University of Hawaii at Manoa SCEL

Dragon Fruit PDR

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Overview

- Goals for this Semester
- Overall Block Diagram
- Problems Experienced
- Potential Solutions
- Schedule
- Team Progress
- What to finish

Goals for this Semester

Debug

- Ghost Voltage
- Excess current draw
- Xbee making noise

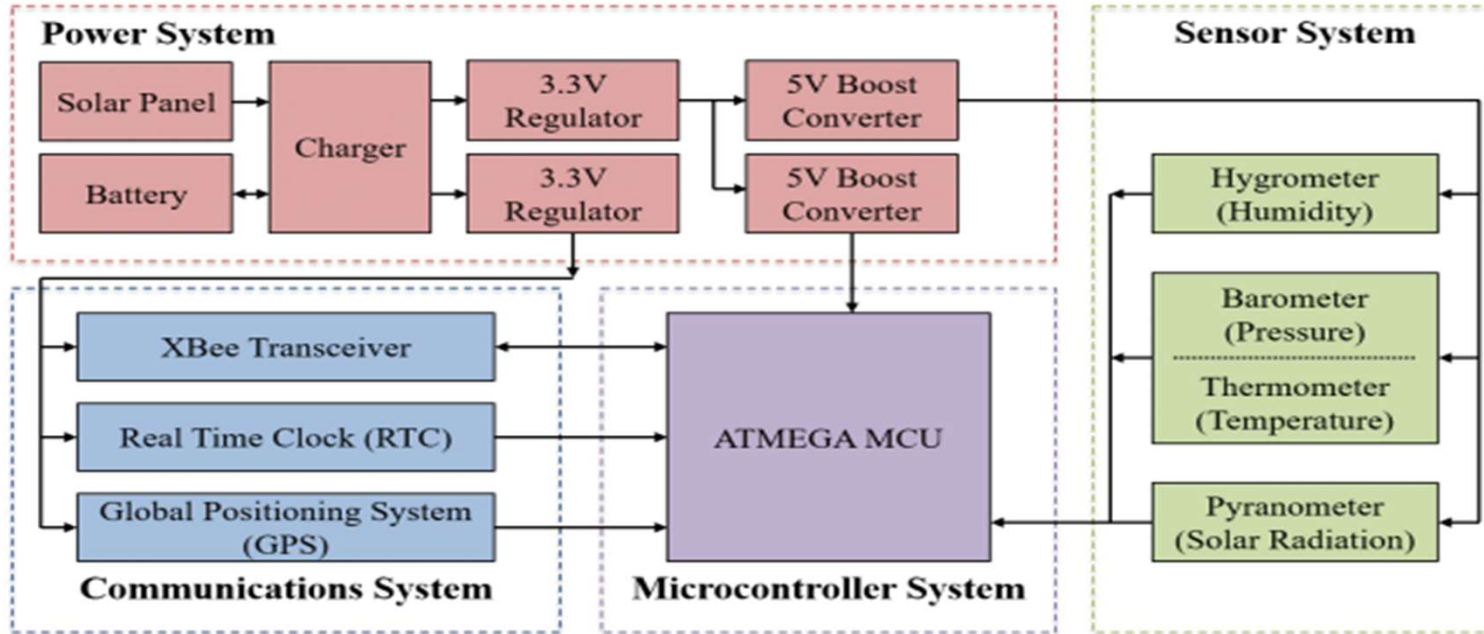## House Circuit

Deploy

Relearn the components

Redesign PCB

- GPS
- Real Time Clock
- More efficient parts

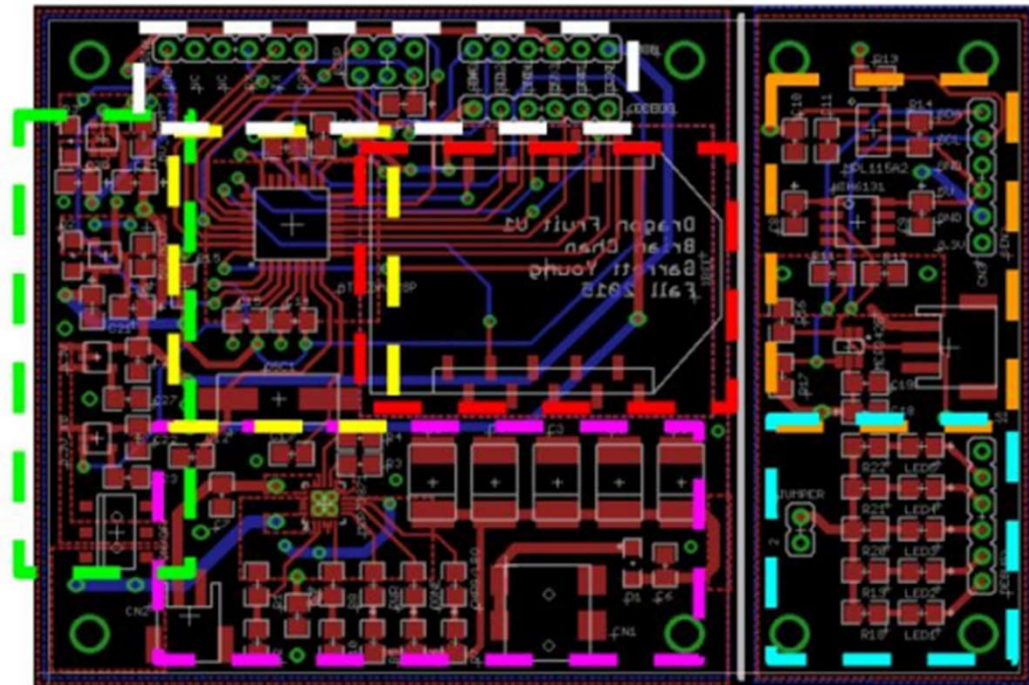# Block Diagram

Block Diagram

Green - Power
Pink - Charging Circuit
White - Bus interface
Yellow - MCU
Red - Xbee
Orange - Sensors
Blue - Debug LEDs

Problems Experienced

General Problems

- Board did not program with 16 MHz clock

- Swapped 16 MHz clock for 8 MHz

    - (increased current draw)

- Noise problem (screeching) at 3.5V+

    - When connecting battery or solar panel

- Assumed noise originated from XBEE

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Ghost Voltage

- Believed 3.3V reg. was outputting 4V to XBEE

- Excess voltage stems from MCU and XBEE connection

- Tasked to check voltage reg without XBEE connected

- Ghost voltage disappeared and screeching noise became less pronounced

Programming Issues

- Could not get solar panel and battery readings

- Connections were not made during design process

- Jumped battery and solar voltages to MCU

- Voltage divider needed for solar panel and ADC jump connection

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Housing

- Not optimized for debugging purposes

- Change housing orientation for board accessibility

  - Access to debug lights

  - Turn on and off board

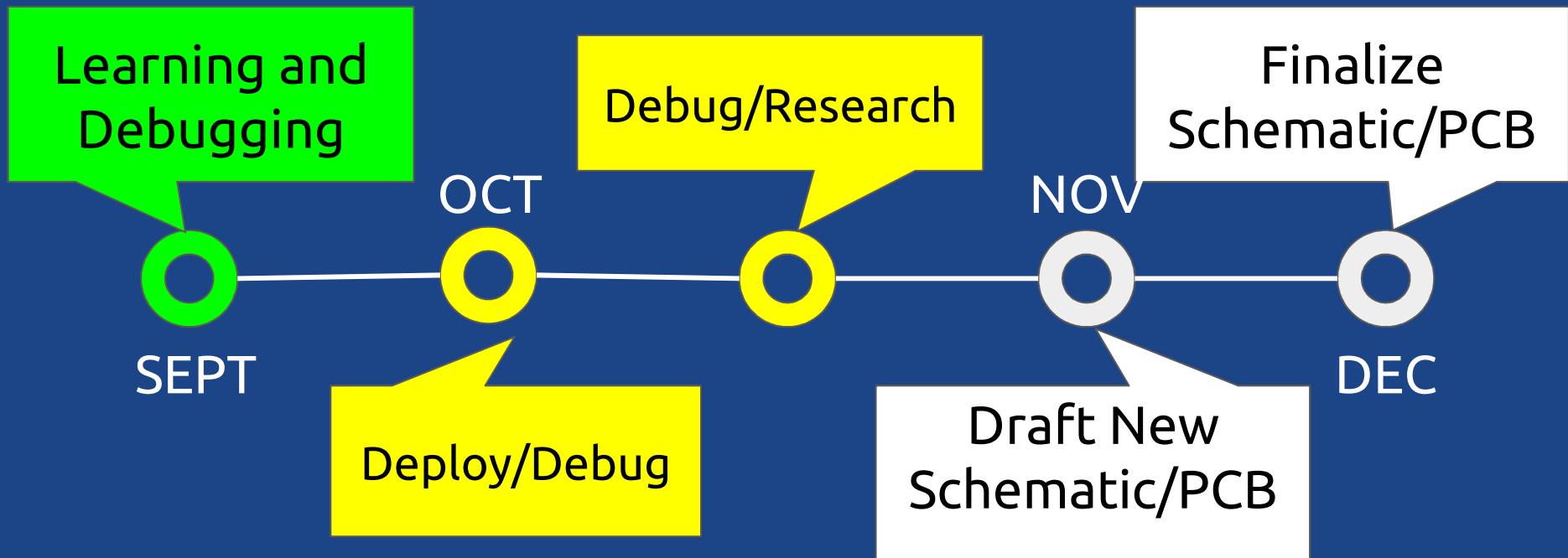 - Ease of access for programming

Potential Solutions

- (Excess Current) - Decided to keep 16 MHz
- (Screeching Noise)
  - Incorporate voltage divider in the MCU - XBEE circuit
- (Debugging) - Build subsections on the protoboard

Schedule

Learning and Debugging

Debug/Research

Finalize Schematic/PCB

OCT

NOV

SEPT

DEC

Deploy/Debug

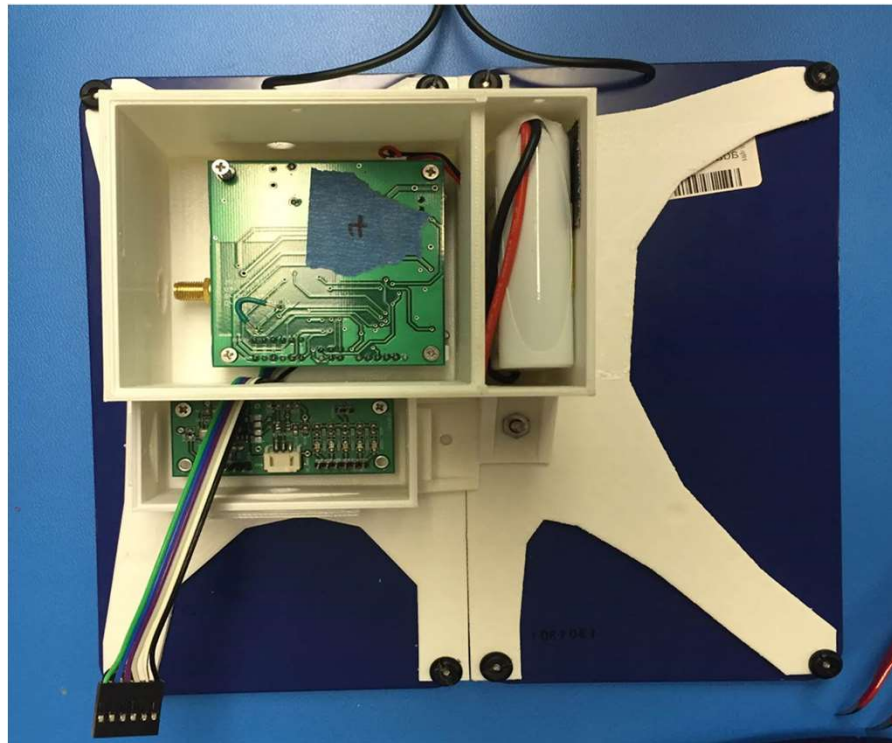Draft New Schematic/PCB

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Team Progress

- Dragonfruit housing prototype printed

- Learned about different components on the PCB board

- Reading datasheets and previous Dragon Fruit documents

- Interfaced with the other teams

Housing

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What to Finish

- Officially deploy board

- Continue learning how Dragon Fruit works

- Debug circuit board

- Start research for GPS and real time clock

- Run performance tests on circuit

Questions?

Image Sources

http://cryptid-creations.deviantart.com/art/Daily-Paint-1081-Dragon-Fruit-Keeper-570702189

Housing image - Tyler Yamauchi