

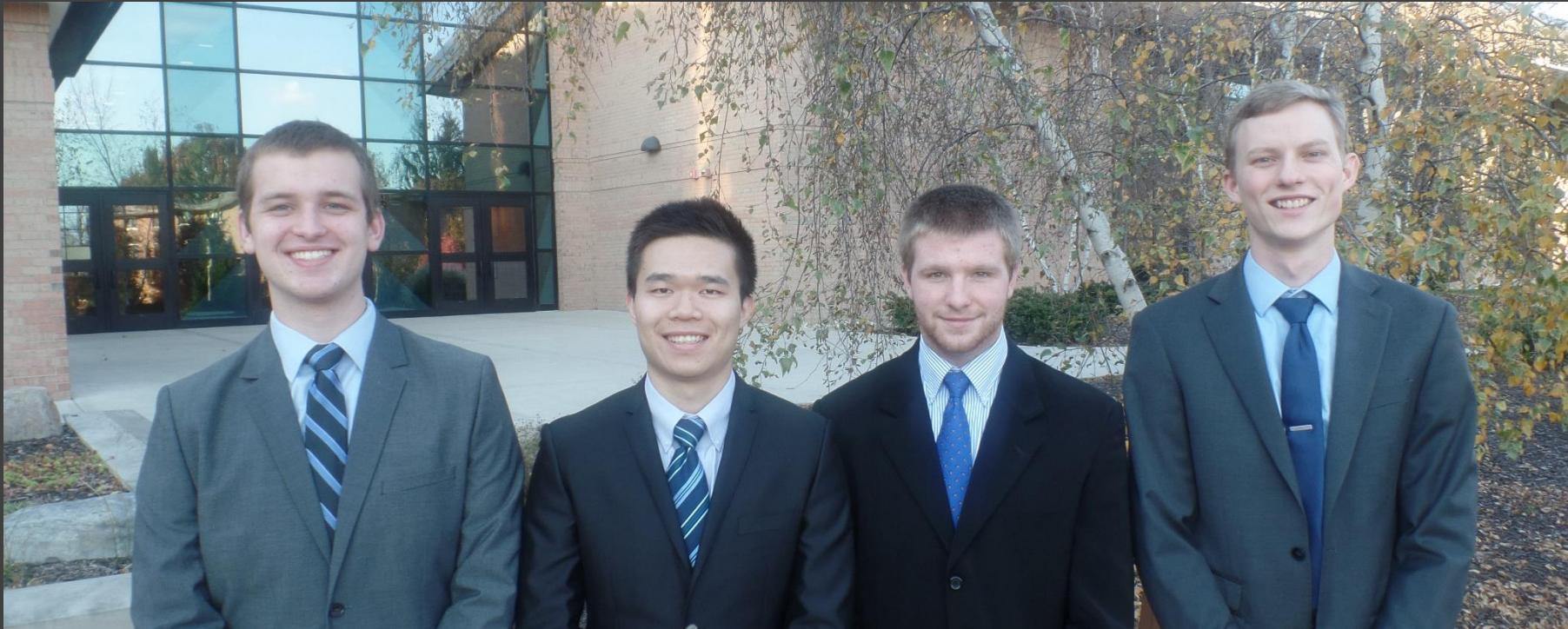
Garde*Net*



TEAM 16

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The Team



John Connell | Anthony Jin | Charles Kingston | Kevin Kredit

Overview

- ❑ The Project
- ❑ Design Decisions
- ❑ Project Highlights
- ❑ Current Status

The Project

The Problem

- ❑ Watering is a labor intensive venture
- ❑ Community gardens often have difficulties to get consistent volunteer help

Our Solution

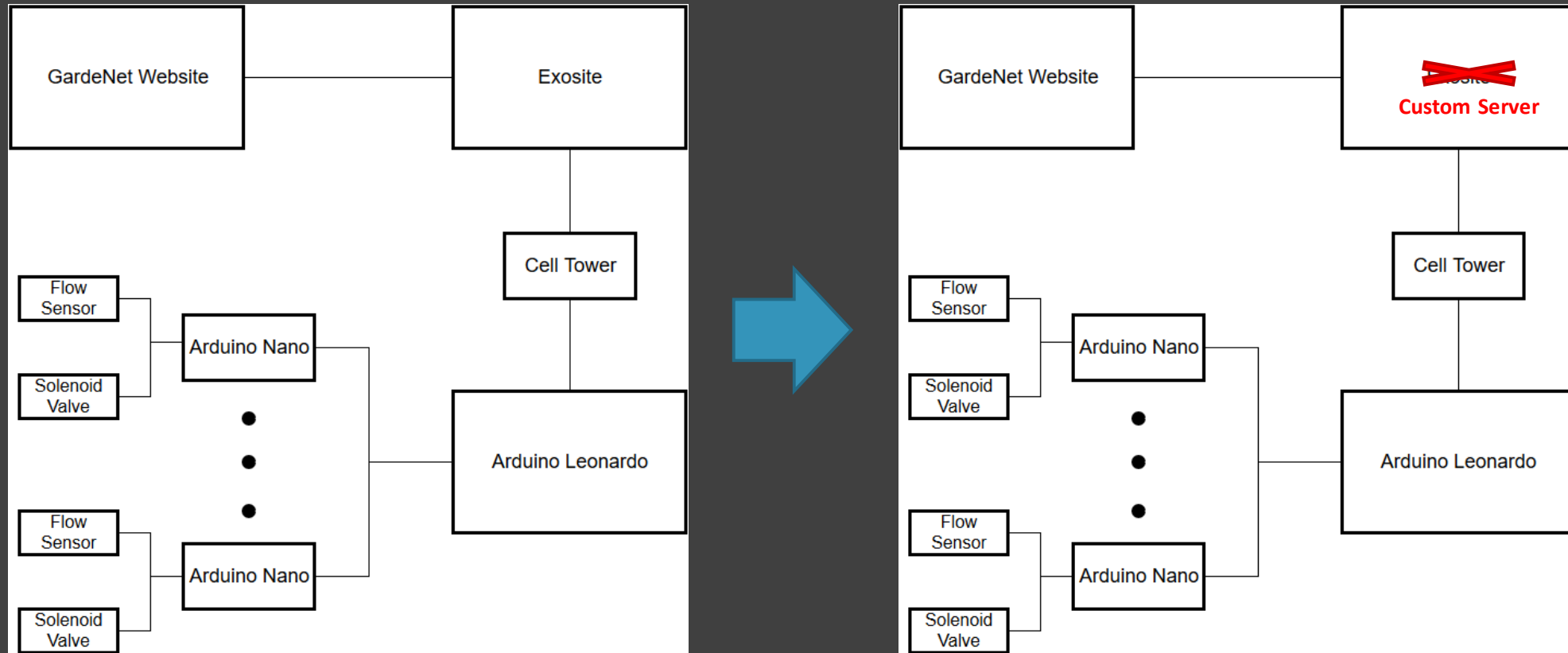
- ❑ Automate the watering process via
 - ❑ 3G cellular network
 - ❑ Internet-of-Things (IoT)
- ❑ Our main client is Caledonia Community Garden



Caledonia Community Garden

<https://lintvwotv.files.wordpress.com/2014/06/maranda-caledonia-community-garden.jpg?w=650>

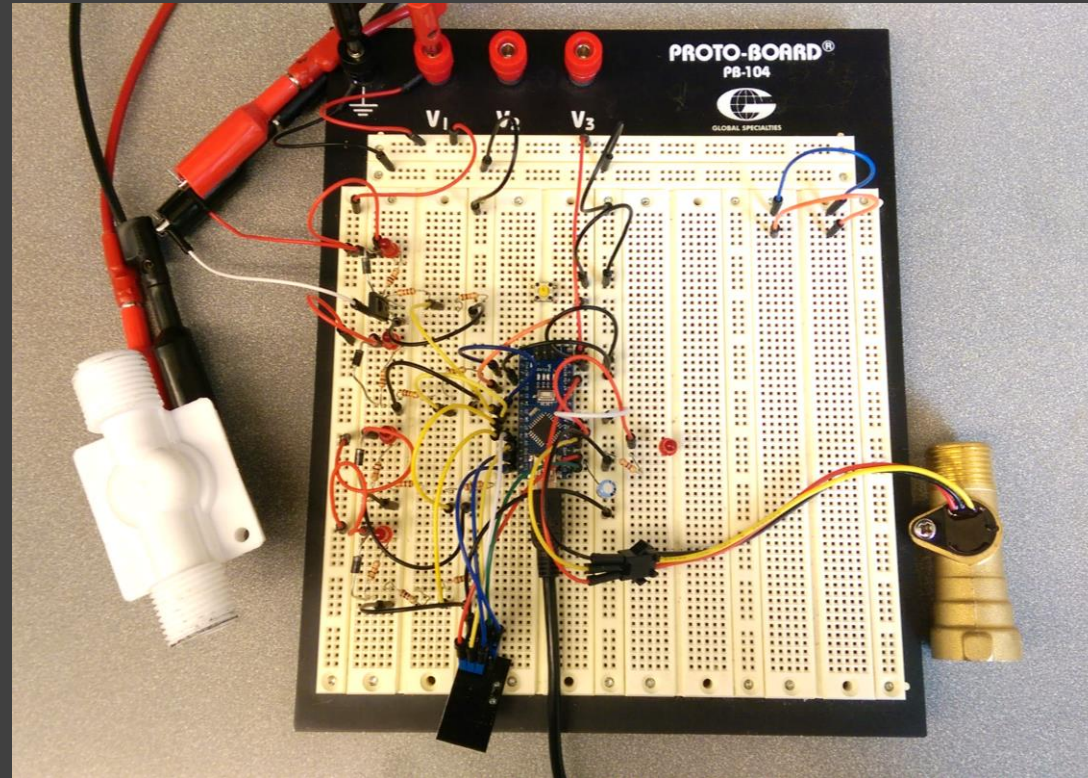
Our Design



GardeNet System Architecture

Hardware & Mesh Network

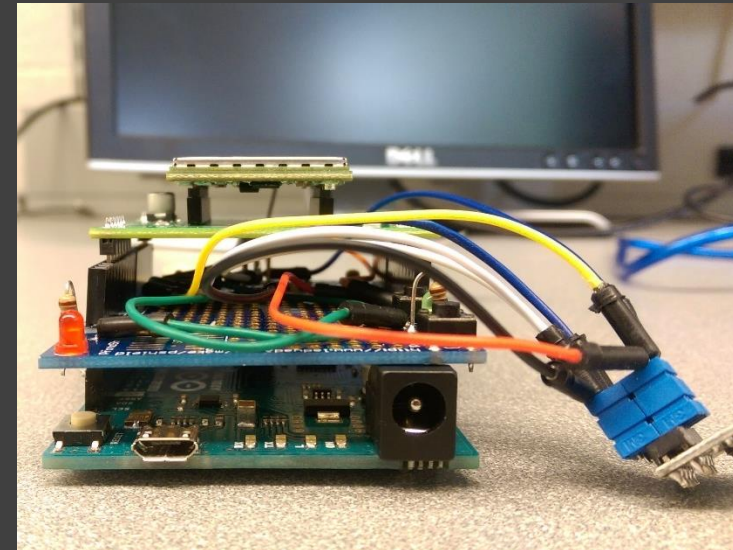
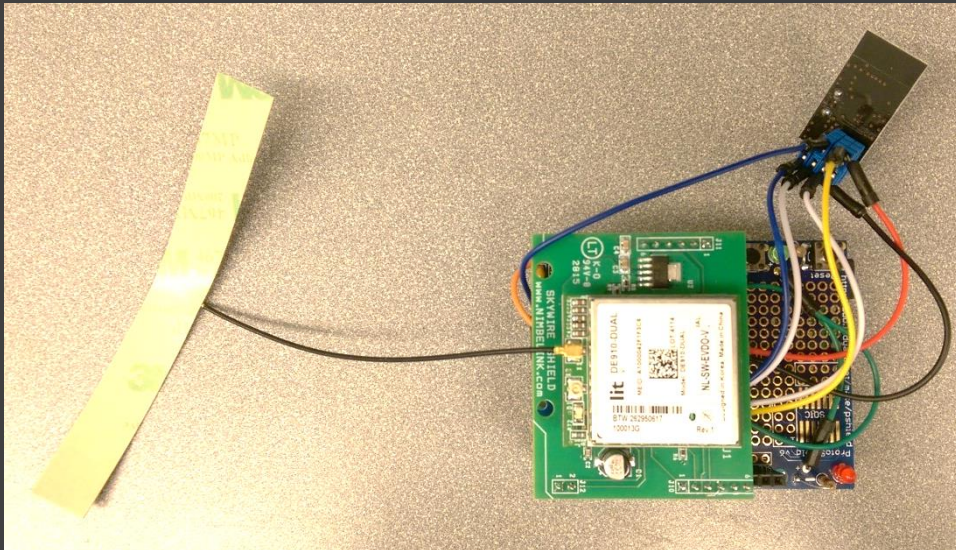
- ❑ Controlling valves
- ❑ Reading flow rates
- ❑ Communicating with the gateway
- ❑ Stability and PCB design



The Node Breadboard

Gateway & Arduino Shields

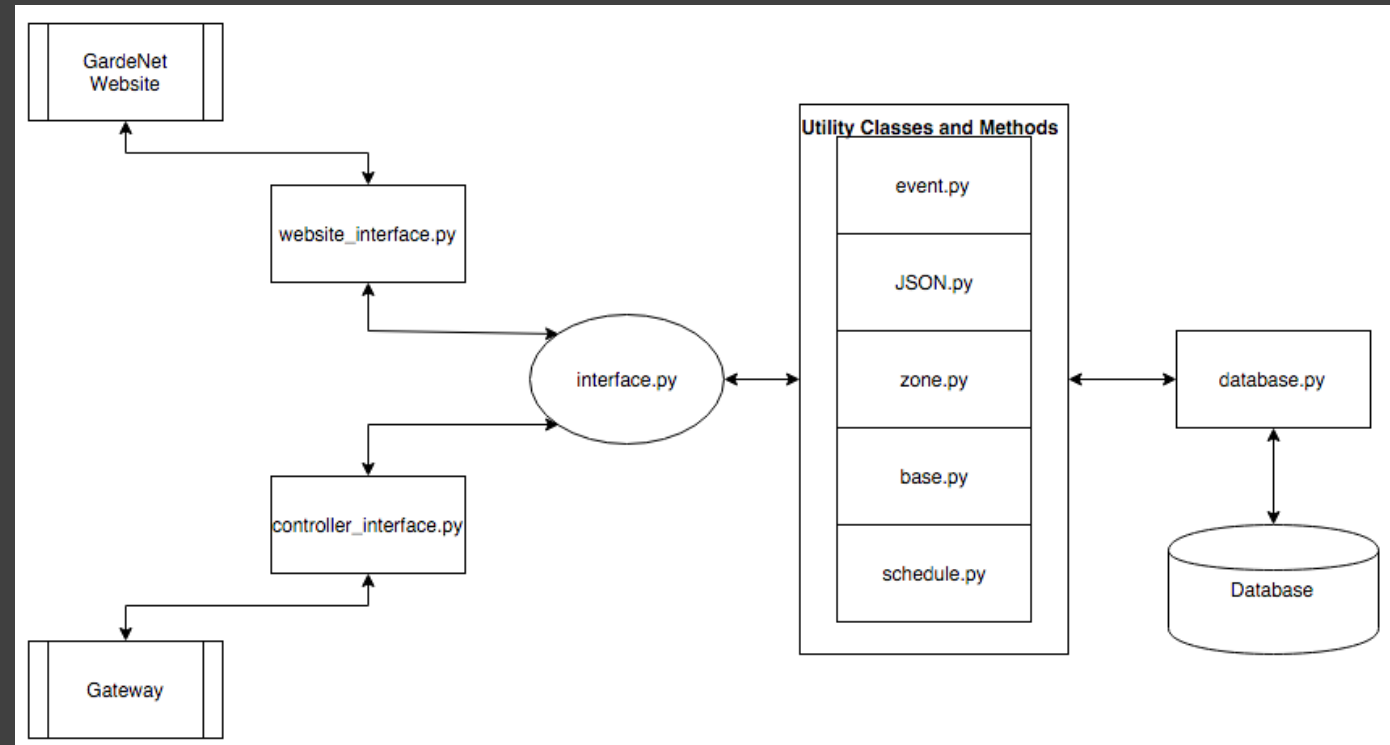
- ❑ Activated the 3G modem
- ❑ Added another shield
- ❑ Currently integrating 3G and radio communications



The Gateway

Server & Database

- ❑ Python scripts
- ❑ Hosted on a Raspberry Pi
- ❑ Interface & utilities
- ❑ Database



GardeNet Server Architecture

Website (gardenet.ddns.net)

- ❑ Schedules and switches
- ❑ Dynamically add zones and events
- ❑ Password protection
- ❑ “Live” on Raspberry Pi
- ❑ Dynamic DNS
- ❑ Future: Administrator View and Guest View

The screenshot shows the 'GardeNet Controller' web interface. At the top, there's a navigation bar with 'Home' and 'GardeNet Home' links. The main heading is 'FULL GARDEN SHUT OFF' with a toggle switch set to 'Off'. Below this are 'ADD +' and 'DELETE' buttons. A tab bar shows 'Zone 1', 'Zone 2', 'Zone 3', and 'Zone 4', with 'Zone 1' selected. The 'Zone 1' section contains a table of events:

	Day:		Start	Stop
Event 1	Monday	▼	08:00	09:30
Event 2	Tuesday	▼	07:00	08:30
Event 3	Wednesday	▼	17:30	19:00

GardeNet Controller

Project Highlights

Challenges

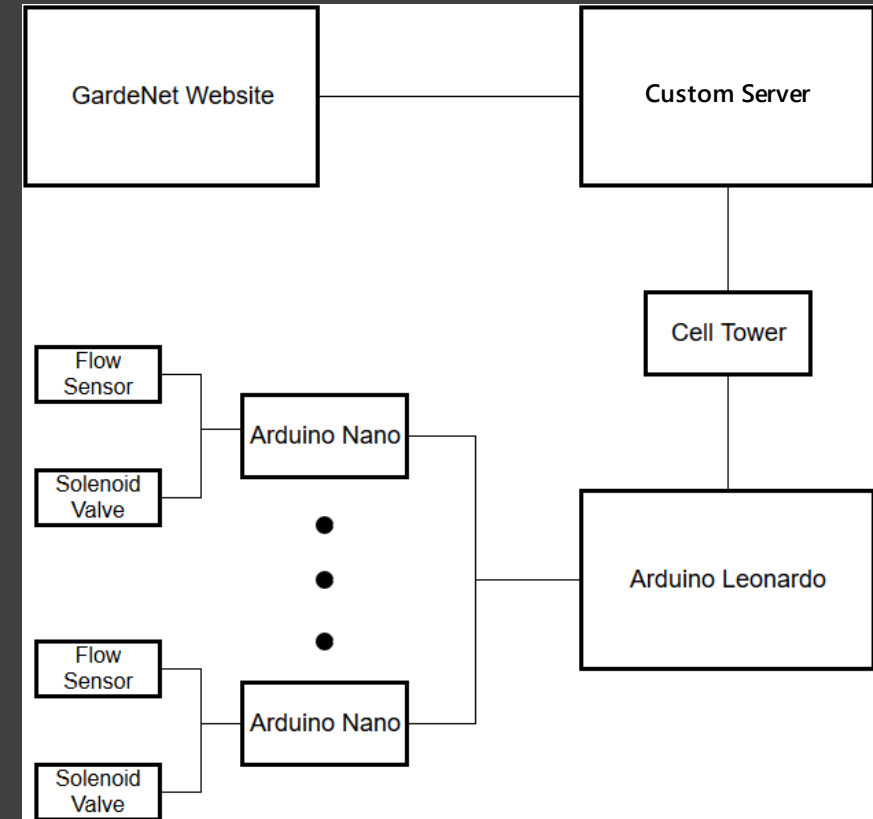
- ❑ Exosite vs. GardeNet server
- ❑ Budget & time constraints

Opportunities

- ❑ Advice from experts
- ❑ Most important design norm: Trust

Current Status

- ❑ Hardware & Mesh Network ☒
- ❑ Gateway
 - ❑ Mesh network, 3G cell connection, internal timer ☒
 - ❑ Communication with server, scheduling algorithm ☒
- ❑ Server & Database
 - ❑ Utilities and database ☒
 - ❑ Interfaces, process weather information ☒
- ❑ Website
 - ❑ Basic UI and functionalities ☒
 - ❑ Dynamic zone size, message passing ☒



Questions?
