Design Review 4 Presentation
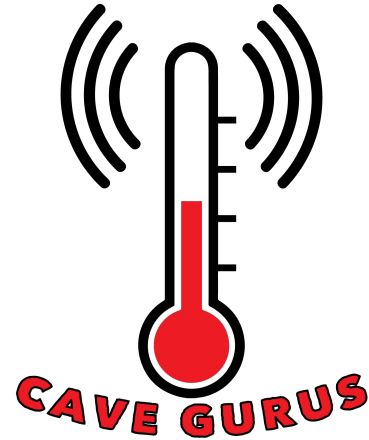
Cave Gurus: Jason Damp

Cheng Wang

Yang Du

Taylor Begay

GTA: Demetria Shepard

Client: USGS - Astrogeology Branch

Taylor J. Begay

WBS Part 1 Updated

Person Primarily Responsible: Taylor Begay				
ID	**Activity/Task**	**Description**	**Deliverable(s)**	**Status**
1	**Order Parts**			
1.1-1.3	6 Nodes Total PCB Implementation User Friendly	Recap DR3	N/A	Completed
1.4	Solder (5) Complete Systems	Recently ordered Perfboards and extra components	- Solder Components	Pending
1.5	Testing	We look to test prototypes. Such as place epoxy around sensor and compare readings. Etc.	- Explore precautionary features - Explore ways to ensure easy user interface - Explore Failures	Pending

Taylor J. Begay

Current Prototype

- 5x7 cm

- Housed in WeatherProof Box

- Design, Subject to Change

Taylor J. Begay
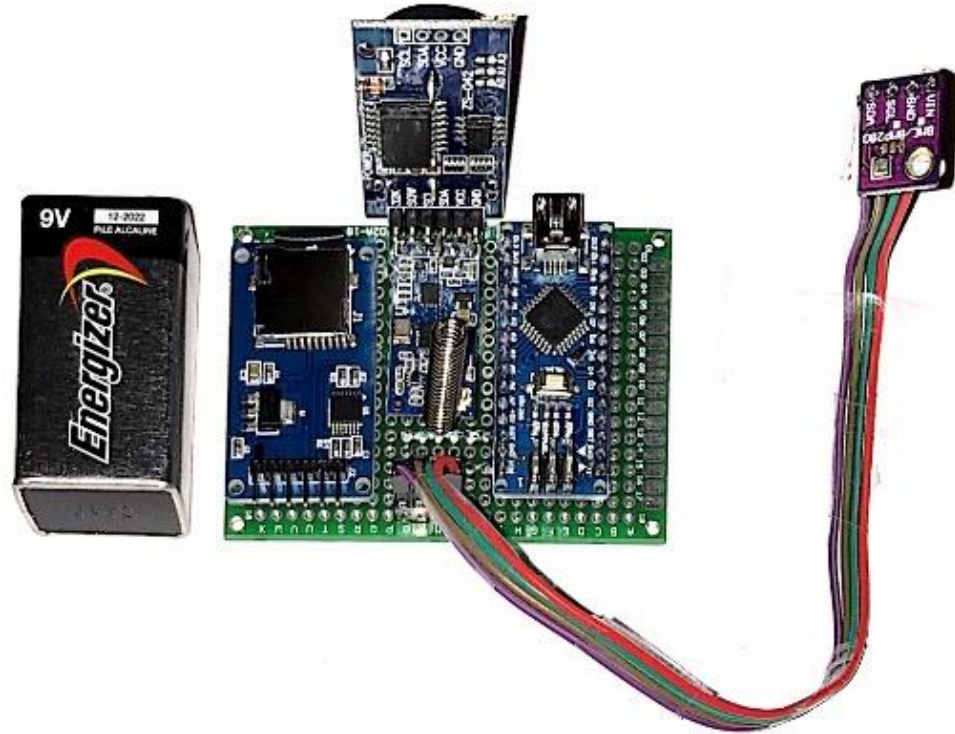
Current Output

Video: Demonstration

Figure 1: text file output

```
Monday25.02.201910:13:5232.69,79286.22,72.03
Monday25.02.201910:14:0232.38,79290.21,72.05
Monday25.02.201910:14:1234.19,79294.19,72.03
Monday25.02.201910:14:2233.92,79279.28,72.09
Monday25.02.201910:14:3233.88,79290.35,72.09
Monday25.02.201910:14:4235.74,79287.08,72.07
Monday25.02.201910:14:5233.67,79290.21,72.01
Monday25.02.201910:15:0232.64,79283.10,72.09
Monday25.02.201910:15:1232.35,79285.32,72.10
Monday25.02.201910:15:2232.48,79287.23,72.09
Monday25.02.201910:15:3241.62,79293.64,72.03
Monday25.02.201910:15:4236.01,79291.42,72.03
Monday25.02.201910:15:5233.28,79285.69,72.09
Monday25.02.201910:16:0235.90,79285.14,72.10
Monday25.02.201910:16:1238.07,79295.55,72.00
Monday25.02.201910:16:2237.75,79290.03,72.03
Monday25.02.201910:16:3235.18,79293.50,71.98
Monday25.02.201910:16:4236.00,79283.99,71.98
Monday25.02.201910:16:5233.14,79289.71,71.94
Monday25.02.201910:17:0233.75,79291.79,71.98
Monday25.02.201910:17:1233.21,79286.74,71.96
Monday25.02.201910:17:2232.75,79293.17,71.96
Monday25.02.201910:17:3232.52,79282.08,72.01
Monday25.02.201910:17:4233.59,79298.53,71.96
Monday25.02.201910:17:5237.62,79286.10,71.91
Monday25.02.201910:18:0236.64,79284.05,71.85
Monday25.02.201910:18:1234.04,79293.07,71.78
Monday25.02.201910:18:2336.94,79288.92,71.76
Monday25.02.201910:18:3337.89,79296.88,71.71
```

Taylor J. Begay

Enclosure and Battery Update (Jason)

WBS Update - Jason Damp

Person Primarily Responsible: Jason Damp

| ID	Activity/Task	Description	Deliverable(s)	Other People
1	**HC-12 Multi-Node Structure**	Yang will give an update		
1.1	Research	Research wireless infrastructures and decide which method best fits our application	- List of configurations - Pros/Cons for each - Decision of best fit (top 2)	
1.2	Configuration	Add third node to system and configure in previously chosen configuration	- Code - (3) Assembled Test Circuits - Test data	
1.3	Primitive Testing	Test the primitive multi-node system in a semi real-world application	- Field report (.txt) of collected data - List of bugs/improvements - (3) Still intact weather modules	- Entire team
2	**Power System Implementation**	Now including Enclosure Logistics and Layout		
2.1	Gather Data	Test our devices power consumption to better understand how much power we will really need	- Individual module reports - Transmitting/Receiving report - Estimated battery size (maH)	
2.2	Research	Find batteries that fit our design constraints (voltage, maH, physical size). Research possible voltage regulating circuit	- Voltage regulator circuit - Desired battery size (to fit box) - Finalized amount of maH	
2.3	Slightly-Less Primitive Testing	Configure circuit with battery and test at home	- Detailed report on battery life - Test data (.txt) - List of potential improvements	- Entire team

WBS Part Updated

	Person Primarily Responsible: Yang Du			
ID	**Activity/<u>Task</u>**	**Description**	**Deliverable(s)**	**Other People**
2	**Solder/Assemble Complete System**			
2.1	- Layout PCBs	-Connect components under normal functional condition. -Consider the area of PCB reasonably.	Completed	-Entire team
2.2	-Solder PCBs	-Solder components and wires as little as possible. -Use the area of PCB reasonably.	Pending	-Entire team
2.3	-Assembly	-Consider whole power consumption. -As far as possible to achieve low power consumption.	Pending	-Entire team

Yang Du

HC-12 Update - Yang
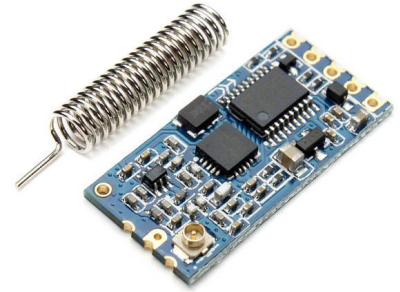
- Having difficulties with complex functions of the module
  - Trying to setup the module and utilize the channels for multi-node
  - Trying to utilize different transmitting strengths, so we can minimize power consumption
- Dr. Winfree suggested a few things that might help:
  - Try sending only the average value of a set time period (Ex. Take average of 5 minute period and send only one set of values)
  - Log data at a regular interval but only send data when a significant change in values has occurred
  - Utilize a master node to send/receive data only when required or at a given set of rules (Sunrise/Sundown)

WBS Part Updated

Person Primarily Responsible: Cheng Wang				
ID	**Activity/<u>Task</u>**	**Description**	**Deliverable(s)**	**Other People**
1	**Update Website**			
1.1	Design website UI	Layout the basic design of our main pages so that they are ready for content.	- Home Page - Project Description Page - About us Page	
1.2	Set website links	Ensure all menus are properly linked as well as the footer links and any others we may need to include.	- Working drop down menu - Working links in footer - All other links functional	
1.3	Fill website up	Change the website content when we get some grogress	- Updated Home Page - Update Project Description - Updated About us - Any other required pages have been added and filled	
1.4	Upload website to server	Utilize Dreamweaver to upload our most recent changes to the NAU CEFNS Server.	- Redundant Local Copy - Updated Server Files - Updated date in footer	

Cheng Wang

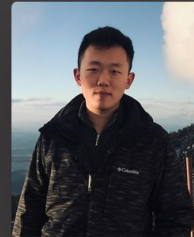# CONTACTS
TEAM MEMBERS

JASON DAMP

Email:

jsd242@nau.edu

TAYLOR BEGAY

Email:

tjb389@nau.edu

CHENG WANG

Email:

cw946@nau.edu

YANG DU

Email:

yd74@nau.edu

Cheng Wang

Conclusion (Jason)

Although we have had many issues, there are still other aspects of our project that we have been making progress on as we continue to speed towards UGRADS.