**Final Report for**

<Descriptive Project Title>

Sponsored By

<Sponsor Name>

Version 1.0

<Month, Date Year>

Prepared by

<Name (Discipline)>

<Name (Discipline)>

Project Engineer <Name>

Chief Engineer <Name>

# Executive Summary

To Do: The Executive summary is a condensation of an entire report and must be short; try to keep it no more than one page. Focus on the objective(s) and the benefits of project, the major points of your design and validation, and recommendations. It is neither an introduction nor outline (table of contents) of the report. Hence, it should not contain phrases such as “This report presents …” and “Our main results are described in chapter 1”.

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# Revision History

|  |  |  |  |
| --- | --- | --- | --- |
| Version | Date | Name | Reason for Changes |
| 1.0 |  |  | Initial document. |
|  |  |  |  |
|  |  |  |  |

# Glossary

To Do: Your final report is reviewed by people both in the field and outside of the field. Define all the abbreviations, acronyms, and terms required to properly interpret your final report. Examples of abbreviations that have two or more commonly used meaning are as follows:

* ATM – Asynchronous Transfer Mode or Automated Teller Machine
* UPS – Uninterrupted Power Supply or United Parcel Services

For any unfamiliar abbreviation, write the full name followed by the abbreviation in parentheses at the first time it is mentioned in the report.

# 1. Introduction

To Do: Review and update material from the Mid Term Report. This section should concisely address the following issues and point to an appropriate document or Appendix containing detailed information as needed:

* History behind the project
* Major end users’ needs and/or problem to be addressed (Present detailed customer requirements in an Appendix.)
* Justification (benefits) for pursuing the project (worth for solving or improving)

This section also contains a summary of report sections.

# 2. Project Objectives & Scope

To Do: This section contains both long term objectives and the planned semester objectives. Provide a bullet list of the objectives for this semester. Focus on final outcomes, not intermediate steps. Do not include task assignments in this section. The objectives should be understandable by themselves. However, you can follow the objectives with a statement of scope to clarify what you planned to do (in scope), and that you planned to not do (out of scope).

# 3. Assessment of Relevant Existing Technologies and Standards

To Do: Concisely presents the material from the corresponding section in the Mid Term Report. Where appropriate, refer to previous final report(s). Make sure to provide correct in-text citations that refer readers to References. (See References also.) This is also the place to summarize your patent search.

Present industry and de facto standards that are relevant to your project. Examples of things that might be applied to your project are found in:

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

If competitors’ products were reviewed, state design targets identified the assessment process also.

# 4. Professional and Societal Considerations

To Do: You developed new technology and solved a given engineering problem. Your solution could affect the world beyond the technology (immediate scope of your project). Examples of such issues include economic, environmental, sustainability, manufacturability, ethical, health and safety, social, and political considerations. Briefly describe your thoughts on how your work affects these issues.

# 5. System Requirements and Design Constraints

To Do: Revise and update the corresponding section from your mid-term report. For any requirement or constraint derived from a stand or regulation, make sure to cite it.

# 6. System Concept Development

To Do: Present the system concept that the team ultimately developed. Where appropriate, refer to previous final report(s). Help the reader visualize the system concept by using appropriate drawings/diagrams, such as sketches, system schematics, circuit diagrams, and UML diagrams. Describe the significant criteria that lead to concept selection, alternate concepts that were considered, and design trade-offs

For the remaining concepts considered, provide appropriate pointers, such as the section in your Mid Term Report.

# 7. Design Analysis

To Do: Introduce the methodology and analyses used in coming up with well-defined structure for the selected concept and major results. If the methodology is based on prior published work, cite the reference instead, with additional appropriate comments.

Examples of analysis techniques include:

* Technical/mathematical modeling
* Simulation
* Quick prototype and experimentation

Present system and sub-system specifications used in your final design.

# 8. Final Design and Engineering Specifications

To Do: Present the final design, including the detailed design, with appropriate diagrams/drawings with design values. Describe the critical design parameters with associated metrics that your design is addressing. Where applicable, address manufacturability and cost issues and include details in an Appendix. Similarly, organize and place large data tables and/or a set of detailed diagrams/drawings in Appendixes.

# 9. System Evaluation

To Do: In this section, you show whether or not your design meets the end user requirements and engineering specifications. Concisely report your test procedures and results addressing following issues:

* Performance requirements
* Tolerance and Sensitivity
* Reliability and safety, including security
* Failure modes

Note that the reader should be able to reproduce the test results. Provide detailed procedures, equipment, and settings used in the tests in an Appendix.

# 10. Significant Accomplishments and Open Issues

To Do: Discuss the evaluation results in terms of the final design. Describe significant accomplishments compared to your objectives. If you did not meet all objectives, or if you accomplished something that was not in your plan, explain why. Report planned tests that were not performed as open issues. If uncertainties remain, they should be pointed out also. If your results were not completely successful, state why the chosen approach (concept) is not viable or limited. (Unsuccessful results are useful in eliminating unproductive effort by allowing future design teams to learn from your mistakes.)

Make recommendation for design changes or modifying requirements/specifications as needed. This is also the place to suggest future enhancements based on lessons learned from this project.

# 11. Conclusions and Recommendations

To Do: Bring together, concisely, the conclusions to be drawn. Your conclusions must be supported by the material presented in the previous sections. Recommend next steps.

# References

To Do: The references must list all published information sources, including electronic documents that are directly quoted or used to support your discussion or equation. **All references must be cited at the appropriate points within the report text.**

For MS Word, use Citations & Bibliography that is available under the References tab and generate this section automatically.

If you plan to prepare this section by hand, the following formats are recommended because you will not have to renumber citations when a new item is added to your paper.

* Single author: [*Author’sLastName*, *Year*]
* Two authors: [*Author’sLastName1* & *Author’sLastName2*, *Year*]
* Three or more authors [*FirstAuthor’sLastName*, et al., *Year*]

This list of references uses the alphabetical order. For more information, see:

<http://www.ccp.rpi.edu/resources/apa-style/>

# Appendix A: Customer Requirements

To Do: Present the complete set of customer (system) requirements obtained by Team Activity #2. Organize the requirements according to appropriate types. Assign a unique ID to each requirement. If your project focuses on a subset of the customer requirements, present them as either “in scope” or “out of scope”.

Feel free to change this section title, such as Product Specifications or Validation of System Requirements, according to the nature of your project.

# Appendix B: System Evaluation Plan

To Do: Provide a detailed test plan, including procedures, equipment, and settings used in the tests.

# Appendix C: User Manual

To Do: Present the procedure to operate your prototype. Make sure to include all safety related instructions.

# Appendix D: Cost Analysis and Manufacturability Analysis

To Do: Provide cost estimate to manufacture the product (system) you designed. Do not confuse it with the cost of building a prototype. Perform make-buy analysis on critical system elements. For projects working on mass-produced products, present manufacturability issues.

# Appendix E: Expense Report

To Do: Summarize your expenses as a Table as needed.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Item | Quantity | Unit Price | Subtotal | Shipping |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Total |  |  |  | |

# Appendix F: List of Manuals and Other Documents

To Do: To assist future teams to reuse the components used in the prototype, list all manuals came with the components and any other useful documents available. Make sure to submit the listed documents with your final report.