**Detailed Individual Design**

**Subsystem Name**:

**Engineer**:

**Major / Year**:

**Report Date**:

**Team Name**:

**Chief Engineer**:

**Project Engineer**:

Table of Contents

[1 Introduction 1](#_Toc176427830)

[2 System Architecture and Interfaces 1](#_Toc176427831)

[2.1 System Architecture Diagram 1](#_Toc176427832)

[2.2 Interfaces to Other Subsystems 1](#_Toc176427833)

[3 Key Subsystem Needs and Requirements/Use Cases 1](#_Toc176427834)

[4 Subsystem Concepts 2](#_Toc176427835)

[5 Technical Design Challenges 2](#_Toc176427836)

[6 Unit Test Strategy and Integration 2](#_Toc176427837)

[7 Individual Project Plan 2](#_Toc176427838)

**Instructions** – the expected overall length for this report is approximately 2000 words for the **writing in the body**. Space taken by figures & tables, the cover page and Table of Contents page are not included in this word count. Please use single spacing – like this template uses.

**REMOVE ALL INSTRUCTIONS BEFORE SUBMITTING THIS DOCUMENT!**

# Introduction

½ page max.

Define the overall project.

Explain what subsystem is covered by this document.

# System Architecture and Interfaces

Text summary (not including tables/figures) 4 pages max.

## System Architecture Diagram

Insert system architecture figure(s) from System Design Document here. Insert as editable PowerPoint slide, NOT an image.

Do not just insert the figure(s). Describe the key elements within, referring to the diagram(s). If it’s helpful, you may number the items in the figure so that you can use those when describing it.

## Interfaces to Other Subsystems

Must include specific references to the system architecture figure. Include mechanical, electrical and software interfaces, e.g., how this subsystem connects to one or more of the others.

JK to provide additional text for this section

Table 1 - Subsystem Interfaces

|  |  |  |  |
| --- | --- | --- | --- |
| **#** | **Subsystem Name / Function Description** | **Inputs/Outputs/Interfaces to/from/with This Subsystem** | **Notes** |
| 1 |  |  |  |
| 2 |  |  |  |
| 3 |  |  |  |
| 4 |  |  |  |
| 5 |  |  |  |
| 6 |  |  |  |
| 7 |  |  |  |

You may add more lines to the table if needed.

# Key Subsystem Needs and Requirements/Use Cases

Text summary (not including tables/figures) is 1 page max.

From the overall N&R for the project, identify up to 5 key requirements and/or use cases in a table. You may copy these from the team's Needs and Requirements spreadsheet, adding new items as you discover them. Do not just include the table! As with all figures and tables, the supporting text should explain the contents of this table. Be sure to clarify how they support the functionality of the completed project.

**Note** – at the end of the semester, ensure that all of the needs and requirements from EACH subsystem are merged back into the project's single needs and requirements spreadsheet.

# Subsystem Concepts

Text summary (not including tables/figures) is 3 pages max.

Include sketches/summaries for at least 3 concepts, for this subsystem. For each, show/explain how it addresses the project's needs/use cases/user stories. If you are struggling to identify at least three concepts, we invite you to consult with your PE as soon as possible.

# Technical Design Challenges

Text summary (not including tables/figures) is 1 page max.

Define and describe the perceived technical **design** challenges. While there may be challenges associated with obtaining materials, working with a team, fabrication, scheduling, etc., this section must focus on the technical design challenges.

# Unit Test Strategy and Integration

Text summary is 1 page max.

Explain how you will test your subsystem without requiring the rest of the project to be completed. This is commonly referred to as “unit testing”. When each individual unit or subsystem of a project has been individually tested to success, the team can then focus on integration.

Describe how your completed / tested subsystem will be integrated with the others to create the overal team project. Final testing then can confirm that the assembled project works to meet the specified requirements.

# Individual Project Plan

Text summary (not including tables/figures) is 1 – 2 pages max.

This is the Gantt Chart on the EDN filtered to show only your technical tasks. To create, go to Gantt Chart, filter for you, and export .png file (bottom right of page). If you have non-technical tasks, please use additional filters to exclude those. See your PE for help with filtering, if needed.

As with all figures, be sure to add a summary explaining your project plan – not just the figure!

# Applicable Standards

Table, typically 1 page max.

This section should identify which present industry and de facto standards are relevant to your portion of the project. Some of these standards become design constraints. Examples of things that might be applied to your project are found in:

<https://designlab.eng.rpi.edu/edn/projects/capstone-support-dev/wiki/Standards>

The categories below are suggestions. You may include others as needed and may delete the ones that do not apply.

|  |  |  |
| --- | --- | --- |
| **Category** | **Standards Applicable** | **Purpose / Application to Your Work** |
| Software |  |  |
|  |  |
|  |  |
|  |  |
| Electrical |  |  |
|  |  |
|  |  |
|  |  |
| Mechanical |  |  |
|  |  |
|  |  |
|  |  |
| Industrial |  |  |
|  |  |
|  |  |
|  |  |