



# Preliminary Design Review (PDR)

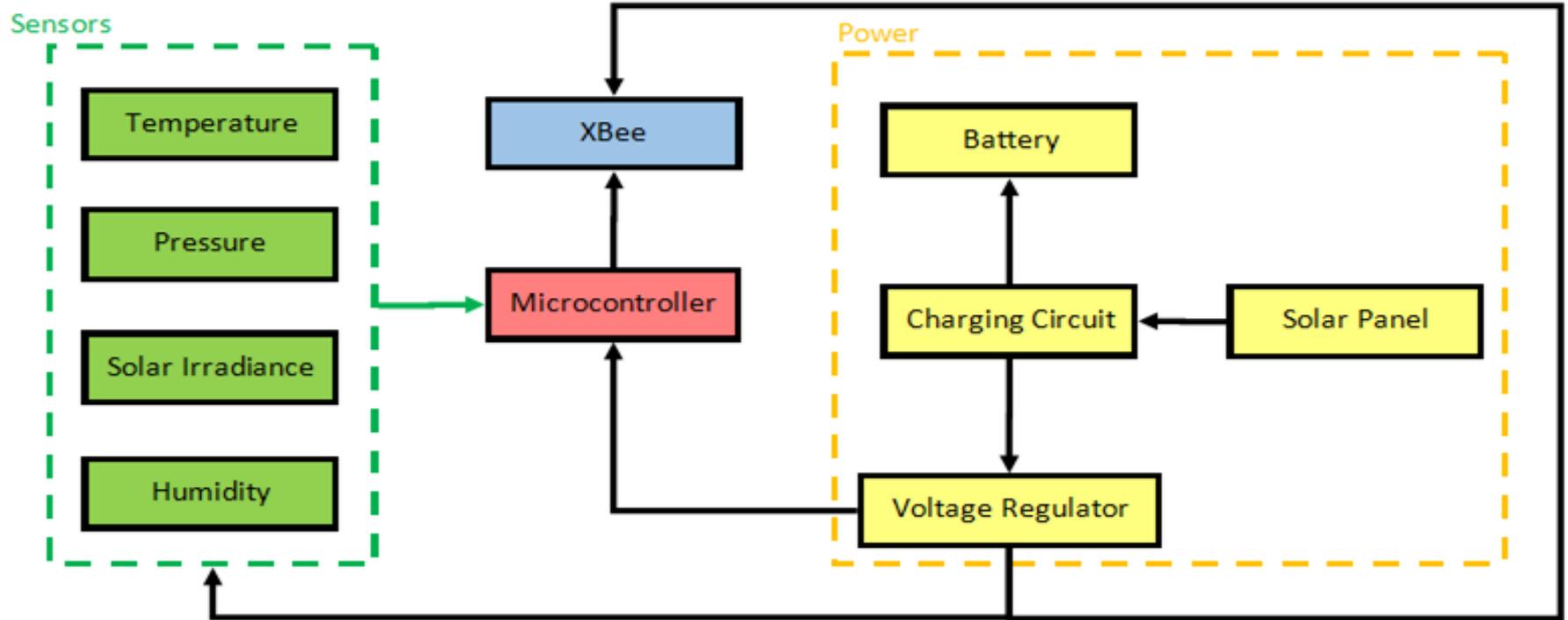
Team Asteroid

Mentor: Brian Chan  
Advisor: Dr. Kuh

# Overview

- 1) Overall Block Diagram
- 2) Microprocessor & Bare Arduino
- 3) Sensors
- 4) Charging Circuit
- 5) XBee
- 6) Experienced Problems and Issues
- 7) Next Tasks

# Overall Block Diagram



# Team Tasks

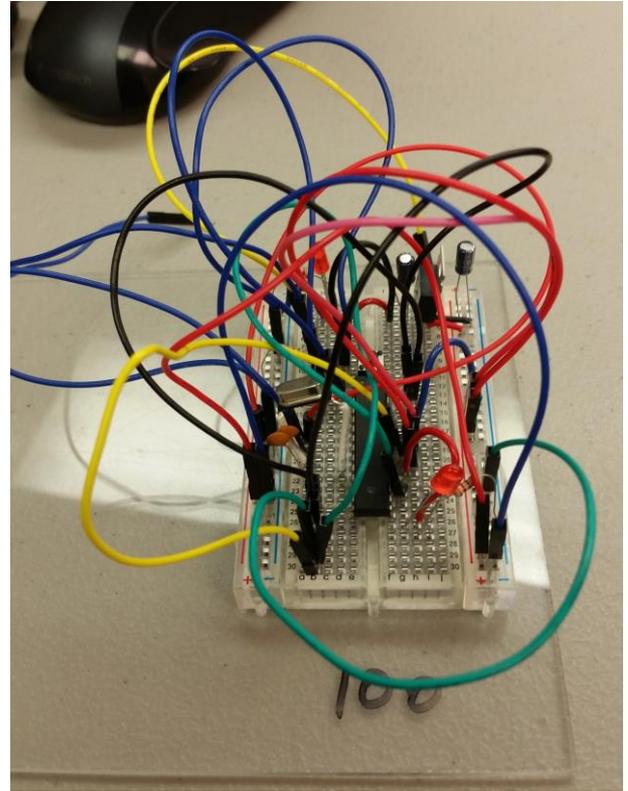
Kevin - XBee, Eagle Schematics

Gordon - Charging Circuit, Eagle Schematics

Nathan - Sensor codes, XBee

# Microprocessor & Bare Arduino

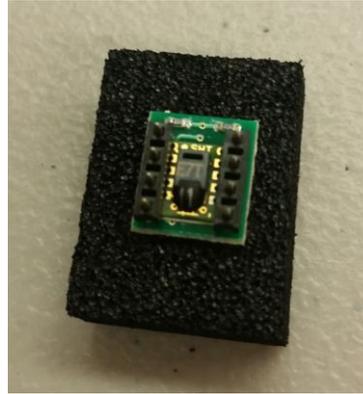
- 1) Programmed the microprocessor using arduino (blink program)
- 1) Built bare arduino on a breadboard
- 1) Successfully ran blink program on bare arduino



Bare Arduino

# Sensors

- 1) Tested sensors using example code
- 1) Looked at functions from libraries
- 1) Started splitting sensors into modules



Humidity Sensor (SHT1x)



Pressure Sensor (BMP-180)

# Charging Circuit

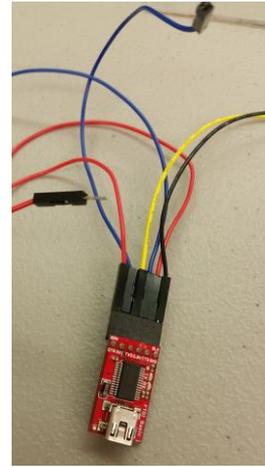
- 1) Charged via USB functions properly
- 1) Will test the charging circuit using the solar panel



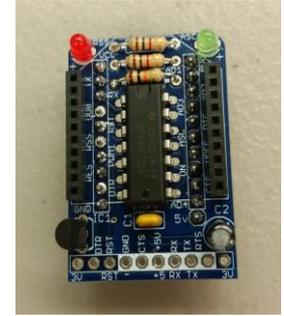
Charging Circuit  
(MCP73871 with Tenergy 18650 3.7V 6600mAh)

# XBee

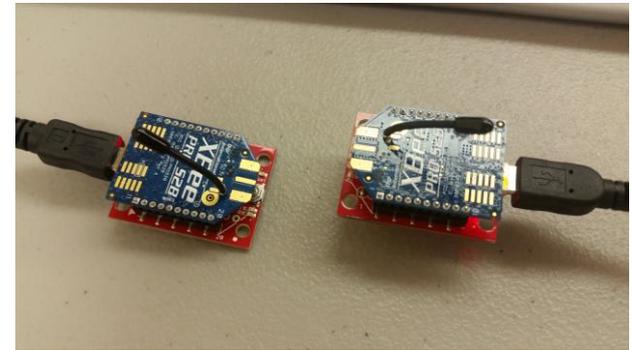
- 1) Configuration completed
- 1) Sent and received packages through two XBees achieved through USB connection via XCTU (AT mode)



FTDI Basic Breakout



Arduino Adapter

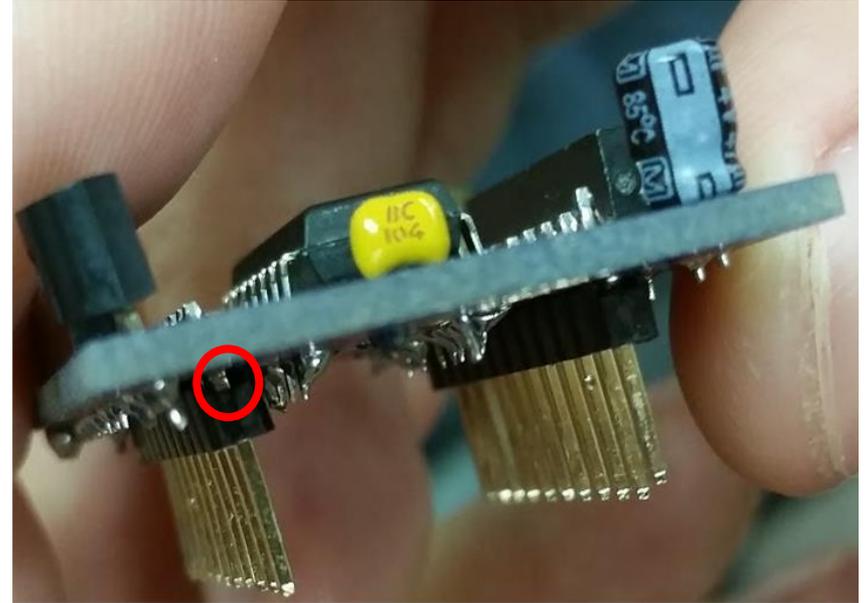


XBee's communicating



# Experienced Problems and Issues

- 1) Soldering techniques
- 1) Configuring XBee (Resolved)



XBee Adapter

# Next Tasks

Test XBee in AT and API mode

Create algorithm for sensors and transmitting data

Break up the code into separate modules

Test sensors & XBee with Bare Arduino

Start Eagle design

# Team's Progress

Date	2/15/2016	2/22/2016	2/29/2016	3/7/2016	3/14/2016	3/21/2016	3/28/2016	4/4/2016	4/11/2016	4/18/2016	4/25/2016	5/2/2016	5/9/2016
<b>Modules</b>													
Microprocessor	•												
Sensors				•									
Charging Circuit			•										
Xbee				•									
Build													
System Integration								•					
Overall System Firmware						•							
Design/Print PCB					•								
Housing								•					
Test													
Debug							•	•					

\*\*\* *Tasks been pushed back 1 week* \*\*\*

Questions?

# Image Sources

1. <http://www.whatdoesitmean.com/vas1.jpg>
2. Block Diagram made by Gordon
3. Weatherbox Parts pictures taken by Kevin