

Alesandra Roger
Rashad Kayed
Alex Mitchell
Yugraj Singh
Ian Hamilton
Evan Hughes

Smart Irrigation Project Sprint Plan 1

Product Name: Smart Irrigation Project (SIP)

Team name: iSlugs

Sprint Name: Prototyping and Basics

Sprint Completion Date: October 28th

Revision number: 0

Revision date: 10/21/2014

Goal:

Design an appropriate architecture for our autonomous irrigation system and create a prototype which can detect moisture levels..

User Stories and Task listings:

1. As a hardware developer of the system, I need to know a system architecture so that I can identify hardware restrictions and required functionality! **(5)**
 - 1.1. Decide what type of microcontroller we will use (Arduino or BeagleBoard). Consider: cost, flexibility, capabilities, power consumption, documentation/support community. (3 hours)
 - 1.2. Decide what kind of moisture sensor to use (resistive vs capacitive vs other?) Consider: cost, durability, expected lifetime, power consumption, (3 hours)
 - 1.3. Estimate what kind of power budget we should stick to allow solar power later. Consider: cost, power output, likely power requirements of the other hardware units (4 hours?)
 - 1.4. Decide whether the system will be distributed or centralized. (many small isolated probes, or a network of sensors connected to a central controller) (3 hours)
2. As a software developer of the system, I need to know what hardware we are using so that I can write appropriate code. **(1)**
 - 2.1. Research best programming language to use coupled with the most appropriate programming environment. (Some languages and environments are better depending on type of hardware being used). (1 hour)
 - 2.2. Break down system into modules or smaller parts (Soil moisture sensors, Solar, Switch, Backend Data Manipulation). (2 hours)
 - 2.3. Understand how the hardware and software truly interact. (2 hours)
3. 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. **(1)**
 - 3.1. Document work while developing code for each fragment that has significant value (Software). (1 hour)
 - 3.2. Work with at least one other teammate at all times to help build perspectives and strong learning environment (Hardware). (2 hours)
 - 3.3. Maintain appropriate git(version control system) practices. (< 1 hour)
4. 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. **(8)**
 - 4.1. Build the initial prototype consisting of the microcontroller and a moisture sensor (2 hours)
 - 4.2. Write the program which accepts data from the sensor and does any processing necessary to make the data usable for the rest of the system. (2 hours)

- 4.3. Test moisture sensors in dry soil and record results. (< 1 hour)
- 4.4. Test moisture sensors in moderately wet soil and record results. (< 1 hour)
- 4.5. Test moisture sensors in heavily wet soil and record results. (< 1 hour)
- 4.6. Compare results to understand when the system needs to water plants. (3 hour)
- 5. As a tester of the system, I need the system to log data so I can run tests that take a long time. **(5)**
 - 5.1. Make sure that the hardware extracts data correctly. (1-2 hours)
 - 5.2. Make sure that the data transferred to software is readable and precise. (1-2 hours)
 - 5.3. Seek edge cases with experimental/unorthodox behavior with hardware and if necessary, solve issues in efficient manner. (2 hours)
 - 5.4. Make sure the data are being stored! (< 1hr)

Team roles:

Alesandra Roger : hardware and software developer
 Rashad Kayed :
 Alex Mitchell : Software engineer and hardware student
 Yugraj Singh :
 Ian Hamilton : Software/Hardware engineer
 Evan Hughes : Software Engineer/Developer

Initial task assignment:

Alesandra Roger : Research how we will use our microcontroller(Arduino or BeagleBoard) to control our irrigation system.
 Rashad Kayed :
 Alex Mitchell : Research and decide which moisture sensor to use.
 Yugraj Singh :
 Ian Hamilton : Decide what type of microcontroller we will use (1.1)
 Evan Hughes :

Initial burnup chart:

Initial scrum board:

Scrum times: Mon/Wed/Fri 11:30am. Stan, our TA has agreed to join us on our Friday SCRUM meetings.