 2.3 Product Position Statement

|  |  |
| --- | --- |
| For | Patients, Doctors, Health enthusiasts |
| Who | Wants to keep track of their health or disease or get a diagnosis of their disease according to the symptoms or those who want to track patient’s health in real time for critical diseases |
| Plus Health Application (PHA) | Is a software product |
| That | Provides the ability to monitor health of patients with critical diseases, to simulate the presence of the health enthusiasts, to correctly predict the disease with a list of symptoms and recommend medication according to it and to refer closest doctor’s office of a kind of diagnosis or as specified by the user. |
| Unlike | Current available monitoring systems that do not support continuous/real time tracking of patient's health, current symptoms tracker than cannot predict disease and recommend medication according the the prediction or refer to a doctor according to a disease |
| Our Product | Is useful and cost-effective health monitoring interface for patients and doctors. The product will support simulating the presence of the health enthusiasts. The product will be able to correctly predict the disease with a list of symptoms and recommend medication according to it. It will be able to refer closest doctor’s office of a kind of diagnosis or as specified by the user. |

## 3 Stakeholder and User Descriptions

### 3.1 Market Demographics

The target market segment includes earning adults, patients, hospitals and health enthusiasts. The user of PHA is anticipated to be consumers who already use cell phone on a regular basis for personal and/or business use and/or use laptops/computers to use the internet. App will be available in app store, google play store and web for free. Doctors who want to track patient’s in real time will have to pay certain per patient and patients as well.

### 3.2 Stakeholder Summary

|  |  |  |
| --- | --- | --- |
| Name | Description | Responsibilities |
| Requirement Specifier/Systems Analyst (IS) | A stakeholder who will work with the stakeholders of PHA to gather their needs | Leads and coordinates requirements elicitation and use-case modeling by outlining the system’s functionality and delimiting the system; for example, finding out how the app users will use (use cases) the app to enter systems to get the likely disease associated with it |
| Technical Reviewer/ Software Architect/ PM | A stakeholder who will maintain and lead SDLC | Give feedback on process and requirements, design and implement project, allocate resources and keep the team focused. |
| Market Analyst | This is a stakeholder that will assist our abilities to position our product successfully | Ensures that there is going to be a market demand for the product’s features and for the new service |

### 3.3 User Summary

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| --- | --- | --- | --- |
| Name | Description | Responsibilities | Stakeholder |
| Patients | Primary end user of the system | Connect with the internet, enter symptoms, connect with the devices that monitor the health (such as Fitbit), schedule meeting with doctors, sign up with hospital/doctor to be tracked | Self, doctor (We will have sample user to evaluate out design) |
| Health Enthusiasts | Primary end user of the system | Connect with the internet, enter symptoms, connect with the devices that monitor the health (such as Fitbit), schedule meeting with doctors | Self(We will have sample user to evaluate out design) |
| Doctors | Primary end user of the system | Have the patients sign up for the tracking/monitor, install app the view entered symptoms and the have continuous access of patients | Self, Patients(We will have sample user to evaluate out design) |
| Developers | End user of the system | Develop, design and maintain the app | Self |

### 3.4 User Environment

The users access the PHA remotely and locally. Remote access is wireless through web application and local access is through their mobile device (Apple, Android or Windows)

### 3.5 Key Stakeholder or User Needs

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| --- | --- | --- | --- | --- |
| Need | Priority | Concerns | Current Solution | Proposed Solutions |
| Secured Access | High | Management of private user information | None | Manage user access with password with encryption or two factor authentications |
| Scale | High | Develop apps for multiple device for access | None | Develop numbers of solutions for web, iOS and Android devices |
| Easy to use | High | Easy to use navigation | None | Develop user friendly and intuitive interface no matter the device |
| Responsive | Moderate to High | Ability to rely on third party communication links (APIs) | None | Use fast and success platform like GCP for responsiveness |
| Flexible | Low to Moderate | Customization is focused more in later versions | None | Single or similar interface for each channel at the beginning |

## 4 Product Overview

### 4.1 Product Perspective

Network diagram for the system will be provided within the first iteration.

### 4.2 Summary of Capabilities

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| --- | --- |
| Customer Benefit | Supporting Features |
| Convenient, flexible access to the system | Wireless access through mobile device or through internet in web browser (iOS, Android, Desktop Browser) |
| Secured Access to the system | Authentication with encryption (access control) |
| Quick System Response | Code optimization and use of GCP |
| Tracking the symptoms | Ability to take text input and save it in the device and in the cloud |
| Predicting the disease | Connect to the API for disease prediction and red flags (critical symptoms) |
| Monitor Health of Patients | Symptoms Communication with the doctor  After the patients sign up for health monitoring, data that customer enter as text or photo as input for the symptoms will be automatically be sent to the doctors.  IOT  IOT connectivity allows users to get blood pressure and heartbeat data to the phone which could be communicated to the doctors |
| Monitor Health for Doctors | Doctors’ interface allows them to directly track their patients’ health and status |
| Find the medication | Medication recommendation is given according to the symptoms and the predicted disease |
| Find the doctor’s office | According to the symptoms and diagnosis, doctor’s office will also be recommended, user have ability to directly schedule an appointment |
| Scalable | Supports the monitoring and controlling of many patients and users |

### 4.3 Assumptions and Dependencies

Mobile app development platform is yet to be decided. GCP will be used for cloud-based hosting. Agile Extreme Programming will be used as software engineering approach. There will be 6 iteration each of 2 weeks.

### 4.4 Cost and Pricing

TBD. Hospitals and doctors will be according to the usage.

### 4.5 Licensing and Installation

GCP programming will be done on cloud. Node.JS and MySQL will be used for relational database. NoSQL will be used for symptoms data. Both MongoDB and MySQL are free and Node.js is open source. Visual Studio will be used for all the app development. Machine learning API calls and visualization will be done in python. So, all of these software will be necessary, and they are free.

## 5 Product Features

### 5.1 Start system

The PHA needs to be able to start up and initialize the system locally. (In turn causes the server to respond)

### 5.2 Shutdown system

The PHA needs to be able to shut down gracefully.

**The following features relate to internal app structure of patients and enthusiast.**

### 5.3 Login and Sign Up page

### 5.4 Login as Patient, Enthusiast or Doctor/Health Professional

### 5.5 Login Using Credential

### 5.6 Sign Up using Facebook, Gmail

### 5.7 Log the symptoms (Text, Picture inputs)

### 5.8 Get Disease or cause prediction according to the Symptoms

### 5.9 Ask questions about the disease to reach Certain Confidence Level

### 5.10 Display Disclaimer about Medication and Diagnosis

### 5.11 Suggest Medication and where it is available and it it’s over the counter or Prescription

### 5.12 Suggest Doctor’s Office

### 5.12 Search for Doctor’s Office

### 5.13 Schedule Appoint with Doctor’s Office

### 5.14 Call Doctor’s Office

### 5.15 Call Customer Care for the App

### 5.16 Connect IOT device to the mobile device for tracking

### 5.17 Continuous data transfer and update

### 5.xx Ability to request for an ambulance

### 5.xx Give urgency level of the symptoms

The following feature relate to the app structure for doctor/ health professional

### 5.18 Track Multiple Patients

### 5.19 Notifications of Red Flags (Critical) Symptoms

### 5.20 Connect and communicate with the Patient

### 5.21 Visual Summary and ability to mark as critical or favorite

### 5.22 Call Patient

### 5.23 Get Patient’s Data

### 5.24 Get Data from Patient’s IOT

### 5.25 Request Appointment with Patients

### 5.26 Connect and communicate with the Patient

Other Features TBD

## 6. Constraints

### 6.1 Security

Security of the PHA includes authentication, access control, data integrity, and data privacy

Authentication of the user is by username and password that needs to be encrypted

Login Notification is to be sent to user for Notification

All patient data transmission needs to be encrypted

### 6.2 Usability

Ease to use Features

Ability to request for an ambulance, to call doctors and communicate with them

### 6.3 Responsiveness

System responds quickly to user requests or changes in the environment. System responds within 1 seconds on average to local user requests and changes in the environment. System responds within 2 seconds on average to remote user requests and changes in the environment.

6.4 Capacity

Maximum of 20 Symptoms as input for prediction

Other limitations, TBD

# Appendix