

Group number: 1713

Project title: IoT Monitor

Client &/Advisor: Geiger

Team Members &/Role:

Ian Harris: Team Leader - Web Role

Tim Lindquist: Key Idea - Leafnode Role

Gregory Steenhagen: Webmaster -Web Role

Steven Warren: Communication -Leafnode Role

Terver Ubwa - 3G Node

Khoi Cao - 3G Node

o Weekly Summary

The previous week was spring break so everyone was working on their own. The timeline constructed the previous week served as a guideline for what needed to get done in each individual group. PCB software was learned over break by working in Eagle. Being spring break, we did not plan for any work to be done on our timeline, so any work accomplished during this time is getting ahead of schedule.

o Past week accomplishments

- **Ian Harris:** Was out of town for spring break, no real work was accomplished during this time.
- **Gregory Steenhagen:** Worked full time at my job, so was unable to get any work done during this week.
- **Khoi Cao:** Found the schematic + PCB design of the current 3G module. Calculated the cost of the customized circuit.
- **Terver Ubwa:** Read up about JSON format and installed drivers for the 3G module to be able to communicate with the computer using USB. communication with the computer using USB would aid with troubleshooting.
- **Tim Lindquist:** Wrote a program which would output the strength of the signal received as a percentage. Did this by continuously averaging 500 samples to see how

many were received out of the total. After this I did an experiment to see how distance affects signal strength by attaching the transmitter to a truck gate and driving away from the receiver in the road. From this I was able to plot signal strength as a function of distance and see the limits of operation with this device.

- **Steven Warren:** Worked in Eagle to learn how to use the PCB software for later on the project. Lots of time was spent learning online and then practicing using different libraries and making a practice board. At the conclusion, a board was able to made in schematic, transferred over to the PCB side and then ran with no DRC or ERC errors.

Pending issues

- **Ian Harris:** Investigate possibility of not being able to reach the sensorweb domain off-campus or without vpn.
- **Gregory Steenhagen:** UI needs work done on it to promote our project.
- **Khoi Cao:** Sync up with Terver to set a goal for building RF prototype on Home node..
- **Terver Ubwa:** Transmitting data to the web server using JSON format.
- **Tim Lindquist:** Dry soil and begin hydrosopic sensor testing. Waiting on Terver to receive supplies.
- **Steven Warren:** Dry soil and begin hydrosopic sensor testing.

o Individual contributions

<u>NAME</u>	<u>Individual Contributions</u>	<u>Hours this week</u>	<u>HOURS Cumulative</u>
Ian Harris	Was out of town for Spring Break	0	23
Gregory Steenhagen	Was out of town for Spring Break	0	15.5
Khoi Cao	Read the schematic design of the 3G module. Estimated the cost of DIY printed circuit board	3	20
Terver Ubwa	Read up on JSON format and installed drivers to enable communication between the 3G module and the computer	5	24
Tim Lindquist	Wrote a signal strength program. Tested the	10	39

	distance of the transceiver and plotted the data.		
Steven Warren	Created a practice PCB in Eagle to correctly design one for the group.	8	36

o Comments and extended discussion

Need to get hydroscopic sensor testing started to see if it's a viable solution for measuring soil moisture.

o Plan for coming week

- **Ian Harris:** Begin work on the home page of our application. This may take some coordination with Charlie (Gregory) about the framework we are using.
- **Gregory Steenhagen:** Work on the descriptive website for our project.
- **Khoi Cao:** Testing the home node with the access to web server via URL. Fix the compiling issue on Arduino while attempting to integrate the AT command + http post with Json format
- **Terver Ubwa:** transmitting data using JSON format and also working on the reception of data by the home node from the sensors.
- **Tim Lindquist:** Write code with steve using new libraries for the long distance transceiver. Get a distance vs signal strength plot for that device.
- **Steven Warren:** Work with Tim on using new libraries with the long distance radios. We will then similarly document the radios as done with the short range radios.

o Summary of weekly advisor meeting

No meeting this week due to spring break. Ready to discuss pending issues and progress this week.