



Developing an Energy-Harvesting, Failure-Tolerant Sensing Platform for Greenhouse Monitoring



Diana Zhang
<d.zhang@psu.edu>

Tamara Ortega
<tortega@g.clemson.edu>

Josiah Hester
<jhester@clemson.edu>

Jacob Sorber
<jsorber@clemson.edu>

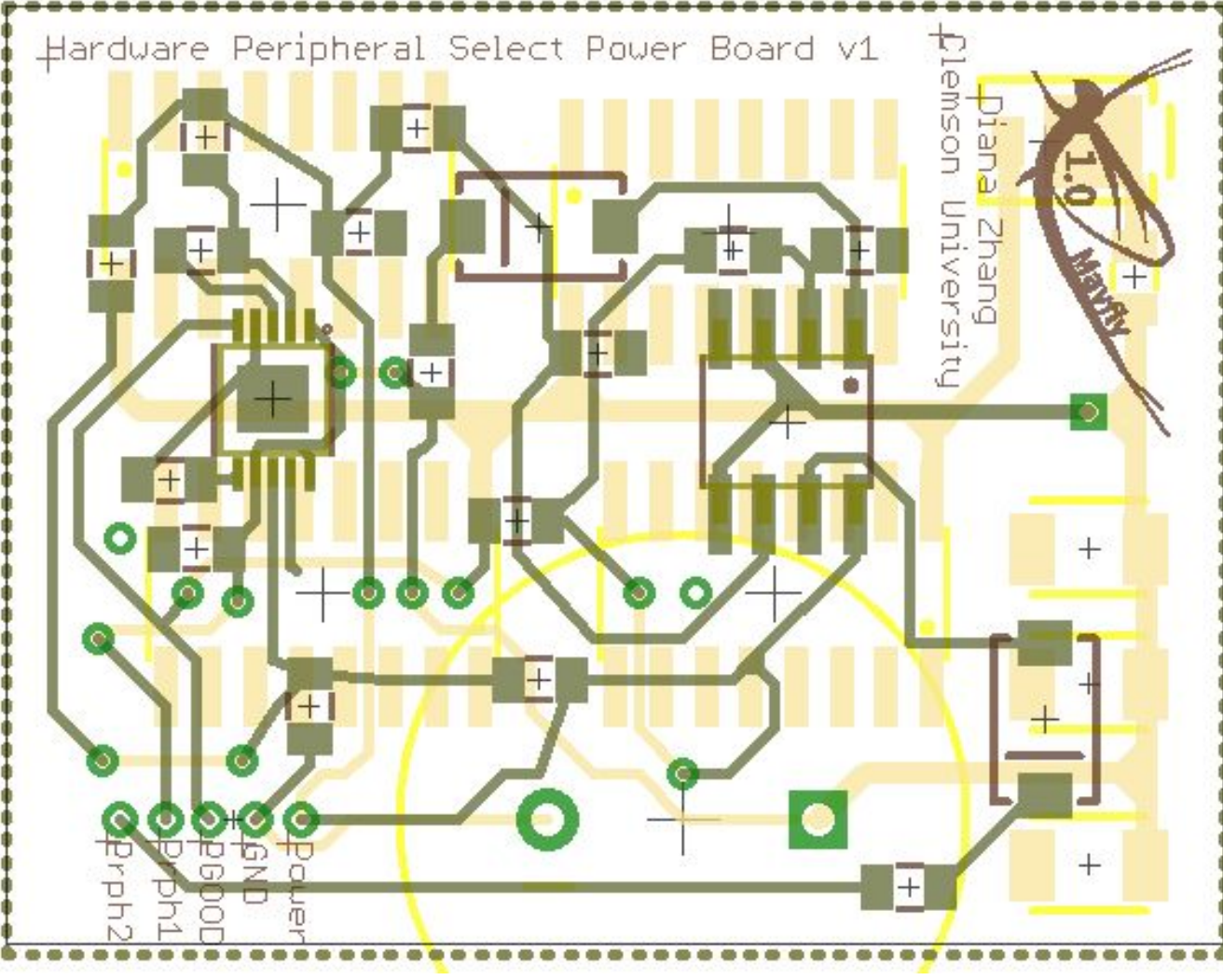
Goal: Develop a hardware platform for efficient greenhouse monitoring



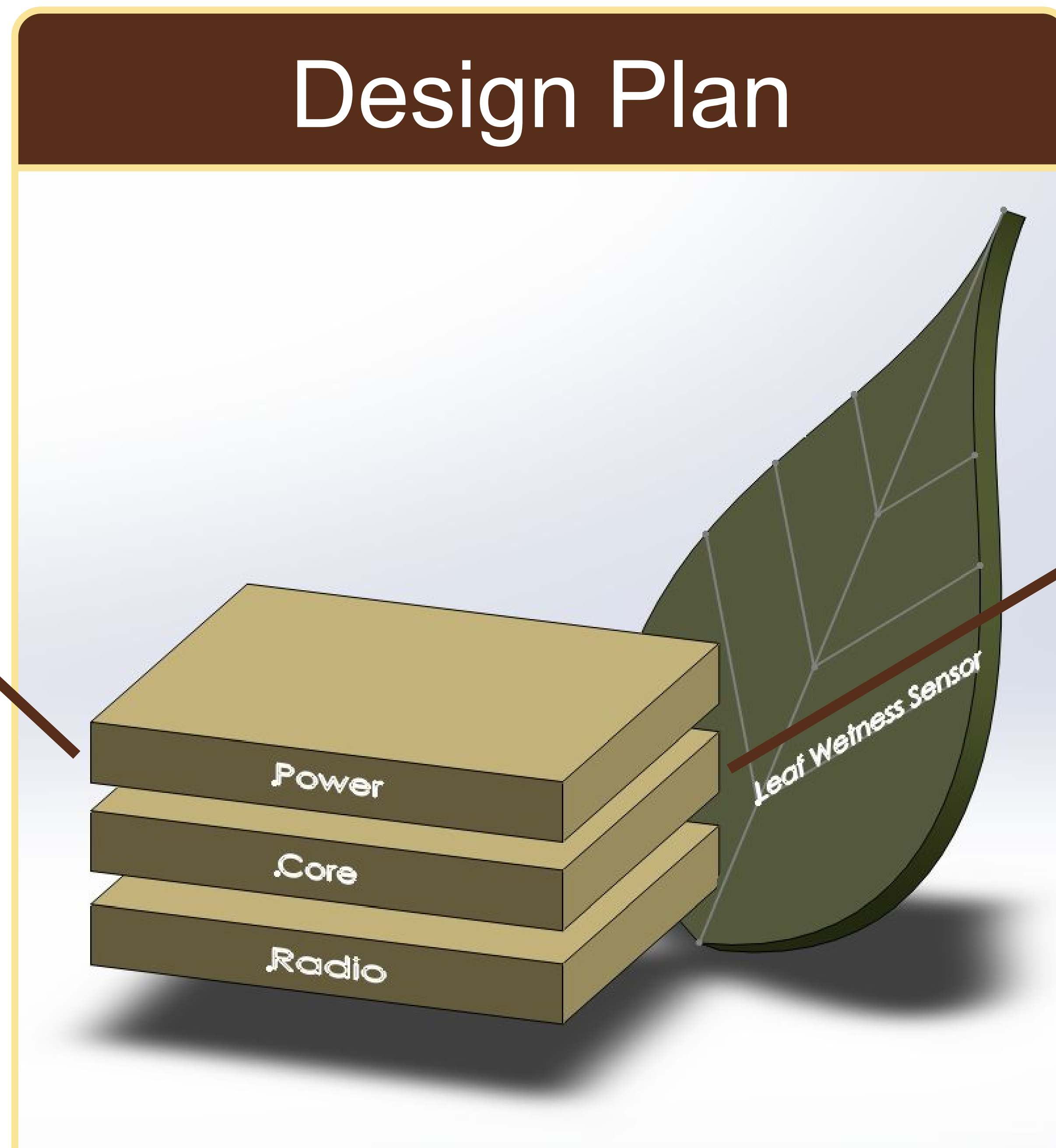
Current greenhouse watering methods use about **2x** more water than required



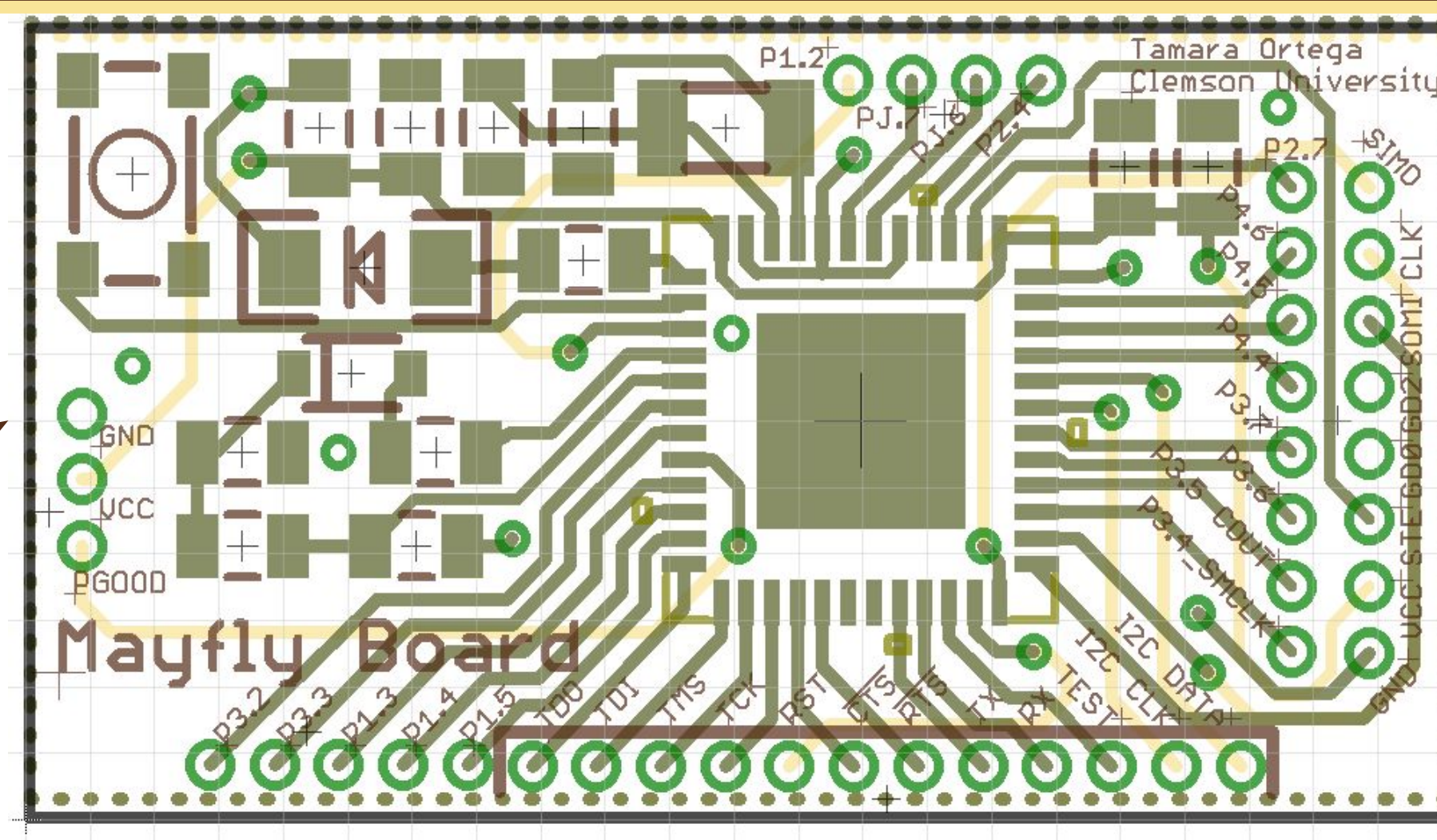
Power



- Solar-powered
- Federated supply:
Powers core & 2 Peripherals
Each peripheral has its own cap
*Scalable to support more periph*s
- Easily Customizable



ULP μ C Core



- FRAM -- fast data write
- Programming Interface
- Controls peripherals
- Modular connections
Power Board, Radio Board, etc

Results & Conclusions

- *Modular Design for Prototyping*
- *Low-Maintenance Sensing*
- *Flexible, Batteryless Design*

Future Work

- *Peripheral Development*
Sensors: Leaf Wetness, Temperature, etc.
Radios
- *Developing Network Capabilities*

