

Hazard Analysis
SE 4G06, TRON 4TB6

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Table 1: Revision History

Date	Developer(s)	Change
10/14/22	Azriel G.	Added sections 1, 2, and 3
Date2	Name(s)	Description of changes
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1 Introduction

This document is the hazard analysis for the entirety of Synesthesia Wear. For context, Synesthesia Wear is an inexpensive and non-intrusive hearing aid bracelet with a purpose of improving quality of life by providing users with an alternate channel for sound recognition within their surroundings. Furthermore, this bracelet will have a corresponding application that will be made to be user-friendly so that users can easily access and configure their bracelets to whatever settings they so desire. Lastly, for the purposes of this document, the Synesthesia Wear developers believe that the definition of a hazard is one that is derived from Nancy Leveson's work. With that in mind, a hazard is any property or condition within the Synesthesia Wear system where after pairing up with any conditions in the environment, a potential for loss to the system now exists.

2 Scope and Purpose of Hazard Analysis

The scope of this document is to identify any and all possible hazards within the system, clarify the mitigation steps of each identified hazard, determine the causes and effects of all failures, and define all safety and security requirements that have resulted from the overall analysis.

3 System Boundaries and Components

The hazard analysis will be conducted on the Synesthesia Wear system which will be comprised of the following components:

1. The Bracelet which also consists of:
 - (a) Vibration Motor
 - (b) Sound Sensor
 - (c) Microcontroller
2. The Application to be installed on the users' devices which consists of:
 - (a) User Interface
 - (b) Bracelet Settings Configuration
3. The Device that runs the application
 - (a) Operating System

With the above in mind, the system boundary is limited to the above 3 components with each having their own respective subcomponents. Furthermore, it is important to note that not all components in the above list can be controlled (i.e. Device's Operating System) by the Synesthesia Wear developers. However, these components still needed to be listed down in the system boundary as the potential for a hazard can still be correlated to them.

4 Critical Assumptions

[These assumptions that are made about the software or system. You should minimize the number of assumptions that remove potential hazards. For instance, you could assume a part will never fail, but it is generally better to include this potential failure mode. —SS]

5 Failure Mode and Effect Analysis

[Include your FMEA table here —SS]

6 Safety and Security Requirements

[Newly discovered requirements. These should also be added to the SRS. (A rationale design process how and why to fake it.) —SS]

7 Roadmap

[Which safety requirements will be implemented as part of the capstone timeline? Which requirements will be implemented in the future? —SS]