



Team Guava

Preliminary

Design Review

Presentation

S18



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Presentation Overview

- Block Diagram
- Progress
 - Schematic
 - PCB
- Future Work
- Gantt Chart
- Potential Problems
- Questions

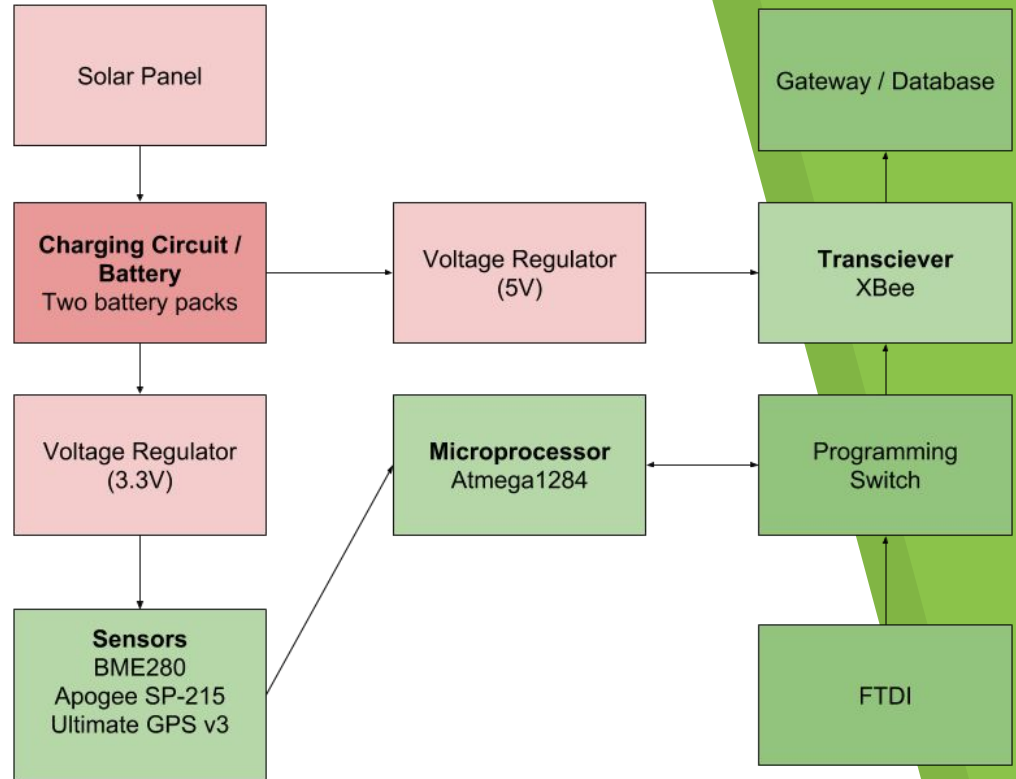


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Block Diagram

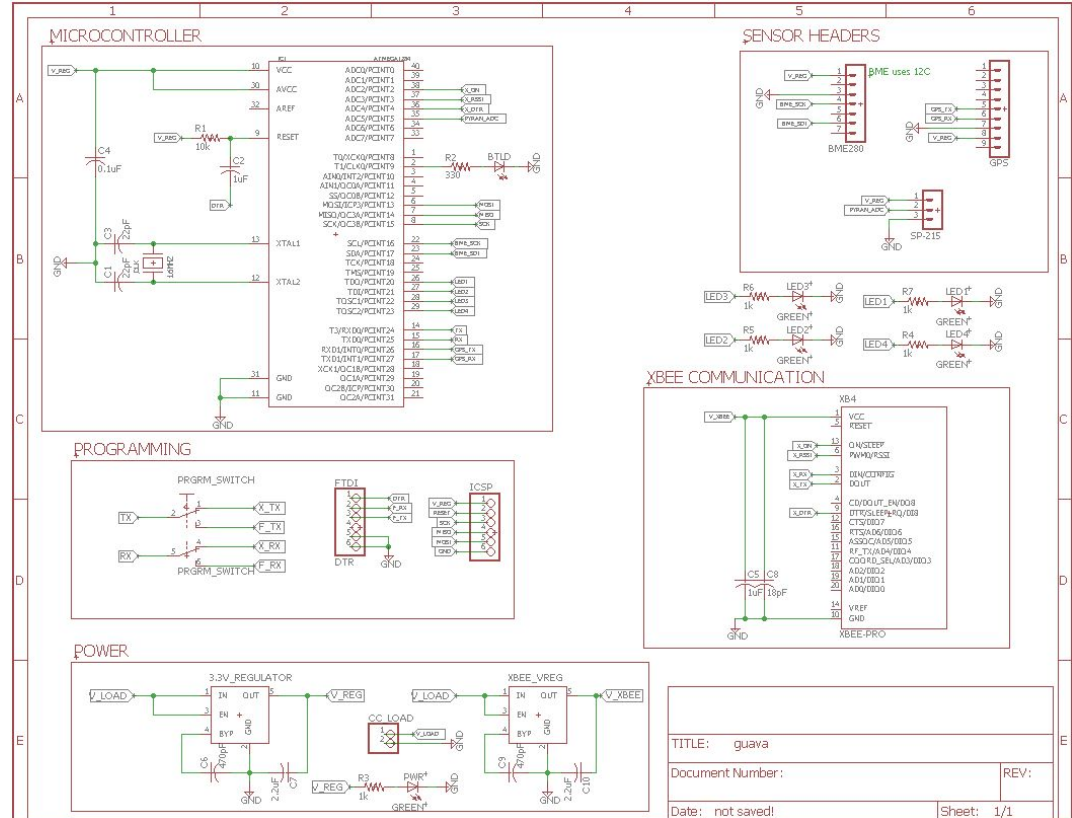
- Voltage Regulators
3.3V for sensors. 5V
for XBee
- Physical
Programming
Switch to change
RX/TX connections





Schematic

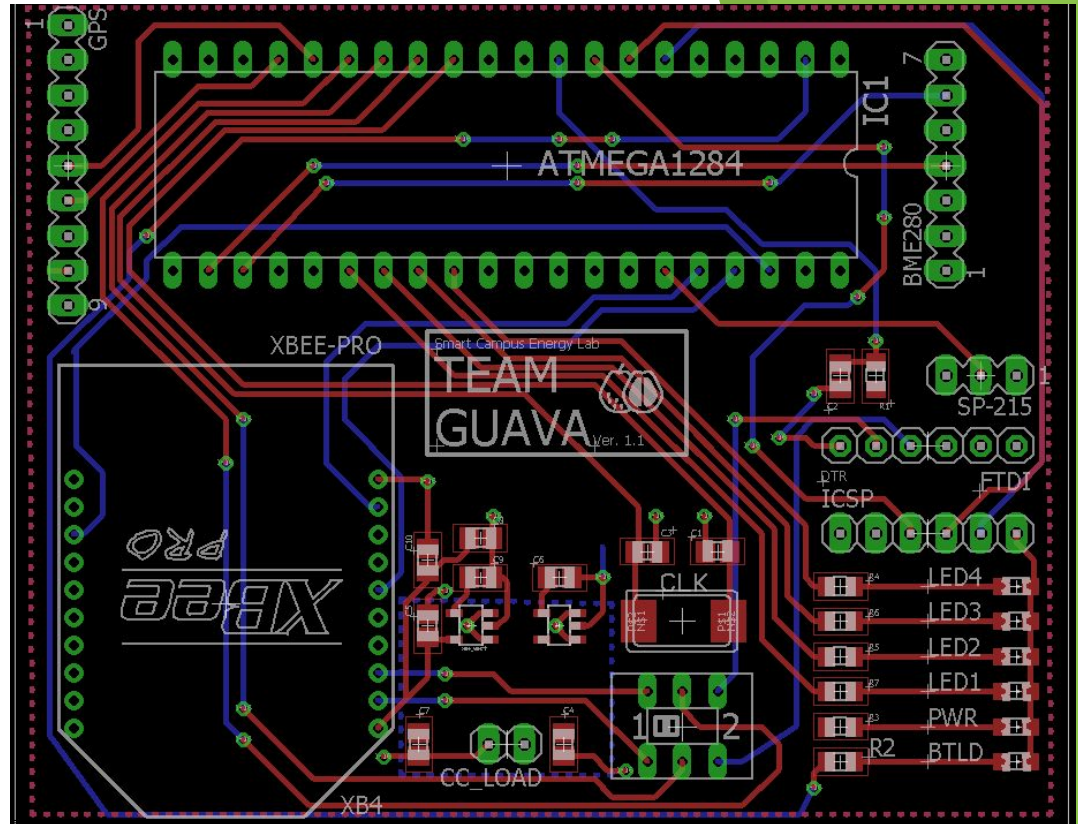
- 6 LEDs for debugging
 - Including bootload and power
- Sensors are connected to board using headers
- Includes headers for programming and bootloading





Printed Circuit Board

- 6 LEDs for debugging
 - Including bootload and power
- Sensors are connected to board using headers
- Includes headers for programming and bootloading





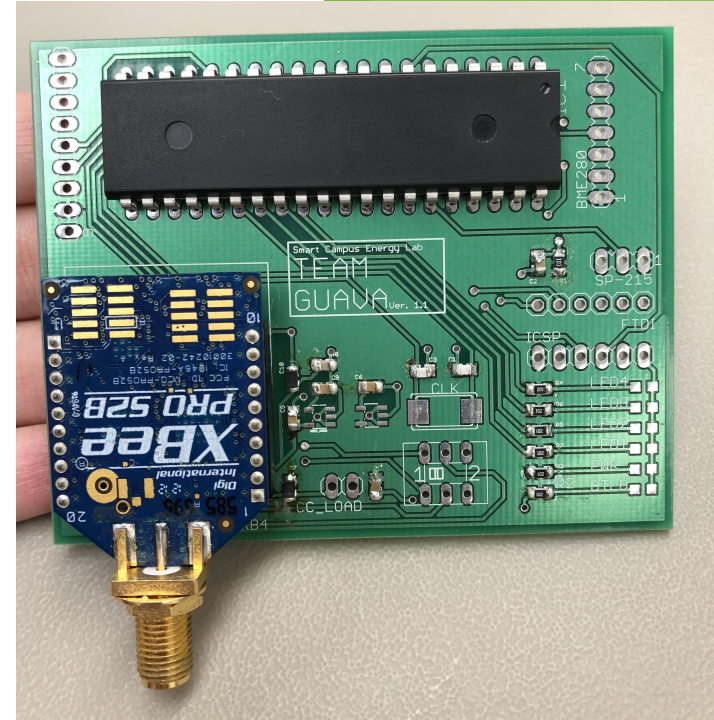
Guava Progress

Breadboard

- Installed bootloader for 1284P
- Wouldn't upload sketches
- Found out it would upload sketches if powered by source other than FTDI

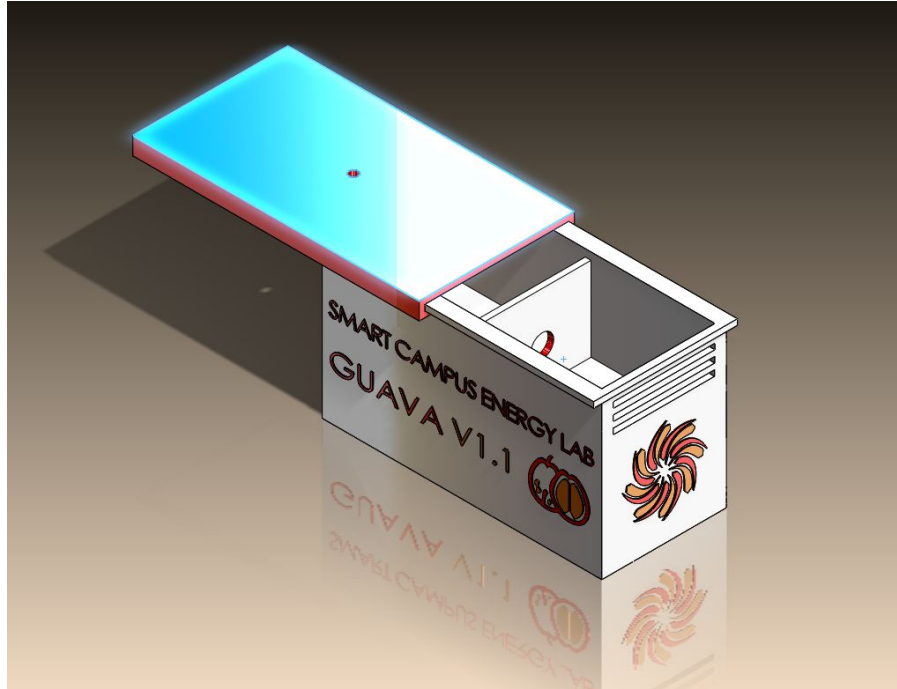
Board Population

- Began populating board
- DIP Carrier didn't come in yet



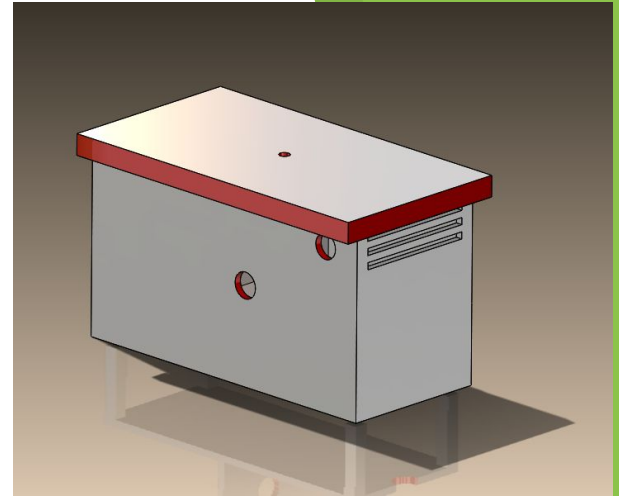
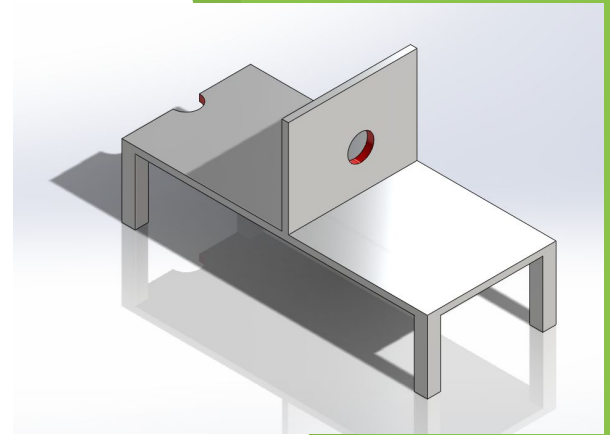


Housing



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Power Budget

Guava Board Power Budget			
3.3 Volt Module	Datasheet Values		
Device Name	Idle (mA)	Typical Current Draw (mA)	Max Current Draw (mA)
Xbee Transmit	15	205	220
Xbee Receive			
Barometer	0.01	0.01	0.01
Humidity	0	0.65	1
V. Reg 3.3V		0.35	0.9
V. Reg 3.3V (Xbee)		0.35	0.9
Atmega 1284		1.1	5.5
Irradiance ADC	0.01	0.15	0.3
Irradiance Op Amp		0.8	2.2
Total Current Draw (mA)	15.02	208.41	230.81
Supply Voltage (V)	3.3	3.3	3.3
Total Power Consumption (mW)	49.566	687.753	761.673



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Future Work

Produce a self-sustaining environmental sensor module that will collect meteorological data

- Finish populating the boards
- Print a weatherproof housing
- Change clock speed from 16 to 8MHz
- Implement running two batteries



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Guava																
(Gantt Chart)																
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Date	1/8/2018	1/15/2018	1/22/2018	1/29/2018	2/5/2018	2/12/2018	2/19/2018	2/26/2018	3/5/2018	3/12/2018	3/19/2018	3/26/2018	4/2/2018	4/9/2018	4/16/2018	4/23/2018
Proposal			2/3/18													
PDR						2/24/18										
CDR										3/24/18						
Final																4/28/18
Power Budget																
Housing																
Designing																
Printing																
Parts order/Bill of Materials																
Build																
Fabrication Time																
Testing																
Final Report																



Gantt Chart



Potential Problems

- Power consumption of 1284P
- Sketch uploading issues for board
- Figuring out changing clock speed

Other

- Long debugging process

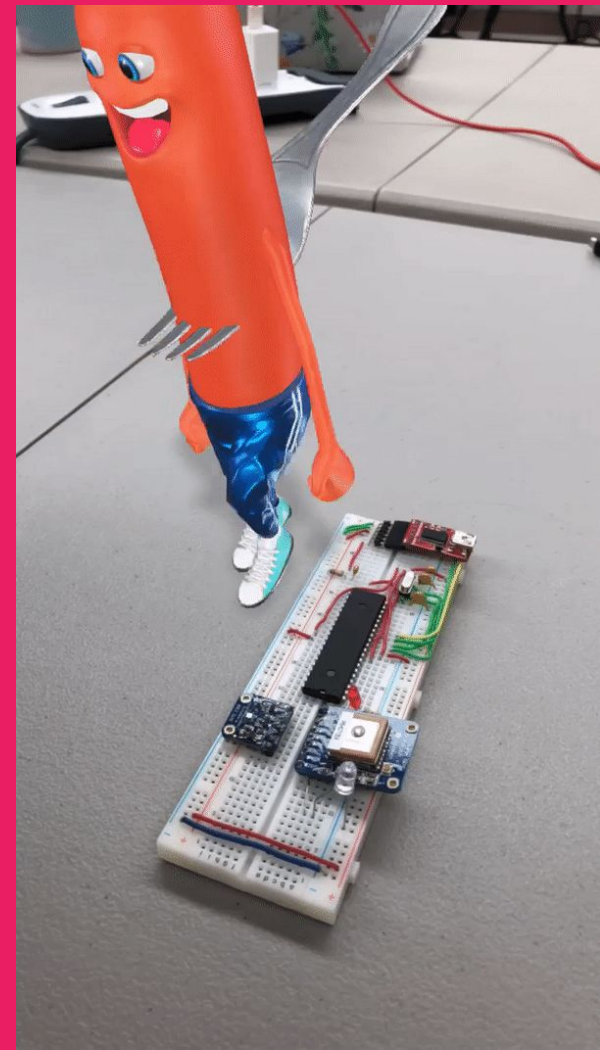


Thank you!
Any Questions?



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