Sprint 1 - Endurance Design Document

November 24, 2020

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# Executive Summary

## Project Overview

Describe this project or product and its intended audience, or provide a link or reference to the project charter.

## Purpose and Scope of this Specification

Describe the purpose of this specification and its intended audience. Include a description of what is within the scope what is outside of the scope of these specifications. For example:

In scope

This document addresses requirements related to phase 2 of Project A:

* modification of Classification Processing to meet legislative mandate ABC.
* modification of Labor Relations Processing to meet legislative mandate ABC.

Out of Scope

The following items in phase 3 of Project A are out of scope:

* modification of Classification Processing to meet legislative mandate XYZ.
* modification of Labor Relations Processing to meet legislative mandate XYZ.

(Phase 3 will be considered in the development of the requirements for Phase 2, but the Phase 3 requirements will be documented separately.)

# Product/Service Description

In this section, describe the general factors that affect the product and its requirements. This section should contain background information, not state specific requirements (provide the reasons why certain specific requirements are later specified).

## Product Context

How does this product relate to other products? Is it independent and self-contained? Does it interface with a variety of related systems? Describe these relationships or use a diagram to show the major components of the larger system, interconnections, and external interfaces.

## User Characteristics

Create general customer profiles for each type of user who will be using the product. Profiles should include:

* Student/faculty/staff/other
* experience
* technical expertise
* other general characteristics that may influence the product

## Assumptions

List any assumptions that affect the requirements, for example, equipment availability, user expertise, etc. For example, a specific operating system is assumed to be available; if the operating system is not available, the Requirements Specification would then have to change accordingly.

## Constraints

Describe any items that will constrain the design options, including

* parallel operation with an old system
* audit functions (audit trail, log files, etc.)
* access, management and security
* criticality of the application
* system resource constraints (e.g., limits on disk space or other hardware limitations)
* other design constraints (e.g., design or other standards, such as programming language or framework)

## Dependencies

List dependencies that affect the requirements. Examples:

* This new product will require a daily download of data from X,
* Module X needs to be completed before this module can be built.

# Requirements

## Functional Requirements

| Req# | Requirement | Comments | Priority | Date Rvwd | SME Reviewed / Approved |
| --- | --- | --- | --- | --- | --- |
| ENDUR\_01 | Start in the square | Should be in the same spot when finished with the program. | 1 | 10/28/20 | 11/22/20 |
| ENDUR\_02 | Follow the figure eight course five times | Must follow the path provided to create a figure eight design. | 1 | 10/28/20 | 11/22/20 |
| ENDUR\_03 | Finish in the square | Should be in the same spot as starting position. This indicates whether or not the robot stuck to the right path correctly. | 1 | 10/28/20 | 11/22/20 |
| ENDUR\_04 | Speak “I am the winner” | Not declared as important in relation to points deducted, still required by CEO Eckert. | 2 | 10/28/20 | 11/22/20 |
| ENDUR\_05 | Flash multicolored lights for 5 seconds | Not declared as important in relation to points deducted, still required by CEO Eckert. | 2 | 10/28/20 | 11/22/20 |

## Security

### Protection

Specify the factors that will protect the system from malicious or accidental access, modification, disclosure, destruction, or misuse. For example:

* encryption
* activity logging, historical data sets
* restrictions on intermodule communications
* data integrity checks

### Authorization and Authentication

Specify the Authorization and Authentication factors. Consider using standard tools such as PubCookie.

## Portability

If portability is a requirement, specify attributes of the system that relate to the ease of porting the system to other host machines and/or operating systems. For example,

* Percentage of components with host-dependent code;
* Percentage of code that is host dependent;
* Use of a proven portable language;
* Use of a particular compiler or language subset;
* Use of a particular operating system;
* The need for environment-independence - the product must operate the same regardless of operating systems, networks, development or production environments.

# Requirements Confirmation/Stakeholder sign-off

Include documentation of the approval or confirmation of the requirements here. For example:

|  |  |  |
| --- | --- | --- |
| Meeting Date | Attendees (name and role) | Comments |
| MM/DD/YY | My group member names | confirmed all except ENDUR\_XX |
| MM/DD/YY | My group member names | confirmed…………. |

# System Design

## Algorithm

Develop and describe here the algorithm that will be used to provide the required performance of your software

* Start in the square
* Follow the figure eight path five times
* Finish in the square
* Speak “I am the winner”
* Flash multicolored lights for 5 seconds

## System Flow

Diagram

Description automatically generated

## Software

Block code representing JavaScript code was manipulated using Sphero Edu software.

Graphical user interface, text, application, chat or text message

Description automatically generated

Sensor data not available after turning in robot. The video of the robot shows the accuracy of the robot following the figure eight path.

## Hardware

The Sphero robot was used in testing. The version used was the SPRK+ and connected to a personal computer over Bluetooth in order to access the block code created by the COO.

## Test Plan

| **Reason for Test Case** | **Test Date** | **Expected Output** | **Observed Output** | **Staff Name** | **Pass/Fail** |
| --- | --- | --- | --- | --- | --- |
| First Test | 10/27/20 | Some errors, unknown | Did not figure 8 but instead went out into the circles both facing same direction | Zoë | Pass |
| Change way heading out into circle | 10/27/20 | Figure 8 | Circled back over itself, just going over one circle | Zoë | Fail |
| Get rid of heading block and trace negatively through circle with orientation negative | 10/27/20 | Figure 8 | Slightly off path, did not calibrate 100% correctly | Zoë | Fail |
| Redo | 10/27/20 | Aim more correctly calibrated | Figure 8 | Zoë | Pass |

## Task List/Gantt Chart

Full Gantt Chart on Github: [here](https://github.com/zoeklapman/Accuracy.git).

## Staffing Plan

| Name | Role | Responsibility | Reports To |
| --- | --- | --- | --- |
| Zoë Klapman | COO, software developer | Oversee operations, program/test robot, sections 3.1 and 5 of system design document. | (CEO) Professor Eckert |
| Keven Kevelier | PM | Monitor task list/gantt chart, sections 2-4 of system design document. | (COO) Zoë Klapman |
| Maryam Kakar | PM | Monitor task list/gantt chart, section 1 of system design document. | (COO) Zoë Klapman |