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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 : Product Owner/SCRUM Master
Alex Mitchell : Software engineer and hardware student
Yugraj Singh : Software/Hardware engineer
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 : Oversee tasks being completed and coordinate appropriately as scrum master and product owner. Work with teamates on research as needed.
Alex Mitchell : Research and decide which moisture sensor to use.
Yugraj Singh : Microcontroller programming and determine most appropriate microcontroller
Ian Hamilton : Decide what type of microcontroller we will use (1.1)
Evan Hughes : Decide what type of microcontroller we will use

Initial burnup chart: See github repository for file.
Initial scrum board: See github repository for link.

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