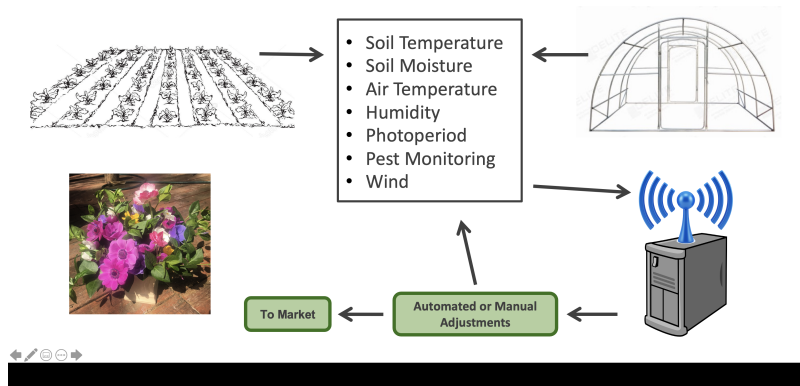


Small Farm Hoop House Sensor Automation Use Case

Use Case



Use Case Questionnaire

Adopted from [Heilmeier Catechism](#)

1. What is the goal of the use case? Describe your objectives without technical or industry-specific terms.
Up and functioning, being used to manage small farms, maintain optimal growing environment for crops
 - * soil not too dry, not overwatered (appropriate soil moisture levels)
 - * ambient (air) humidity levels
 - * ambient (air) temperature
 - * soil temperature
 - * appropriate light levels, spectrum, length/duration of time (luminosity)
 - * wind speed, direction, gusts, sustained
 - * pest monitoring (cameras or laser for sound of wings)
 - * manual visual inspection
 - * pH of soil, health, sampling, chemical analysis testing
 - * determine when to harvest (visual inspection)
 - * venting fans
2. How is it done today? What are the current problems or limits of how it is being done?
farmer intuition and manual inspection
manual intervention required, sometimes quite rapidly
physical presence constantly required
SME knowledge
timer on water, override timer when needed
3. What is new with this approach, and why will it be successful?
allows you to control the conditions rather than react to the environment
reduce or control labor costs
4. If it is successful, what difference will it make? How does it bring value? Why would anyone want to do it differently?
more production (viability)
more information to make good decisions (reduce labor and waste, increase productivity)
5. What are the risks of the new approach?
communication and power supply (on- or off-grid)
severe weather equipment damage
6. How much will it cost? Initial BOM & setup, on-going expenses, etc.
< \$1k per acre
ongoing: power, connectivity, data licensing, any cloud services, wear & tear
7. How long will it take to get it running? What training and other preparation is needed?
20'x50' == 8 hours to install sensors, attach to processing, begin collecting data
8. How can you tell if it is working? Are there mid-term and final checks to determine success?
 - * alerts/notifications happening
 - * less human interaction needed for scheduled activities
 - * notification and mitigation of pests before damage occurs
 - * real-time monitoring and human interactions not happening
 - * no fungus & [mold growth](#) on crops

* yields increase or inputs decrease (less water, for example) == directly impacts ROI