



Preliminary Design Review (PDR)

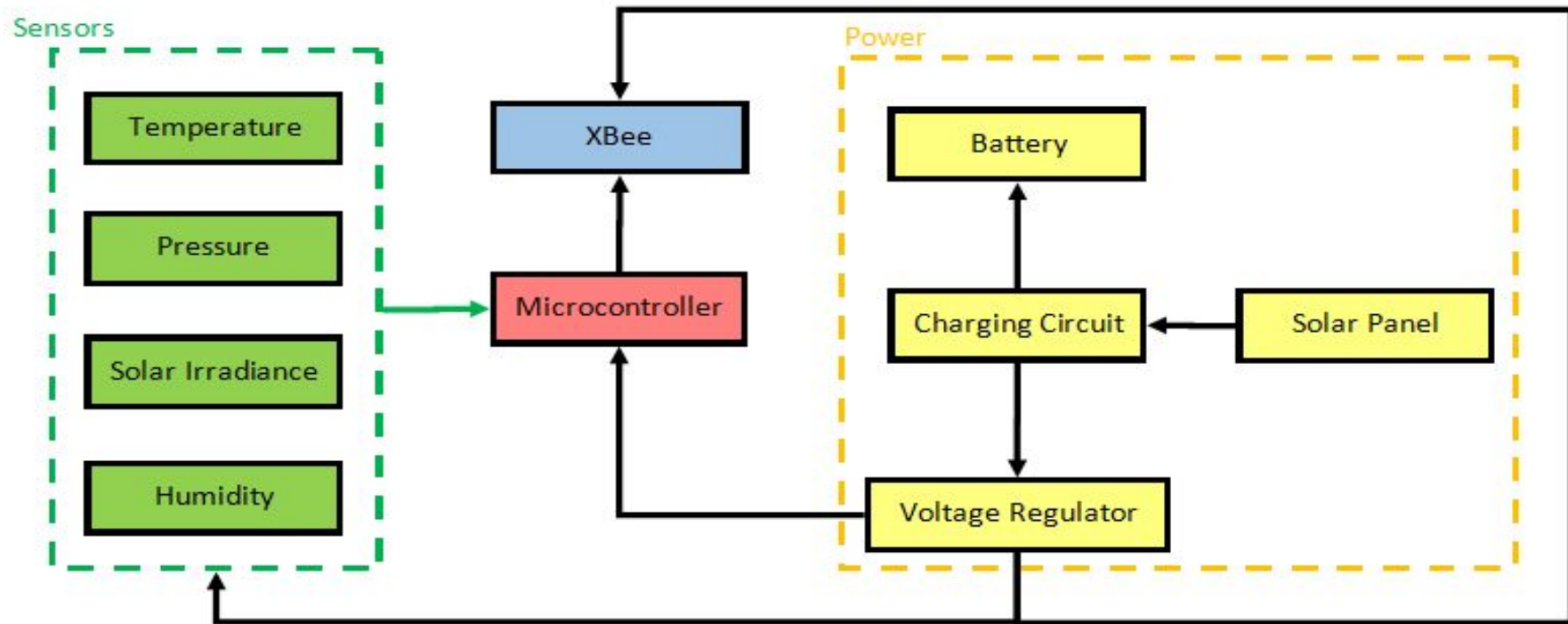
Team Asteroid

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

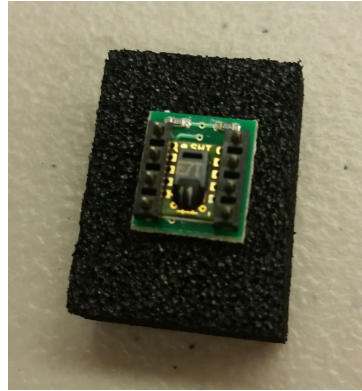
- 1) Programmed the microprocessor using arduino (blink program)
- 2) Built bare arduino on a breadboard
- 3) Successfully ran blink program on bare arduino



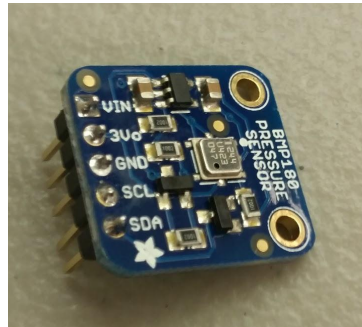
Bare Arduino

Sensors

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



Humidity Sensor (SHT1x)



Pressure Sensor (BMP-180)

Charging Circuit

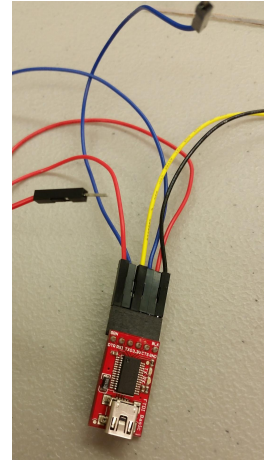
- 1) Charged via USB functions properly
- 2) Will test the charging circuit using the solar panel



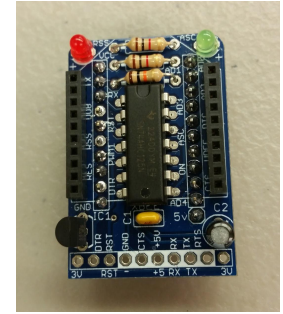
Charging Circuit
(MCP73871 with Tenergy 18650 3.7V 6600mAh)

XBee

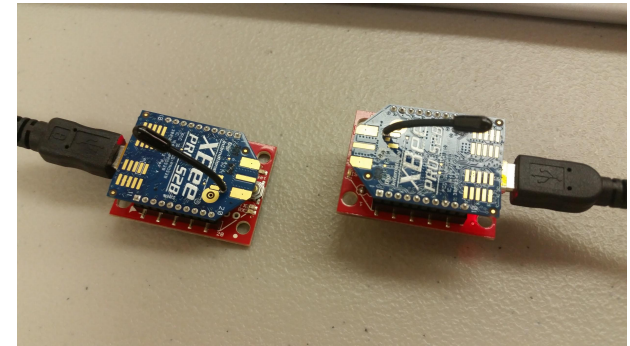
- 1) Configuration completed
- 2) Sent and received packages through two XBees achieved through USB connection via XCTU (AT mode)



FTDI Basic Breakout



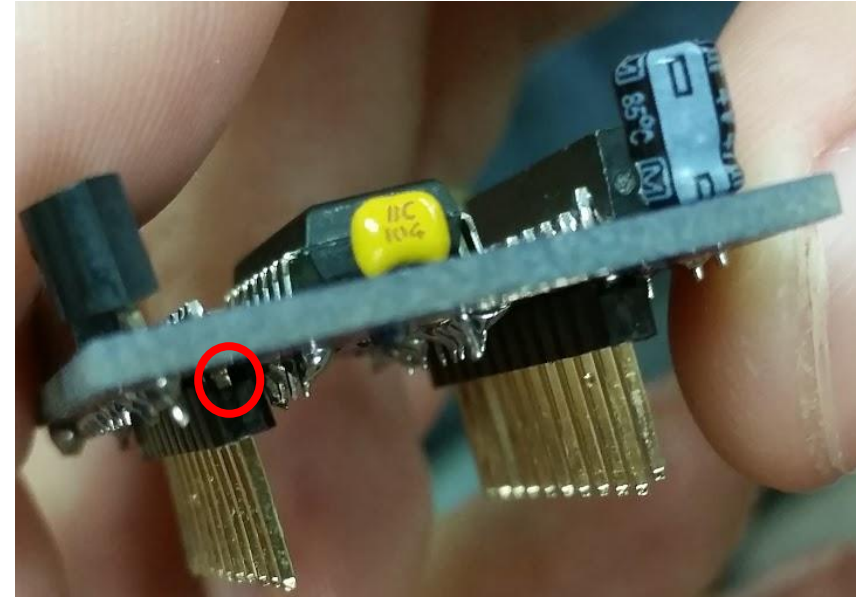
Arduino Adapter



XBee's communicating

Experienced Problems and Issues

- 1) Soldering techniques
- 2) 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
Modules													
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