

Deliverable #2: System Overview

1 Objectives

I want to know that you have given some thought to how your system is going to work, beyond just the idea itself.

This deliverable is meant as a way for you to define the implementation details of your project more clearly. You will have the chance to describe the overall system in finer detail, find parts and resources specific to your project, and create a state machine encapsulating core functionality. After completion of this document, you should be able to start designing your custom printed circuit board and accompanying software.

For this deliverable, you will prepare a document including all of the above.

2 Document Details

To get full credit, you must include the following sections in your document:

Executive Summary: This section should be on the first page. This short (around 100 words) paragraph should concisely describe the goal of your system, with minimal implementation details. Think of this as the elevator pitch, tell me what is cool about your idea.

System Description: This section is where you will describe the actual system, with as many implementation details as possible. The intent is to get you to a place where you can design your board and start writing software with confidence. **You must include sub-sections for each of the following, in the order defined below:**

1. A description of the software running on your system, including a description of the radio protocol you will use, and the analog component

2. An accompanying state machine diagram (generated with Visio, Graphviz or similar tools) describing the software's different states, responses, and other functions.
3. A description of the hardware required for your system. This includes defining the hardware needs (microphone, color sensor, tri-color LED, bluetooth), and their purpose in your system
4. A **table** of parts you think you will use: include the part number, supplier, price, and a justification or description of where they fit in your system
5. A description of the final demo. Write this as a script, or describe the demo from the audience perspective. What do you hope to show? How will you prove your system works? Also describe any accompanying software that graphs, or interacts with your device.

Note that the radio protocol and analog component of your system must be described. The analog component can be anything from sensing with an ADC, to using PWM for motor control, to adjusting brightness or color of an LED. If you are not sure about the analog component, contact me well before the deliverable deadline.

Resources: This section is where you list the software and hardware libraries you intend to use, your inspiration from blog posts around the web, and any other resources that you have found online specific to your project.

An example document is available on the class schedule website, this will guide you in creating your own system overview document, start with this format, and then improve on it.

3 Collaboration

The class project is **not** a group project, students will be graded individually based on what they submit, build, test, and finally, demo. All projects must meet the individual requirements listed. However, if you are interested in collaborating with others on a project together, that is fine. Just remember you are responsible for your own grade, so organize appropriately. Make sure your hardware / software / firmware does not depend on someone else's. If you choose to collaborate with others on a larger project, your part must still be able to independently demo a working system that is microcontroller driven, with your own custom software and

custom PCB, that includes a radio component, an analog component, and a visual component.

4 Submission Instructions

This deliverable is due by 11:59 PM on September 22nd. Absolutely no late assignments will be accepted.

Submit your document via **handin.cs.clemson.edu**. Do not email me your document. You must name your document [your username].pdf, replacing [your username] with your Clemson username.

The idea document should be in PDF form, no other format will be accepted. Make sure to submit your document using **handin**.

5 Grading

This deliverable is worth 10% of your final class grade. Table 1 shows the rubric that you will be graded against.

Table 1: Grading Rubric for System Description

Item	Description	Pts
<i>Name & Title</i>	Make sure both are included on the first page.	5
<i>Executive Summary</i>	100 words or less. High level description.	20
<i>System Description</i>	Correct sub-sections. Correct order. Sufficient detail.	30
<i>State Machine</i>	Sufficient detail. More than 5 states. Every transition and state labeled.	20
<i>Parts Table</i>	All fields included. 5 or more parts.	10
<i>Resources</i>	5 or more resources listed.	5
<i>Style</i>	Grammar, sentence structure, clarity, organization, spelling.	10

If the document is not turned in on time, or it's not a PDF you will get a 0%.