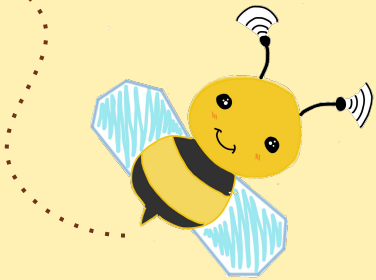
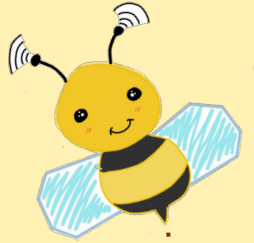



Final Presentation

Team Bumblebee
Fall 2021





Members

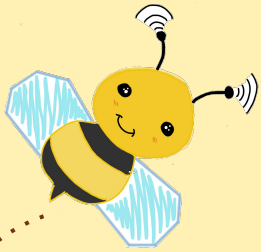
Brian Griswold
EE496, EE- EP

Zhongkeng Lin
EE396, EE- System

Thant Thiri
EE496, EE- EP

YuCheng He
EE396, EE- System

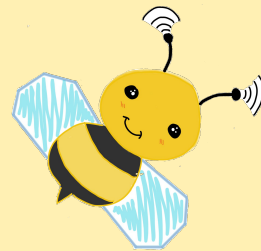
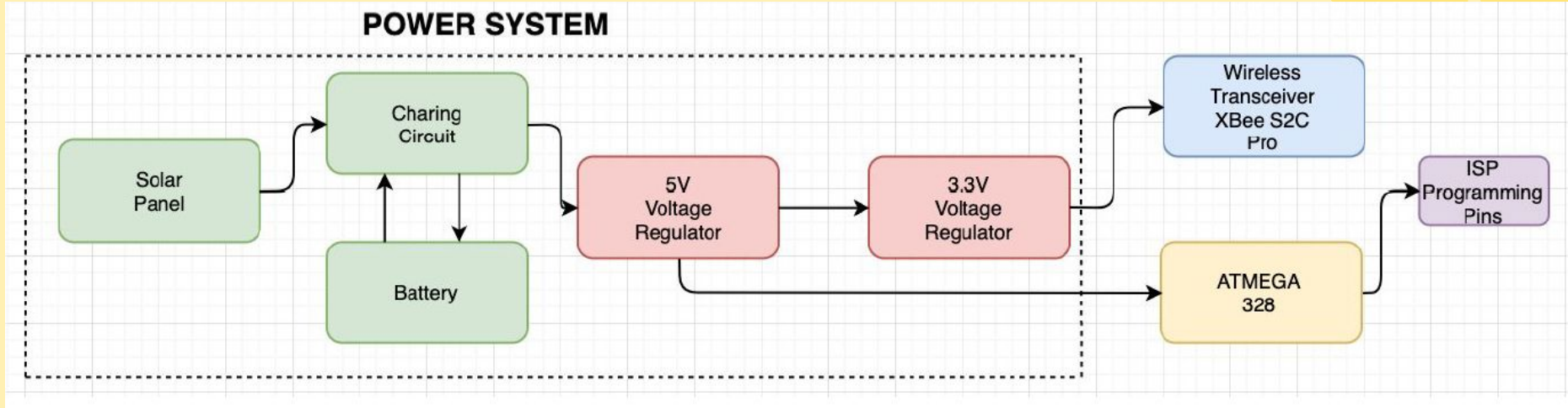
Yin Aye
EE496, EE-EP



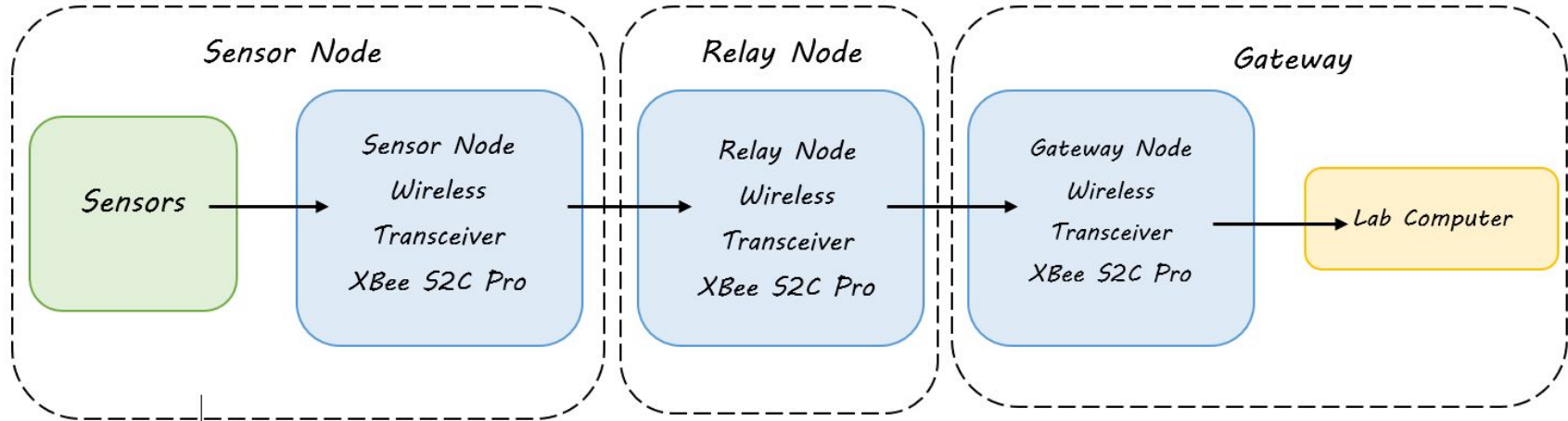
Presentation Overview

- Block Diagrams
 - Power
 - Signal/Communication
- Team Progress
- Range Test
- IoT Mapping implement Xbee Models
- Gantt Chart
- Future work
- Questions

Power Block Diagram



Signal/ Communication Block Diagram





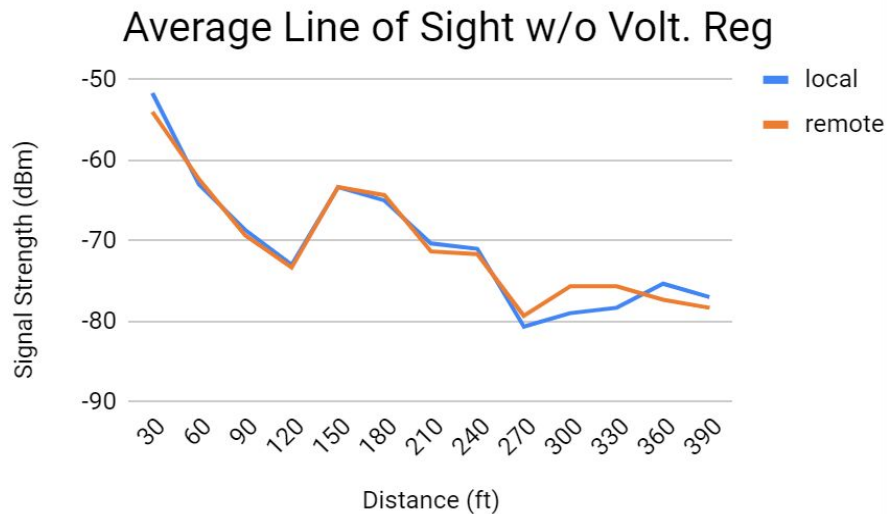
Team Progress



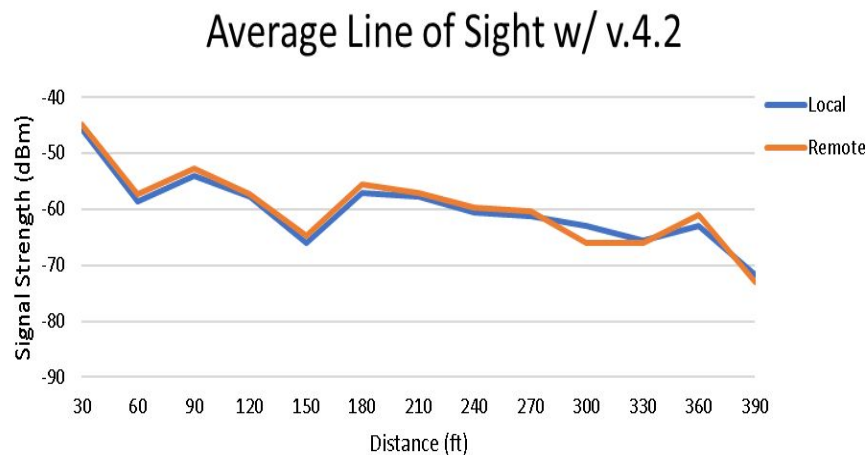
- Range tested Holmes / McCarthy Mall to West side Hawaii Hall
- Checked the signal strength of various node positions in IoT Network Mapping consisting of 12 nodes .
- Continued populating Version 4.2 boards.
- Coordinated with firmware to set up Bumblebee code in Control Tower for Gateway access.
- Worked with firmware team to define the pinout for software serial connection in VS tower code.



Holmes Hall 4th floor line of sight

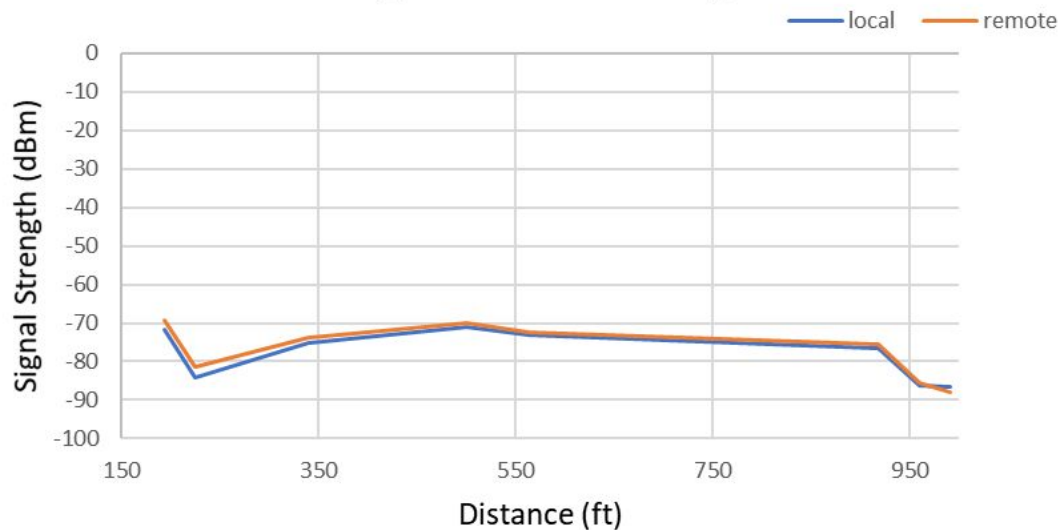


Line of Sight version 4.1



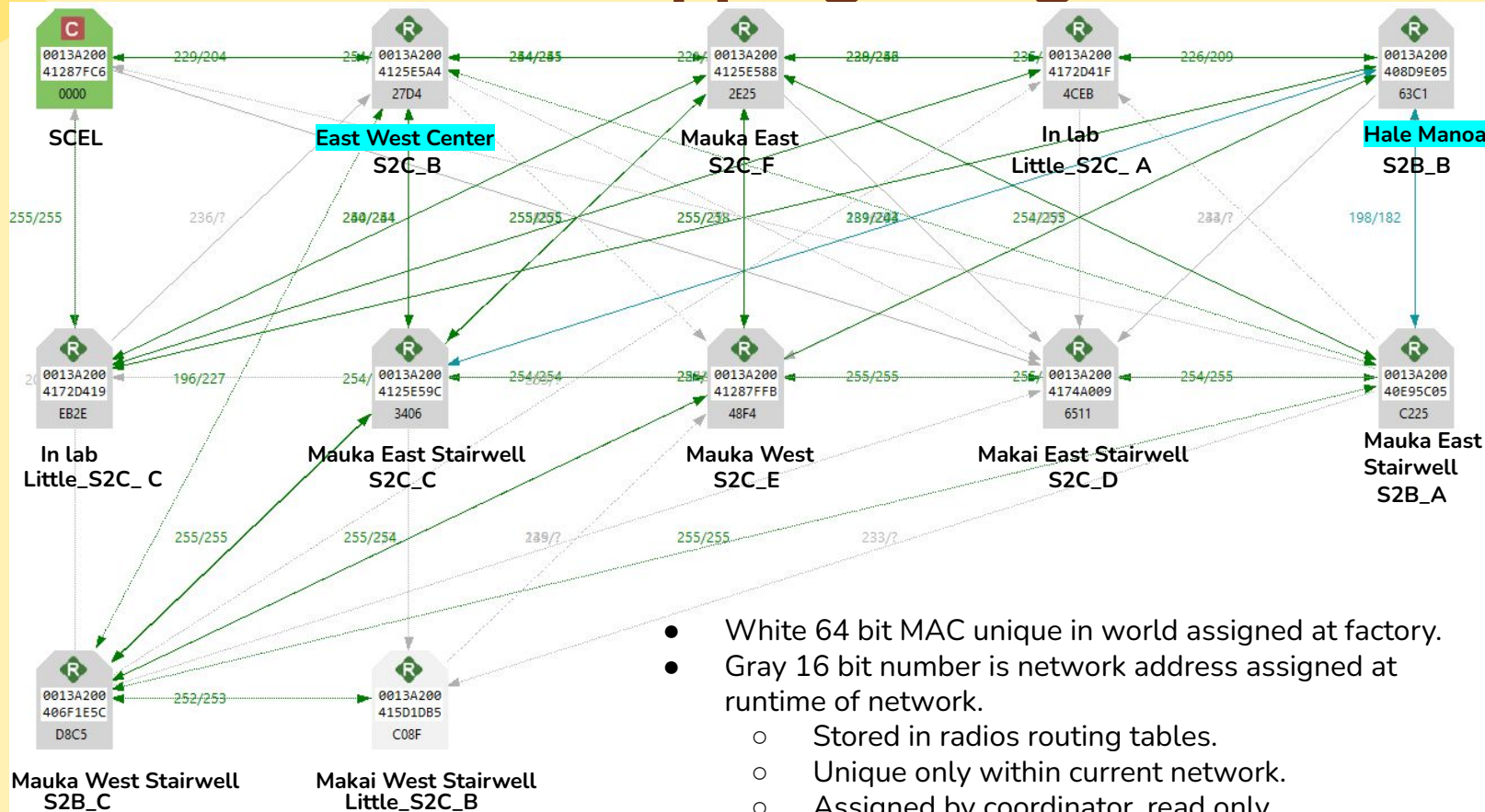
Line of Sight with new power supplies
3.3v and 5v

Average Not Line of Sight



Xbee Pro has -112 (dBm) sensitivity receiving.

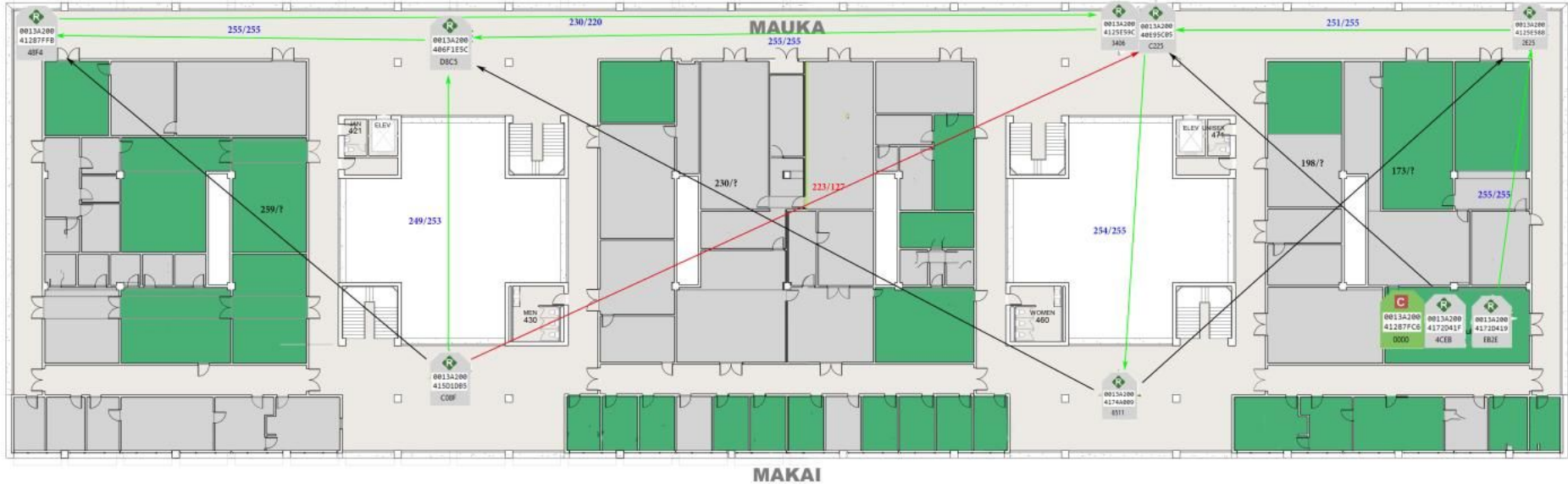
IOT Network Mapping using Xbees



- White 64 bit MAC unique in world assigned at factory.
- Gray 16 bit number is network address assigned at runtime of network.
 - Stored in radios routing tables.
 - Unique only within current network.
 - Assigned by coordinator, read only.

Data Results(Side)

Holmes Hall
400 Level





R
0013A200
41287FFB
48F4

C
0013A200
41287FC6
0000

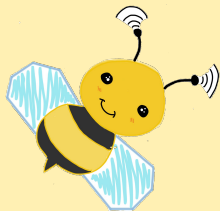
R
0013A200
4125E588
2E25

R
0013A200
4172D41F
4CEB

R
0013A200
4125E5A4
27D4

R
0013A200
408D9E05
63C1

254/255



Future Work



- Populate last two Version 4.2
- Range testing using version 4.2 PCB
- Range testing with other hardware teams to create relay network of sensor data to test gateway.
- Test VS code on Bumblebee PCB Board and verify communication between Atmega software serial and Xbee
 - Test Gateway communication
 - (Perhaps this Sunday)
- Incorporation of SMD sensor on Bumblebee





 Questions? 