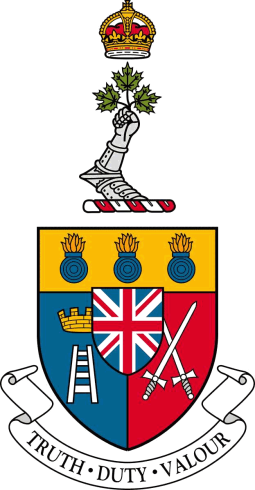
Royal Military College of Canada

Department of Electrical and Computer Engineering

EEE455/7 Electrical and Computer Engineering Design Project



DID-07 – Detailed Design Document

Instructions

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# Introduction

This document provides instructions for preparing Data Item Description (DID) 7 – Detailed Design Document (DDD). In addition to the Title Page and Table of Contents, the DDD shall contain at a minimum the sections as outlined in this document. These sections include several sections on your design; presentation of results; a discussion of the results in relation to the requirements; a conclusion; and references. Additional sections may be included as required. ***Use the course Style Guide for additional guidance on structure and formatting***.

The DDD should be produced in consultation with your supervisor. At this point you should have completed your design, built, and tested your product. You should have followed a deliberate design methodology. ***Describe your design methodology*** in the introduction. Depending on the level of detail, this could require a dedicated subsection.

## 1.1 Document purpose

In this section, state the purpose of the DDD document. Typically, the purpose of the DDD is as follows:

1. to provide an overall discussion on changes or deviations from the originally planned project in terms of the Statement of Requirement (SOR), the Preliminary Design Specification PDS (schedule and process) and the Schedule Update. The discussion should include a description of any changes or deviations from the original documents with the associated justification;
2. to present the **details** of the final project design;
3. to provide all design artefacts such as drawings, schematics, diagrams, figures, illustrations, source code, algorithms,… etc;
4. to present the final results of the project including the acceptance test procedures and results;
5. to provide a summary of the degree of success of the project; and
6. to provide any feedback on the course experience as a whole.

## 1.2 Background

You will have provided background information about your project in previous deliverables. Rather than repeat the same information in this section, try outlining the background of how the whole project has progressed and the motivation behind it. You can talk about the requirement definition phase, the preliminary design phase, and obstacles that you had to overcome to reach your final design. You can direct the reader to your previous deliverables for further details (make sure to list them as references). ***You should not be just copying and pasting the background section from your preliminary design specification.***

# Design

You will require several sections to describe your detailed design. Generally, you should have a section dedicated to an **overview of your system** architecture followed by **individual module descriptions**. Normally a dedicated section is required to describe how these modules **interface with one another**. Certain projects will also require a section that mathematically describes the dynamics of your system. Refer to the PDS description for examples of design section structures. Work with your supervisor to develop a structure that is suitable for your project.

# More Design Sections

As required.

# Results

Depending on your project, this section could be called Testing; Simulation Results; Experimental Results; Verification and Validation; or some combination of these. ***You shall have*** at least one section dedicated to presenting results that demonstrate your design satisfies the requirements.

## 4.1 Experimental Setup

One subsection should be dedicated to describe the experimental methodology and/or setup. Here you would describe how your experiments or verification and validation activities were linked to your requirements. Did you have to develop a simulated environment? If so, how well does this environment simulate the real thing? What are the assumptions, constraints, and limitations relevant to your product?

## 4.2 Presentation of Results

Here you would present your results. The form of these results will vary depending on your project. For example, if you designed a turret tracking system, present experimental results that show your system indeed tracked the target. You should have multiple trials that are linked together by meaningful metrics (such as mean error or mean settling time). Typically, these results are best presented using ***plots and tables***. Refer to the Style Guide for proper formatting.

# Discussion

In this section, provide a detailed analysis of how your design performed in relation to the requirements. It is a good idea to support your findings using a table that links your observations to the requirements. Table 5.1 provides an example of such a table. Make sure every requirement from your SOR is addressed. When requirements could not be met or were only partially met, provide additional details on why this was the case.

Table 5.1 – Summary of Results

|  |  |  |  |
| --- | --- | --- | --- |
| Index | Description of Requirement | Result | Comment |
| FR-1 | The Death Star shall be able to provide life support for 1000 Imperial Star Troopers | Satisfied |  |
| FR-2 | The Death Star shall be able to destroy the planet of Tatooine | Satisfied |  |
| PR-3 | The mean Tatooine destruction time shall be no greater than 12s | Partially Satisfied | Mean destruction time was 15s |

Discuss any major unresolved issues (including unsatisfied requirements). Provide recommendations on how they could be satisfied in future work. Also, if your project went really well, describe how it could be expanded upon in the future. In many cases, good fourth year design projects have led to follow-on projects. Future students may link their work back to your DDD, which means all of your contributions may continue to impact the department for years to come.

# Conclusion

Summarize the contents of the document. The reader should be able to read the introduction and conclusion and have a full appreciation for what you set out to do and what you accomplished. These two sections should be able to stand on their own to describe your work.

# References

This section lists all documents, standards, etc., applicable to the comprehension of the DDD. These could be academic papers provided by your supervisor, previous years’ reports, manuals, or other relevant technical documents. ***Each reference must be used somewhere in the text***. Use the reference format provided in the Style Guide.