Deliverable #1: 
Team Formation and Idea

1 Objectives

In the last deliverable, you came up with an idea for a project. In class, you had the opportunity to pitch your idea to the class and receive feedback. In this deliverable, you need to form your team and your team needs to agree on and submit your team's idea document.

2 Team

Your team should consist of 3–4 people. I will help facilitate team formation in class, but in the end you are responsible for forming your teams.

Be careful when choosing your teams. This will be your team for the rest of the semester. Choose people who will help you succeed and who you are comfortable having represent you. Teams that share common interests and complimentary skills usually work best together.

3 Document Details

As before, in the document your team submits, you need to convince your reader of three things:

1. Your idea is interesting, cool, or useful.
2. Your idea is achievable in one semester.
3. You are excited about making this idea a reality.

Choose from the categories of embedded systems we talked about in class (robotics, drones, wildlife tracking, wearables, building & infrastructure sensing, gadgets, gizmos, pranks and so many others) then hone in on a specific application. Write about it, trying to envision a final product.
Your project can be anything you like, but it must have the following features.

- **Custom Hardware**: Your device must contain at least one printed circuit board that you have designed and tested. Your circuit board must contain system components and serve a meaningful purpose in your design. It can’t simply be connectors and traces.

- **Custom Software**: Your device needs to have a microcontroller that runs software that you have designed, written, and tested. Your project should have at least 300 lines of reasonably styled custom C-code—it can’t just be connectivity code (code that simply calls 3rd party libraries). I can also easily spot filler code. Pick a project of adequate complexity. Don’t oversimplify and then try to fake it with padding. I recommend using an MSP430FR5994, which is the one that comes in your hardware kit for the class, so you only have to learn to use one MCU.

- **Wireless Communication**: Your device needs to wirelessly communicate information (probably using a radio, infrared (IR), visible light, and other wireless mechanisms are fine, too) to another computing device.

- **Sensing**: Your device must use sensing in some meaningful way. Projects that would be fine without the sensor are not appropriate.

- **User Interface**: Your device must interact with users. It must produce output and take in (and respond to) input from a user. In this class, we will define user interface loosely. It could include indicator lights, sounds, buttons, switches, gestures, motor responses, or a screen. The interaction could also involve another device (phone, laptop, etc) that is communicating wirelessly with your device. Remember, that you will demo your device at the end of the semester. Your user interface will be the thing that people see and use when they try it out.

Please describe these facets of the system in as much detail as you can. I know you don’t have everything ironed out at this stage, but specific thinking now will help your team anticipate needs later.
4  Stretch Goals

Projects like these can be difficult to predict. Sometimes a task that you expect to be straightforward ends up taking more time. In your idea document, your team should first outline the minimum acceptable goals that you expect to achieve during the semester, as well as 2–3 stretch goals that you hope to achieve. Stretch goals will help you prioritize your efforts and avoid reaching the end of the semester with a lot of work and nothing to show for it (focus on getting something working, even if it isn’t the fully envisioned product).

5  Collaboration

This stage of the class project is to be done in groups, members of your team will be graded based on what the team submits. Your document should contain a short collaboration plan, which should describe your team’s plan for working well together. How will you manage responsibilities? How will you facilitate communication? What are your expectations for each other, over the course of the semester?

6  Submission Instructions

This deliverable is due by 4 PM on January 26th. Late assignments will not be accepted.

The idea document should be in PDF form (no other format will be accepted) and submitted to handin.cs.clemson.edu. Your team should submit only one document, which should include the names of all team members at the top of the document. You should also come up with a team name, so that I can easily refer to your team in the future. Please avoid names that are socially unacceptable or that a reasonable person might find offensive.

7  Grading

This deliverable is worth 5% of your project grade, and will be graded on how well your idea meets the criteria above.