

Team 29: Automated Greenhouse Bi-Weekly Update 2

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Sponsor: Kevin Nowka

TA: Skyelar Head



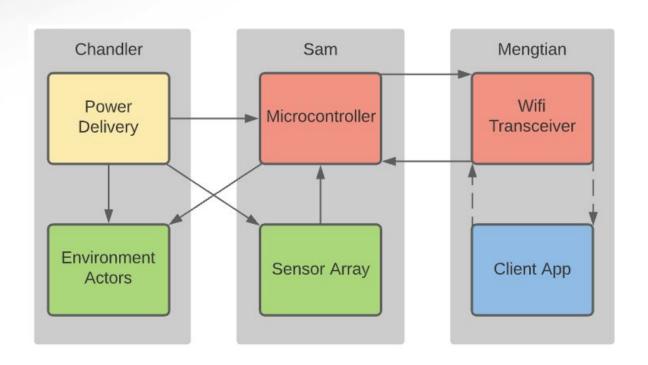
Project Summary

- Traditional gardening, even with a greenhouse, is a very manual process that can be very time consuming and plants are still vulnerable to the elements.
- The automatic greenhouse attempts to alleviate this problem by automating water delivery, temperature regulation, and airflow according to remotely set values by the user.



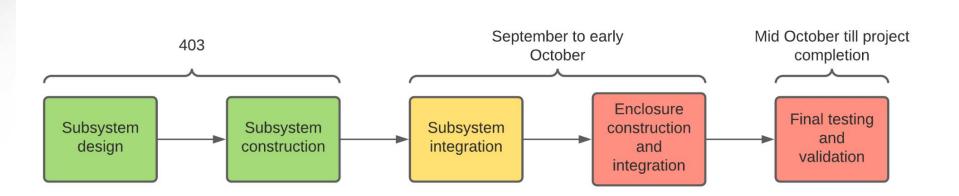


Subsystem Overview





Project Timeline





Power Subsystem

Owner: Chandler Kramer

Accomplishments since last update 10 hrs of effort	Ongoing progress/problems and plans until the next presentation						
 Ordered Fans for the greenhouse enclosure Ordered and received buck converter components for MCU Ordered and received updated power supply for Solenoids. 	 Configuring and testing the buck converter (temporary configuration) Soldering main buck converter piece to the breakout board 						



MCU and Sensor Subsystem

Owner: Samuel Erickson

Accomplishments since last update 10 hrs of effort	Ongoing progress/problems and plans until the next presentation
 Getting the MCU side of the MCU <-> wifi connection successfully configured in preparation for full data stream integration Driving relay board with MCU to integrate with solenoids and fan 	 Integrating solenoids + fans with relay board Send wifi board sensor data Create control algorithm framework



Client Interface Subsystem

Owner: Mengtian Ke

Accomplishments since last update 10 hrs of effort	Ongoing progress/problems and plans until the next presentation						
·	 Expand communication between the MCU and Photon board Display the MCU sensor data 						



Power Subsystem

Owner: Chandler Kramer

- Fan(s)
- Power supply
- Buck converter components





MCU and Sensor Subsystem

Owner: Samuel Erickson

- Main efforts towards getting the MCU and wifi board bidirectional connection established
 - Results in next slide





Client Interface Subsystem

Owner: Mengtian Ke

The Photon communicates with the MCU and transfer data between them.

```
Sent to MCU 1
Received from MCU 2
Sent to MCU 2
Received from MCU 3
Sent to MCU 3
Received from MCU 4
Sent to MCU 4
Received from MCU 5
Sent to MCU 5
Received from MCU 6
Sent to MCU 6
Received from MCU 7
Sent to MCU 7
Received from MCU 8
Sent to MCU 8
Received from MCU 9
Sent to MCU 9
Received from MCU 10
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Misc. Update

- Greenhouse has been purchased and constructed courtesy of our sponsor
- Mister and dripper system purchased, to arrive on 10/4
- Silicon caulk for electronics waterproofing purchased
- Decided on plant to grow: cherry belle radish





Execution Plan

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	8-Sep	15-Sep	22-Sep	29-Sep	6-Oct	13-Oct	20-Oct	27-Oct	3-Nov	10-Nov	17-Nov	24-Nov	1-Dec
Interface Subsystem:													
Checked subsystem from 403 to verify functionality													
Connect with the MCU and													
transfer data													
Design a report page to present data													
Design a live graph to show data visually													
Report page prints out the value from each sensor and													
illustrates a live graph Monitoring and tesing data													
from MCU to photon board (vice versa)													
Testing data received in the web-interface from the MCU and displaying them on the website													
Testing web-interface, photon board, and MCUdata as a transmission line													
Final integration testing													
Microcontroller Subsystem: Make sure subsystem works													
from 403 Establish connection with wifi board													
Order solenoids and relay board													
Connect solenoids and fans to relay board and drive through													
MCU Establish permanent wired connections between components													
Create automatic control algorithm													
Test algorithm in enclosure													
Monitoring and testing humidity sensor within enclosure													
Monitoring and testing soil moisture sensor within enclosure													
Monitoring and testing temperature sensor with enclosure													
Final integration testing Power Subsystem:													
Checked subsystem from 403 to verify functionality of components													
Compare and purchase upgraded fans for new design													
Order buck converter for MCU													
Receive buck converter for MCU													
Connect power subsystem with MCU subsystem and relay board													
Establish permanent wired connections between components													
MCU power testing													
Relay board power testing													
Photon board power testing													
Final integration testing													
meegration testing													



Thank you! Any Questions?