Smart Grass

Home Irrigation Control System (HICS)

Team SmartGrass

Roles and Responsibilities

Team Members:

- Belachew Haile-Mariam (Far Left)
  - Computer Engineer
  - Team Lead
  - Hardware Lead
- Tung Vo (Left Middle)
  - Computer Science
  - Embedded Software Developer
  - Hardware Tester
- Gautam Adhikari (Right Middle)
  - Software Engineer
  - Hardware Developer
  - Risk Manager
- Jeremiah O'Connor (Far Right)
  - Computer Science
  - Web Developer Lead
  - Document Manager

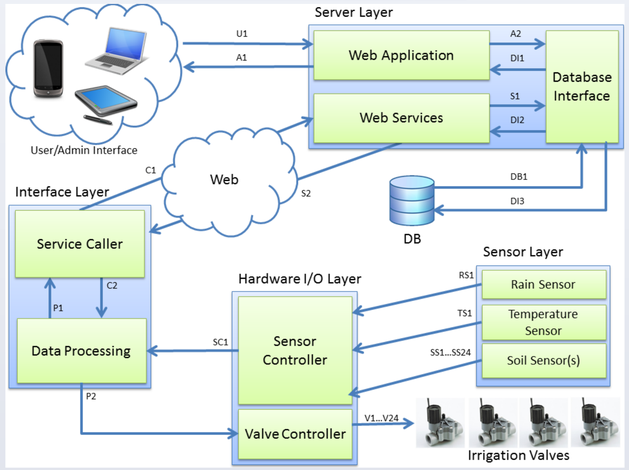
Stakeholders:

- Mike O'Dell
  - CSE Senior Lecturer
  - Project Supervisor
- Keith Aholt
  - Owner/Manager of Nuts and Bolts Hardware Store
  - Project Sponsor

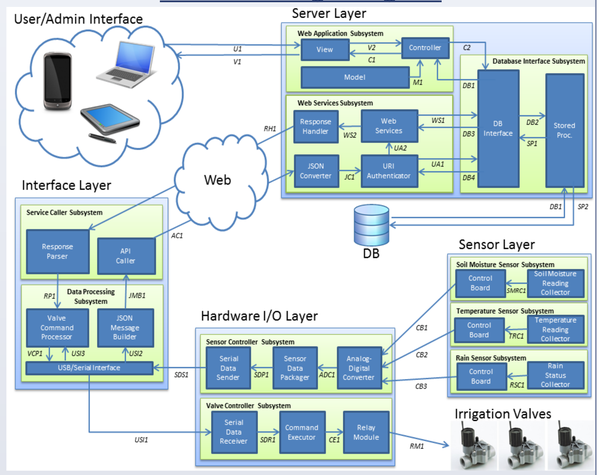
PROJECT CONCEPT AND DESCRIPTION

HICS is an intelligent home irrigation control system that utilizes soil moisture sensors to measure the amount of moisture present in the user's lawn and use this information to water the lawn in an efficient way. The rain sensors and the temperature sensors help prevent watering when unnecessary. The sensors, hardware and their proper integration and programming makes HICS a machine that is smart enough to save people time, effort, and money on their home's lawn care. The purpose of this product is to replace an existing sprinkler control system and allow users to control their home's irrigation remotely through a web application that will scale to fit on a computer, tablet, or mobile device.

Architectural Design Diagram



Detailed Design Diagram



Web Application Screenshot

Final Prototype

KEY REQUIREMENTS

RQ#	REQUIREMENT	PRIORITY	STATUS
3.1	CENTRAL CONTROL UNIT	CRITICAL	COMPLETE
3.2	SOIL MOISTURE SENSORS	CRITICAL	COMPLETE
3.3	WEB APPLICATION	CRITICAL	COMPLETE
3.4	WATERING SCHEDULER	CRITICAL	COMPLETE
3.5	SOIL MOISTURE REPORTS	MODERATE	COMPLETE
3.6	USER LOGIN	CRITICAL	COMPLETE
5.3	COMMUNICATION BETWEEN THE WEB APPLICATION AND CENTRAL CONTROL UNIT	HIGH	COMPLETE
5.4	COMMUNICATION BETWEEN THE SOIL MOISTURE SENSORS AND CENTRAL CONTROL UNIT	HIGH	COMPLETE
7.4	SCALABILITY	HIGH	COMPLETE
8.1	MAPPING THE SOIL MOISTURE SENSORS TO IRRIGATION VALVES	CRITICAL	COMPLETE
8.6	USER ADMINISTRATION ACCOUNT	HIGH	COMPLETE

Lessons Learned

- Backup files with a cloud-based service for easy syncing/sharing.
- Plan to complete milestones before they are actually due.
- Set mini-milestones that add up to bigger ones.
- Define your project terminology early so that everyone is always on the same page.
- Maintain good communication within the team.
- Constantly look for feedback from your project stakeholders.
- Keep an agenda for every meeting.