

**Group number: Dec1713**

**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**

This week Tim, Khoi, and Ian met with Dr. Kaleita to talk about our project. Prof. Geiger thought this meeting would be beneficial, as Dr. Kaleita is in the field of Agricultural Science. Specifically, we discussed methods for testing our hydrosopic sensor. Prof. Kaleita recommended several methods to do soil moisture testing. Our next step is to acquire a rather large amount of soil for the tests. Our web-app has a domain, but we cannot currently access it publicly, which is a large priority for this week. Tim and Steven began programming with the 24L01+ modules. They successfully got the modules to transmit and receive data. The data that can be sent is capable of being far more than 1 byte.

## **o Past week accomplishments**

- **Ian Harris:** Met with Dr. Kaleita, got some feedback about the design of our website. What we have seems reasonable, but we were able to narrow down some of the use-cases the user might have, specifically about making decisions of when to irrigate. We can deploy our web-app, but are struggling to have it publicly accessible.
- **Gregory Steenhagen:** Worked on designing the website for the project, and other UI aspects.
- **Khoi Cao:** Fixed the config issue on 3G module and got that working. Discussed the detail and justification for the home node with Dr. Geiger. Did some experiments on sending/transmitting SMS using the Adafruit library API.

- **Terver Ubwa:** Developed a new plan for testing the 3G module. Together with Khoi, we met with professor Mani Mina and other required people to get the sim card for the 3G module activated in order to start the testing procedure.
- **Tim Lindquist:** Worked with steve to get node communication working. Was able to send and receive strings of 12 bytes. Distance was tested by moving the sensor apart. We found it to have a accurate range of around 100 ft in coover. Built a resistance sensor out of the material. Spoke to Amy about test procedure.
- **Steven Warren:** Collaborated with Tim on the radios that will be used to send wireless information with the Arduinos. We were able to get around 100ft of range within coover. Some of this distance was through glass and not in direct eyesight so the device performed fairly well.

### Pending issues

- **Ian Harris:** Can't currently access our domain publicly, need to contact ETG if I can't figure it out on my own quickly. If this shows up next week there's a problem.
- **Gregory Steenhagen:** Getting UI set up for the data management site.
- **Khoi Cao:** obtaining an activated SIM card from ETG. Learning RF interface between home node and leaf node.
- **Terver Ubwa:** activating the sim card for the 3G module. Transmission and reception testing with the 3G module.
- **Tim Lindquist:** Getting hydroscopic sensor data testing complete and plotted
- **Steven Warren:** Get hydroscopic sensor data testing finished and show the results of the testing.

### o Individual contributions

<u>NAME</u>	<u>Individual Contributions</u>	<u>Hours this week</u>	<u>HOURS Cumulative</u>
Ian Harris	Programming	4	19
Gregory Steenhagen	Programming	3	12.5
Khoi Cao	fixed the 3G config issue	3	17
Terver Ubwa	testing the 3G module. Also met prof Mani Mina for sim card activation	3	17
Tim Lindquist	Worked on node communication and made a sensor.	5	24
Steven Warren	Radio communication with NRF24I01+	4	24

### o Comments and extended discussion

Meeting with Amy Forbes on Friday to discuss test procedure for hydroscopic probe. We talked about soil types and water levels. She gave us a plan for drying out the soil and doing tests. This project is picking up speed as each group has received most of their parts so they can begin building, programming, and testing.

### o Plan for coming week

- **Ian Harris:** NEED to get our app publically accessible.
- **Gregory Steenhagen:** Work on getting beginning of a UI designed to display data.
- **Khoi Cao:** Getting the module to work with URL. Integrate the AT command + http post with Json format (backlog from the week 6). Sync up with Terver to set a goal for building RF prototype on Home node.
- **Terver Ubwa:** Getting the sim card for the 3G module activated and also testing the transmission and reception of the 3G module. incorporating RF communication with the home node.
- **Tim Lindquist:** Rewrite communication code and get sensor tests started. Develop a timeline with hardset dates on what we want to get done before the end of the semester.
- **Steven Warren:** Continue testing and programming with the radio modules. Begin a timeline for when each part of the project should be completed.

### o Summary of weekly advisor meeting

Our meeting with Dr. Geiger went more smoothly this week. We each presented what each subgroup has been working on the previous week. He suggested we create a hard schedule for when to have everything done for the project which we agreed would help keep us on track. The leafnode group showed our progress on the radios, some research completed and what the parts do. The home node group developed a new testing plan due to Dr Geiger's observations.