



Hydroponics Management Dashboard: Leveraging Tech to Improve Data Visualization for Small Growers

Jade Whiting

GRHS 121 – Greenhouse Design and Operation



- **Hydroponic farm in Sheridan WY**
- **Member of the WY Food Coalition**
- **Wyoming Food Freedom Act**
- **Community education focused**

Papa Joe's
Produce

<https://papajoesproduce.com/sheridan-produce/>

Wyoming Innovation Partnership

- The Wyoming Department of Workforce Services pays Papa Joe's to pay me
- This allows me to develop professional and technical skills in the industry
- My objective as an intern has been to learn and facilitate marketing communications. This includes marketing strategy, development of digital materials, and internal communications like IPM
- My internship "capstone" is collaborating on the Dashboard Project





The Dashboard

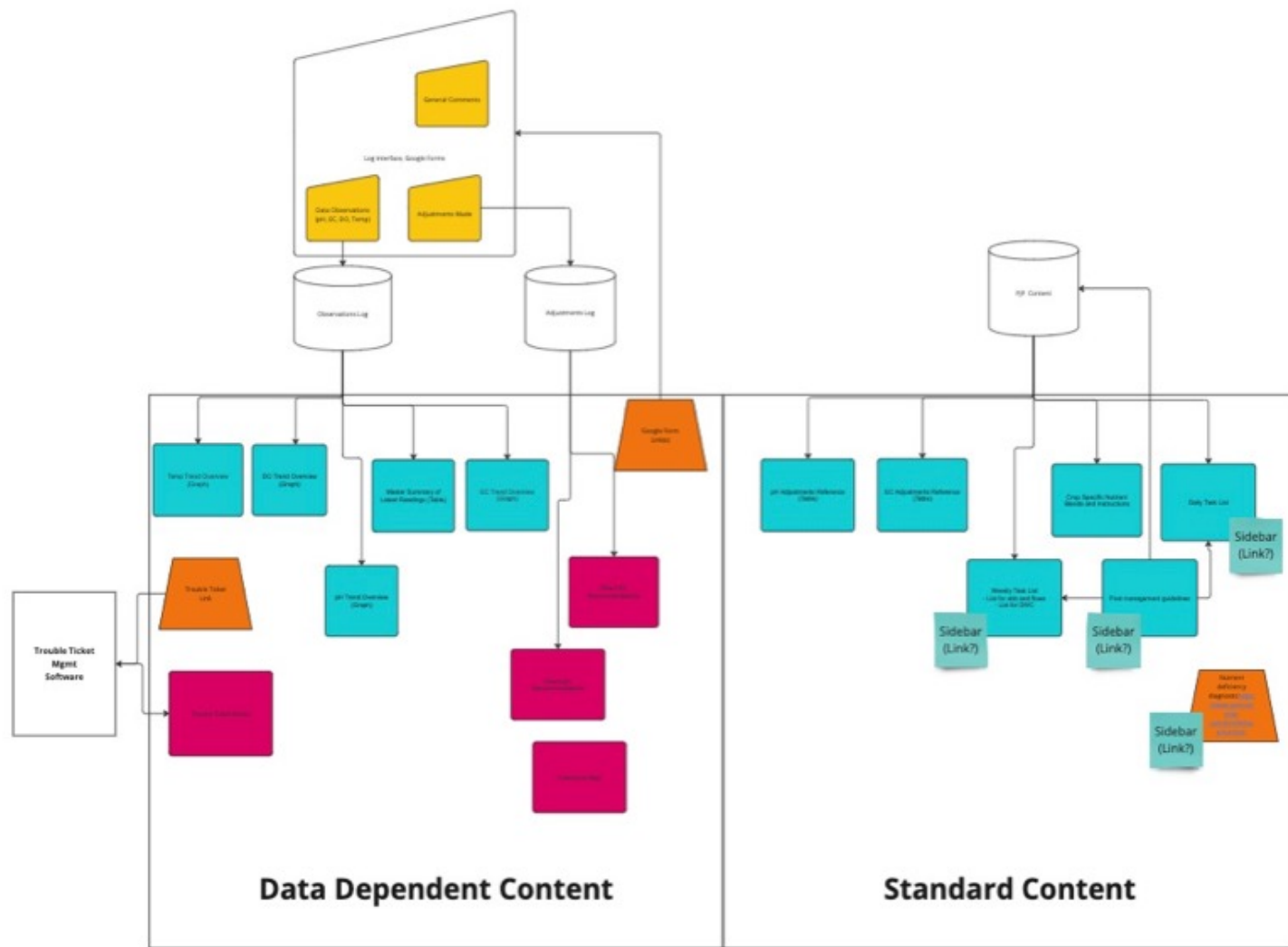
Primary objectives for this project are to create an online dashboard/portal where Papa Joe's employees can:

- Log hydroponic system measurements – Temperature, pH, EC, DO
- Access nutrient recommendations based on data trends over time
- Access a daily task list
- Access troubleshoot materials (nutrient deficiency identification page)
- Submit trouble tickets for issues of high priority



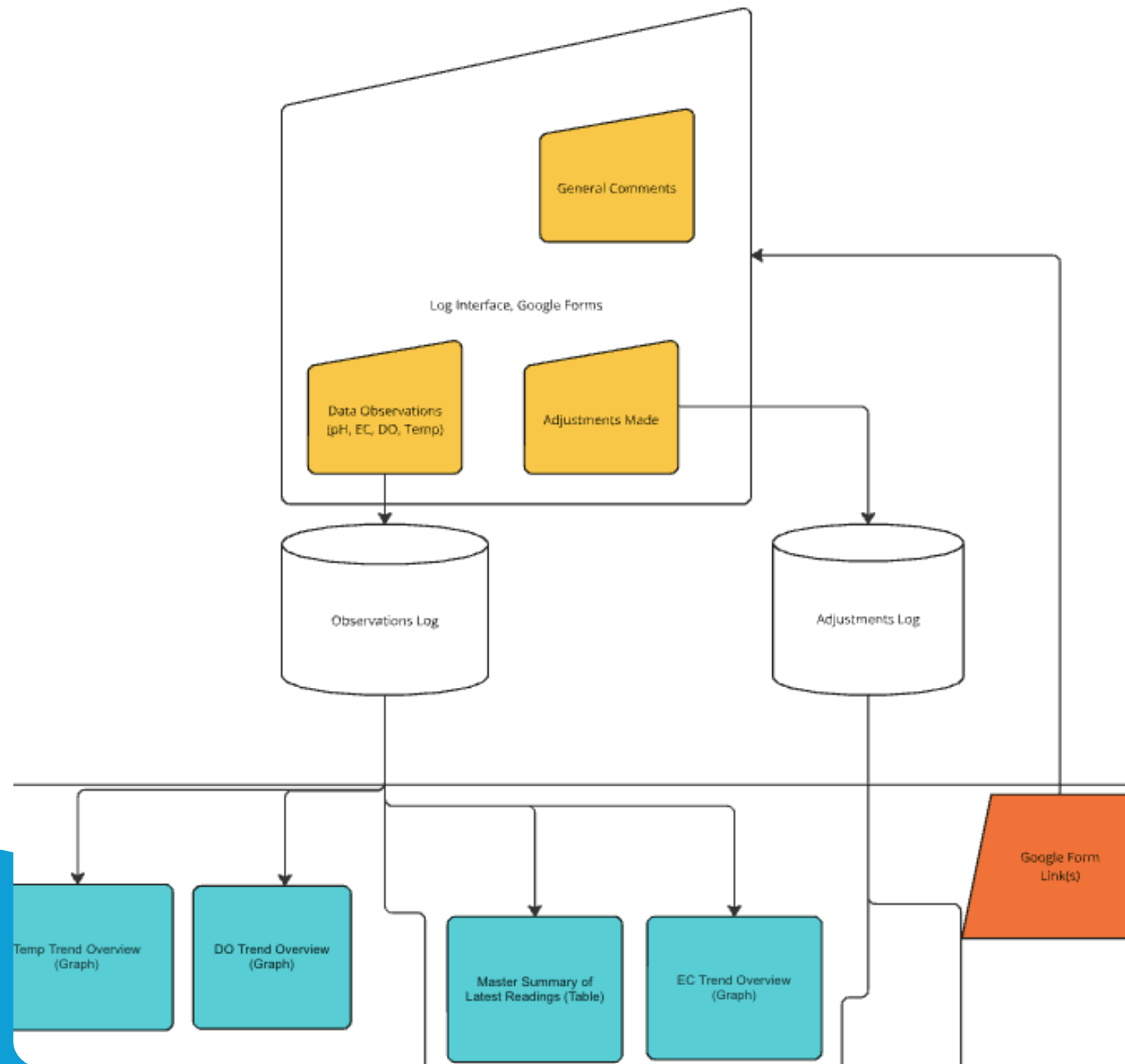
Additional goals

- Use tech to increase capacity for small scale growers
- Make the tool at low cost to PJP
 - Use accessible development tools: Wordpress, Miro, Airtable, Google sheets



Process

System Flow Chart



- Data feeds and types

Progress

- We're in the final stages of our "proof of concept"
- The trouble ticket feature hasn't been rolled out

<https://papajoesproduce.com/data/greenhouse-1-deep-water-culture/>



Critical Success Factors

- Good logging protocol and habits
 - Accurate and consistent measurements
 - Understand your data
 - Data feed management
 - Scalability



Summary

- Simplified instructions for staff
- Centralized data for management



Innovation is accessible

- As a student without a farm or much experience
- As a small-scale community-oriented grower like Papa Joe's



A Timeline of Student Professional Development in CEA

Jade IR Whiting, Isaiah G. Spiegelberg,
Michael R. Baldwin, Carmela R. Guadagno

Many of these opportunities are
made possible through initiatives
of the Wyoming Innovation
Partnership (WIP)



March 2023

Tour of the Santa Fe
Community College
(SFCC) CEA Facilities

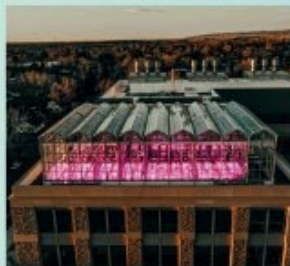
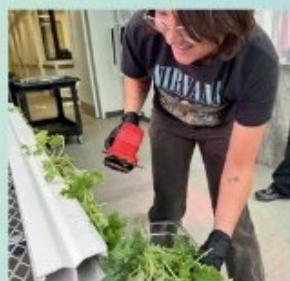


With Charlie Schultz,
Academic Director of the
Controlled Environment
Agriculture Program at SFCC
visiting their aquaponic
facility.



June 2023

Working as a student
technician in the Plant
Growth and
Phenotyping Facility
at the University of
Wyoming



January - March
2024

Courses for
Greenhouse Crop
Production and
Design through the
University of Arizona
funded through WIP



April 2024

Marketing and
communications
internship With Papa
Joe's Produce in
Sheridan WY funded
by the Department of
Workforce Services
through WIP



Special thanks to Adam Bunker,
Operations Manager at Papa Joe's
Produce for coordinating the
internship



May 2024

Graduation from
University of
Wyoming



Continue professional
development in
Controlled Environment
Agriculture Program at
Santa Fe Community
College