Project Release Plan

Baskin Engineering
UC SANTA CRUZ

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iSlugs - Smart Irrigation Project

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Project Release Plan

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Smart Irrigation Project

Purpose:

The purpose of this project is to build an autonomous irrigation system that is solar powered and draws water from a rainwater catchment system. The drip irrigation system will be controlled by a microcontroller, and the feedback it receives from the moisture sensors will allow it to know when the plants need to be watered. This system will also save money by using sunlight as the main source of energy(solar powered) and rain as the main source of water.

High Level Goals:

1. Must be stable and reliable. (Fully tested!).
2. Develop a simple website or user manual for documenting this project.
3. Detect moisture levels in the soil.
4. If the soil is too dry, automatically open valves or turn on pumps to give water to the desired plants.
5. Be able to run off of solar power and therefore have minimal power consumption.
6. Require little to no human interaction to function properly once set up.
7. Ideally, store data which the user can access or download.
8. Ideally, be easy to setup/install in the field.
9. Ideally, use a scalable design to make any future work easier. (Larger field areas, more sensors, wifi capabilities, cell phone interactions, etc.)

Project Release Plan – User Stories

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Sprint 1 user stories:

- As a hardware developer of the system, I need to know a system architecture so that I can identify hardware restrictions and required functionality!
- As a software developer of the system, I need to know what hardware we are using so that I can write appropriate code.
- As a developer of the system, I need other developers to document their work thoroughly (using comments in code, a manual, a website, or other methods) so that I know what their stuff does.
- As a farmer, I need the system to be able to detect the moisture level in the soil so that the system knows plants need water.
- As a tester of the system, I need the system to log data so I can run tests that take a long time..
- As a farmer, I need the system to be able to deliver water to the plants so that they are not stressed by dehydration. (May be pushed to Sprint 2 if not enough time)

Sprint 2 user stories:

- As a user of the system, I need a user manual for the Smart Irrigation Project so that I know how to operate the system.
- As a farmer, I need the system to be capable of running off of solar power so that I don't have to waste money on higher electricity bills and so that I don't have wires criss-crossing my field. (A potential electrocution hazard!!)

Sprint 3 user stories:

- As a tester, I need to be able to run software and hardware tests on the system so that the final product is stable and reliable.
- As a farmer, I need the system to run without my help so that I don't have to worry about my plants dying!
- As a farmer, I would like to be able to change the default settings for the system so that plants with different watering requirements get the appropriate amounts of water.
- As a person living in California, I want the system to not over water plants (waste water) so that I don't die of dehydration because the state runs out of water.