**Software and Hardware Requirement Specification**

**For**

**DigitalDashboard**

**Version 1.0 in progress**

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**Declaration of Group Authorship**

We hereby certify, that this material we now submit for assessment as an SRS report is entirely in our own words and has not been taken from the work of others save and to the extent that such work has been cited and acknowledged within the text of our work.

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**Abstract**

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**Revision History**

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| **Name** | **Date** | **Reason For Changes** | **Version** |
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# 1. Introduction

## 1.1 Purpose

## 1.2 Document Conventions

## 1.3 Intended Audience

## 1.4 Product Scope and Procedures

## 1.5 Objective

## 1.6 Occurring Issues during Development

## 1.7 Particular Approaches

## 1.8 Work Breakdown

### 1.8.1 Database and work breakdown

For our database we will be using the Firebase Real-time database. After some research it seems the Raspberry Pi and the mobile phone can both utilize Firebase and can be connected to move data around. Karan will be handling setting up the required entities from both mobile and the Raspberry Pi device to the database. Zhill will be making sure that the communication of data between the Raspberry Pi and the mobile application is working and that the data is stored in the database. Darren will be creating and modifying the FM radio (online/offline) functionality and hardware connectivity (TEA5767+amplifier connecting to our database and respond to CRUD operations accordingly). As well, a built in MP3 player; all to be used in conjunction with the LCD application.

### 1.8.2 Application and work breakdown

For our mobile application we will be working with Android Studio version 3.3. There will be 3 major components of creating the app. First one being creating a clean layout for the UI and having an aesthetically pleasing icon. The second component being the logic working correctly and having a mobile device communicating with the Raspberry Pi. Lastly getting the mobile device to push and pull data from or to the database. Karan will be handling database creation and the implementation in the application source code. Zhill will be handling some of the functionality of the application, for example, making sure the application will show the data that it got from the sensors. Darren will be handling loading online radio streams when available, and receiving, displaying and saving all local radio stations on the FM band; as well, loading potential MP3’s for the users’ device directly to the application. Our main system feature would be grabbing the speed from the accelerometer and displaying it on the screen, and having the functionality to play music all in device. For the application to run at its best performance an Android device running on 7.0.0 is required.

### 1.8.3 Hardware and work breakdown

For setting up our hardware we are going to need a practical sized enclosure for our devices which still holds its purpose of being a portable screen, also we need to attach everything together to get it all to function correctly. We are also required to create the GUI and program on the Raspberry Pi to get our application to work. Karan will be working on the enclosure and the program. Zhill will be working on the hardware portion of the sensors, making sure that it will be able fit inside the enclosure properly. Darren will be testing the prototype at each stage of development and also assisting Zhill in fabricating a new PCB with all three sensors and necessary accessories (antenna, AUX port, speakers, etc.) integrated together into a single component. For the application to run at peak performance the latest raspberry pi 3b is required.

## 1.9 References

# 2. Overall Description

## 2.1 Product Perspective

## 2.2 Product Functions

## 2.3 User Classes and Characteristics

## 2.4 Operating Environment

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### 4.1.1 Description and Priority

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## 4.2 System Feature 1

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# 5. Other Nonfunctional Requirements

## 5.1 Performance Requirements

## 5.2 Safety Requirements

## 5.3 Security Requirements

## 5.4 Software Quality Attributes

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# 6. Other Requirements

# 7. Appendix A: Glossary

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# 9. Appendix C: Calculations