Objectives:

Our project will revolve around RFID technology and using it to detect and track position within a given space. Our group is interested in the technology and functions behind RFID and would like to work on a project that uses it. Our project idea can have several different end user applications and can be tweaked for different needs and locations.

The main idea behind our project is that we will track position of a person, or anything else that one might want to track, using both RFID and Wi-Fi technologies. To track and object in say a room for example, there would be a "mesh" or "net" of RFID tags located throughout the room. The person or object being tracked would then contain the RFID reader. As the person or object moved throughout the room, they would encounter the various tags around the room. The reader would take in the data from theses tags and relay it to a base computer through Wi-Fi. With software on the computer the location of the person could be calculated and this could then be sent to a web server where the data could be visible over the internet.

The main goal of our project is to accurately be able to track a person or object through a room or a given space. We also want the project to have a simple to use gui that can be accessed from anywhere with an internet connection. Our finished product should be easy to set up and initialize and should be simple for the end user to use to determine location.

The project should be fairly low cost since the RFID tags are generally low cost and the reader that we build should also not be too complicated. The person being tracked should need no input and should simply need to wear or carry the reader device with them. The person that wants to view the location will simply need to pull up a website. So the whole system could easily be defined as easy to use. As for power, the tags themselves will most likely be passive, using only the power from the reader to transmit their data. Since the reader itself will power both the tags and need to send its data via Wi-Fi, it has to have enough power to do so. A person will need to carry the device around so it should try to remain as small as possible so using low power devices and part will probably be of utmost importance. With the use of lower power parts the size of the batteries can be reduced which will of course reduce the overall size and weight of the device.

Specifications:

	Indoor Range	Up to 200 ft
Performance	Transmit Power Output	3dBm
	RF Data Rate	250kbps

Power Requirements	Supply Voltage	1.8 – 3.4V
	Transmit Current	<20mA
	Receive Current	<20mA
	Sleep Current	0.25µA
Networking	Wi-Fi Range	Up to 200 ft
	Technology	802.15.4
General	Frequency	2.4 GHz
	Number of tags	Up to 30
	Number of readers	at least 2
	Accuracy	6 ft or less

Project Budget:

The total cost of the project will be evenly divided among each member. Below is a list of the expected expenses.

Qty	Item	Cost $
1	Xbee Wi-Fi Kit	50.00
30	RFID Tags	3.50ea
2	RFID Readers	20.00
-	Misc cables, casing, batteries, etc.	35.00

Project Milestones:

       The project milestones will be many in both the design and prototyping stages. Within the next 2 weeks we should have a complete overview of the project that includes things such as how many tags we want to use and the main type of room or building we will be designing it for. Around mid July we should an idea of the main components we will be using and how they will all interact with each other. Within about a week after this we should have a rough draft of our complete design. Starting with the fall semester we should have a rough prototype about a month into the semester. This gives us time to adjust or design as needed with still plenty of time to come up with a new prototype if needed. By second half of October we should have our completed prototype to begin our testing with.