



D-Health Solution Inc.

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## PROGRESS REPORT

Over the past three weeks, D-Health Solution Inc. has already completed the hardware and firmware development cycle of “Health Reporter”, an electronic device for reporting health information of human body. Also, the initial environment setup of server platform and web application of “Health Reporter” has been completed. With the exception of mobile application is currently behind schedule, other parts of the “Health Reporter” development are following the proposed schedule.

### Hardware

- 1.) Verification of the medical device standards that applied to “Health Reporter”
- 2.) Assembled Analog receiver, A/D converter and digital signal analyzer together and verified its functionalities
- 3.) Assembled all five sensors to the main platform
  - i.) Pulse and Oxygen in Blood Sensor
  - ii.) Body Temperature Sensor
  - iii.) Galvanic Skin Sensor
  - iv.) Air Flow Sensor
  - v.) Body Position Sensor
- 4.) Verification of the functionalities of all five sensors

### Firmware

- 1.) Downloaded and verified the OS on the digital signal analyzer
- 2.) Performed the firmware environment setup on “Health Reporter”
- 3.) Downloaded and modified the drivers of sensors on the digital signal analyzer
- 4.) Built the firmware to collect all six sets of data to the digital signal analyzer
- 5.) Verified the functionalities of firmware built on digital signal analyzer

## **Server and Web Application**

- 1.) Installed and setup of Apache HTTP Server and MySQL database on local PC
- 2.) Installed and configured of Apache Tomcat Application Server
- 3.) Displayed home page on the computer's own network services
- 4.) Created database schema and run query on MySQL database

## **Documentation**

- 1.) Finished Project Proposal, Functional Specification and Design Specification.
- 2.) Engineering Journals are up to date with respect to each group member

## **Requirements Analysis**

Since the Health Reporter is the medical device that can be operated by trained professionals or regular educated human, the UI of web application should be user-friendly. We have already proposed several drafts of UI part and we will make the final decision when other technical sections are finished. Also, we have already manually tested the sensors in Health Reporter and verified the sensors' safety unofficially. The final release date of Health Reporter shall remain as Apr 10<sup>th</sup> without any delay.

## **System-level Analysis**

D-Health Solution has already finished the hardware and firmware sections. Measurements of each sensor can be read directly through Raspberry Pi and displayed on the monitor of Raspberry Pi. Data can be stored as JSON object, txt file, and database file on Raspberry Pi. Based on the research, Raspberry Pi can be connected to HTTP servers using C++ HTTP libraries.

D-Health Solution team are focusing on building our website and implementing Java application on the server. Java application includes handling HTTP request sent from Raspberry Pi, insertion and query of database, creating web pages.

After performing market searching via retail store and online markets, we selected sensors which are conformed to general electronic and medical device standards. Also, the analog signal receiver, A/D converter and digital signal converter are selected by the same manner as what we performed for selecting the sensors.

We performed manual tests on the devices we ordered in order to verify the functionalities and safety are the same as what the provider mentioned in documents.

## **Remediation**

As the mobile application is currently behind schedule, the expectation of the mobile application may be changed. Based on our research and previous mobile application experience, the most risky part of Android app development would be the connection to remote server. If we want to communicate with a third party server, we need to investigate the API of that server. Because of the schedule slippage, we will drop the extended functionality such as Facebook login and focus on our own database.

D-Health Solution team will be focusing on establish the connection between Android App and our server to implement the notification functionality as it is the core functionality of this app. We will lower the User Interface expectations according to the timeline.

## **Budget**

The Health Reporter developed by D-Health Solution Inc. is following the financial schedule mentioned at the beginning of the project with acceptable range of extra cost on unforeseen equipment, which is an LED monitor with 120 Canadian-dollar cost.

## **Human Resources**

The group dynamics are in safe zone in respect to the current stage of project. All sub-groups are following the development and documentation schedule.

## **Summary**

D-Health Solution team is following their proposed schedule on most of the sections with an exception of mobile application. The devices have passed our unofficial functional requirement and safety tests. The web application is still under development and is being unit tested at the same time of partial release. The expectation of mobile application may be changed due to schedule slippage. D-Health Solution will stick to the demo deadline for completing the “Health Reporter”.