BatSignal:
Software Requirements Specification

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Contents

1 Introduction

1.1 Purpose

The Software Requirements Specification for the BatSignal system describes in detail the software components running on and operating the distributed sensor network.

1.2 Scope of Development

1. Sensor Driver
   (a) Record hardware sensor data
   (b) Communicate on sensor node network
2. Command and Control Driver
   (a) Listen on the sensor node network
   (b) Communicate with Google APIs
   (c) Alert administrators when certain conditions are met

1.3 Definitions, Acronyms, and Abbreviations

1.3.1 Application Specific Definitions

Application Specific Definitions	
ACK	Definition

1.3.2 Industry Definitions

Industry Definitions	
B.A.T.M.A.N	Better Aproach to Mobile Adhoc Networking
RPi	Raspberry Pi
WiPi	Wireless network adapter for the Raspberry Pi
WIT	Wentworth Institute of Technology

1.3.3 Technical Definitions

Technical Definitions	
ACK	Definition

1.4 References

Mention books, articles, web sites, worksheets, people who are sources of information about the application domain, etc.

Use proper and complete reference notation. If this section becomes longer than one page, move the references to an Appendix and provide a pointer in this section.

1.5 Overview

A short description of how the rest of the SRS is organized and what can be found in the rest of the document.

2 General Description

2.1 User Characteristics

This section considers the needs of the anticipated users.

List critical characteristics of the system's human interfaces based on the anticipated users' characteristics.

2.2 Product Perspective

- *If the product is stand-alone, give the relationship to other products.*
- *If the product is part of a larger product, then identify its interface to the other products.*
- *Identify the product's external interfaces with its environment.*
- *If the product uses existing hardware, describe the hardware.*
- *If the product requires new hardware, give a detailed explanation of the hardware.*

2.3 Overview of Functional Requirements

Provide a short description of the functions to be performed by the software, i.e. what the product should do. This description must be in a form understandable to users, operators, and clients. The detailed requirements specifications are left to Section 3.2 in this document. If you number the Functional Requirements in a systematic manner, it will be easier for you to refer to them in Section 3.2 of the SRS, in the design document you will write later, and in the testing document (also to be written later). This should not be design-oriented, a common mistake.

2.4 Overview of Data Requirements

Describe data that are input or output from the product as well as any data that are stored within the system, for example in files or on disc. This section should only cover data requirements from the user's point of view.

Once again, this should not be design-oriented.

2.5 General Constraints, Assumptions, Dependencies, Guidelines

Include factors that impose constraints on the implementation of the software product. This can include hardware limitations or requirements, the amount of memory available, response times, policies, interfaces to other application software, networks, environmental limitations, compliance with relevant standards. This section can also provide guidance in situations when there may be more than one implementation strategy.

2.6 User View of Product Use

This section will provide a user's-eye-view of the product. This may include aspects such as narrative to describe the setting, sketches to show possible appearance of the screen, samples of the data that is stored, entered, or output, and dramatic scenarios that demonstrate the product in operation. If this section becomes longer than about two pages, then break some parts into Appendices and provide pointers from within the text of this section.

3 Specific Requirements

3.1 External Interface Requirements

- *operator/user interface characteristics from the human factors point of view*
- *characteristics required of the interface between the software product and each of the hardware components*
- *interfaces with other software components or products, including other systems, utility software, databases, and operating systems*

3.2 Functional Requirements

A detailed list of functional requirements and their descriptions.

3.2.1 Functional Requirement Template

This lists the exact template your SRS will apply in describing each of the functional components that were identified in Section 2.3. You may also look at the DFD to help you to identify your functional components. For EACH functional component, you should have a section. Each of these sections should be at least the following:

- *purpose / description*
- *inputs: which inputs; in what form/format will inputs arrive; from what sources input will be derived, legal domains of each input element*
- *processing: describes the *outcome* rather than the *implementation*; include any validity checks on the data, exact timing of each operation (if needed), how to handle unexpected or abnormal situations*
- *outputs: the form, shape, destination, and volume of the output; output timing; range of parameters in the output; unit measure of the output; process by which the output is stored or destroyed; process for handling error messages produced as output*

3.3 Non-Functional Requirements

3.3.1 Performance

3.3.2 Reliability

3.3.3 Availability

3.3.4 Security

3.3.5 Maintainability

3.3.6 Portability

3.4 Quality Attributes

4 Other Requirements

5 Use Cases

6 Project Planning and Risk Management

A Appendix