Software Requirements Specification for SE 4G06, TRON 4TB6: Hearing Aid Bracelet

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Contents

Revision History

Date	Version	Notes
October 3, 2022	1.0	Added Section 1 - Project Drivers
Date 2	1.1	Notes

This document describes the requirements for Synthesia Wear. The template for the Software Requirements Specification (SRS) is a subset of the Volere template (Robertson and Robertson, 2012).

1 Project Drivers

1.1 The Purpose of the Project

The purpose of this project is to create an inexpensive and non-intrusive hearing aid bracelet that provides an alternate channel for sound recognition for our users in their surroundings. First of all, Synesthesia Wear's main goal is to be able to provide an improved quality of life for our users by instilling within them a sense of comfort knowing that our bracelet can help alleviate their hearing difficulties in many environments. For this project, there will be 3 main aspects that must be done for its overall completion. The first one is to be able to design and create a small and lightweight bracelet that is comfortable for our users to wear while encompassing all the hardware needed for overall functionality. Simultaneously, the second aspect is one where the bracelet's sound detection is able to reliably detect as many significant sounds in our users' daily lives as possible. Lastly, an app is going to be made so that it has a user-friendly UI that is easy to use and will allow users to easily be able to configure their sound detection settings for their bracelets.

1.2 The Stakeholders

1.2.1 The Client

N/A

1.2.2 The Customers

The customers of this project would be people in the general public who would want or need an inexpensive and non-intrusive bracelet that helps with their hearing. Furthermore, people who are in loud environments may want to purchase Synesthesia Wear as well since hearing is likely obstructed and sound recognition through touch/vibration would be very appealing.

1.2.3 Other Stakeholders

The Developers: The developers of this project are the members of Strone. Our job is to develop a bracelet that is capable of assisting in the sound recognition of users within their surroundings. Throughout this project's entirety, we will test and change/improve aspects that we may deem necessary.

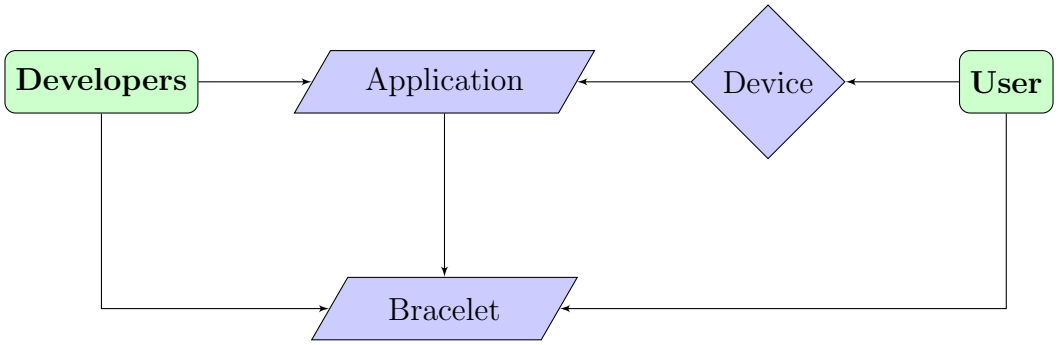
1.3 Constraints

1.3.1 Solution Constraints

The Synesthesia Wear application should be able to run on many computers, laptops, and phones. For phones, the application will be supported on IOS and Android OS. Furthermore, for laptops/computers, the application will be supported by macOS and Windows OS. With all this in mind, it is assumed that implementing for other mobile/laptop/computer OS's would be unprofitable and wasteful to maintain.

1.3.2 Implementation Environment of the Current System

Figure 1: Implementation Environment



1.3.3 Partner or Collaborative Applications

Synesthesia Wear does not have any partner or collaborative applications. However, it does rely upon the fact that the user is using the application on a device that supports IOS, Android, macOS, or Windows OS.

1.3.4 Anticipated Workplace Environment

There is no specific anticipated workplace environment for this product. Ideally, this bracelet and corresponding app can be used anywhere so long as they have a device that supports IOS, Android, macOS, or Windows OS.

1.3.5 Schedule Constraints

It has been decided that this project is to be completed by the week of April 5th, 2022. As a result, this project's scheduling will be executed over a timespan of a bit more than 7 months.

1.3.6 Budget Constraints

For this project, the budget has been dictated to be no more than $ 750 from the entirety of all group members. With this in mind, there is no issues with the application as all software tools and resources are expected to use open-source material found online. Thus, most/all of the budget will likely be spent towards designing and creating the lightweight, non-intrusive, and comfortable bracelet.

1.3.7 Enterprise Constraints

The finished application will be available for anyone to use. However, the Synesthesia Wear bracelet will need to be purchased as it costs money and time to buy all the components and build it.

1.4 Naming Conventions and Terminology

1.4.1 Definitions of All Terms, Including Acronyms, Used by Stakeholders Involved in the Project

Table 1: Definitions

ACRONYNM/ABBREVIATION	INTENDED MEANING
SYWR	Synesthesia Wear
UI	User Interface
OS	Operating System
Etc	Et Cetera
Wi-Fi	Wireless Fidelity
IDE	Integrated Development Environment
GL	Gitlab
Product	The bracelet and appliction being developed as a whole, in its finished state
Project	The development of the bracelet and application
Customer	Ther person(s) that will use the finished product

1.5 Relevant Facts and Assumptions

1.5.1 Relevant Facts

There are a few rules that the team must adhere to during the development of this project. Firstly, each developer must attend the group meeting before the submission of a deliverable to ensure that everyone has given their opinions and approval of the work, sort out any discrepancies, correct errors, and then satisfactorily submit with some time to spare. Furthermore, another rule that must be adhered is the fact that each developer has the right to question and ask for further explanations from others on their work. This is because both/all parties' work is related in some way or another and so the extra clarification and effort would be to all developers' benefit.

1.5.2 Assumptions

The developers are assuming that all software resources that will be used in the creation of the project will be open source software that is free for us to use. Furthermore, it is assumed that the majority/all of our users will have access to a device that supports macOS, Windows OS, IOS, or Android OS.

2 Functional Requirements

Definitions of All Terms, Including Acronyms, Used by Stakeholders Involved in the Project. Definitions of All Terms, Including Acronyms, Used by Stakeholders Involved in the Project Definitions of All Terms, Including Acronyms, Used by Stakeholders Involved in the Project. Definitions of All Terms, Including Acronyms, Used by Stakeholders Involved in the Project in

2.1 The Scope of the work and the Product

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Requirement No	FR-001
Description	The device is able to pick up sounds in the environment of the user.
Fit Criterion	The data received by the device shall match the sounds supplied to the device's surroundings.
Dependencies	N/A

Requirement No	FR-002
Description	The device has to be able to classify different sounds.
Fit Criterion	Will compare test sounds and the device classifications shall match the true classification of the sounds.
Dependencies	FR-001, FR-003

Requirement No	FR-003
Description	The device has to be able to set or change its classification.
Fit Criterion	The sound classifications shall match the sent classifications.
Dependencies	N/A

Requirement No	FR-004
Description	The device is able to provide feedback to the user.
Fit Criterion	The feedback should alert the user that the device is trying to communicate some information.
Dependencies	N/A

2.1.1 Context Diagram

2.1.2 Individual Product use Cases

2.2 Functional Requirements

3 Non-Functional Requirements

3.1 Look and Feel Requirements

3.1.1 Appearance Requirements

3.1.2 Style Requirements

3.2 Usability and Humanity Requirement

3.2.1 Ease of Use Requirements

3.2.2 Personalization and Internationalization Requirements

3.2.3 Learning Requirements

3.2.4 Understandability and Politeness Requirements

3.2.5 Accessibility Requirements

3.2.6 Convenience Requirements

3.2.7 Performance Requirements

3.2.8 Speed and Latency Requirements

3.2.9 Safety-Critical Requirements

3.2.10 Precision or Accuracy Requirements

3.2.11 Reliability and Availability Requirements

3.2.12 Robustness or Fault-Tolerance Requirements

3.2.13 Capacity Requirements

3.2.14 Scalability or Extensibility Requirements

3.2.15 Longevity Requirements

3.3 Operational and Environmental Requirements

Requirement No	FR-005
Description	The feedback provided is the appropriate feedback.
Fit Criterion	The feedback shall convey what signal classification was detected.
Dependencies	FR-002, FR-004

3.4.2 Supportability Requirements

3.4.3 Adaptability Requirements

3.5 Security Requirements

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3.5.1 Access Requirements

3.5.2 Integrity Requirements

3.5.3 Privacy Requirements

3.5.4 Audit Requirements

3.5.5 Immunity Requirements

3.6 Cultural Requirements

3.6.1 Cultural Requirements

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References

Reflection Appendix

Please include an Appendix in your SRS documents that reflects on the graduate attribute of lifelong learning. The reflection should answer two questions:

What knowledge and skills will the team collectively need to acquire to successfully complete this capstone project? Examples of possible knowledge to acquire include domain-specific knowledge from the domain of your application, software engineering knowledge, mechatronics knowledge or computer science knowledge. Skills may be related to technology, writing, presentation, team management, etc. You should look to identify at least one item for each team member.

For each of the knowledge areas and skills identified in the previous question, what are at least two approaches to acquiring the knowledge or mastering the skill? From the identified approaches, which will each team member pursue, and why did they make this choice?

The Appendix does not need to be long. One or two pages should be adequate.