I Sense Huron To Something

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Current Situation

- ~62 volunteers needed
- Tests done 2x a month April- Sept.
- 281 sample sets collected
  - Nutrients (Phosphorus, Nitrogen)
  - Sediments (Total Suspended Solids)
  - Bacteria (E. coli)
  - Other (Dissolved Oxygen, pH, Temperature, Conductivity)

http://www.hrwc.org/wp-content/uploads/2014/11/2014%2011%2013%20Volunteer%20Appreciation%20Data%20Presentation.pdf

http://www.hrwc.org/wp-content/uploads/2009/11/2014-Volunteer-Appreciation-Data-Presentation.pdf

The Problem

- Pollution of river
  - nonpoint source pollution
  - point source (eg Enbridge)
- Time consuming
  - slow response time
- Volunteers
  - need organizing
  - dependent on weather conditions
  - training
  - error

Goal

Create a network of sensors that eliminates the need for manual collection of data in the Huron River

Components

Battery

Sensors
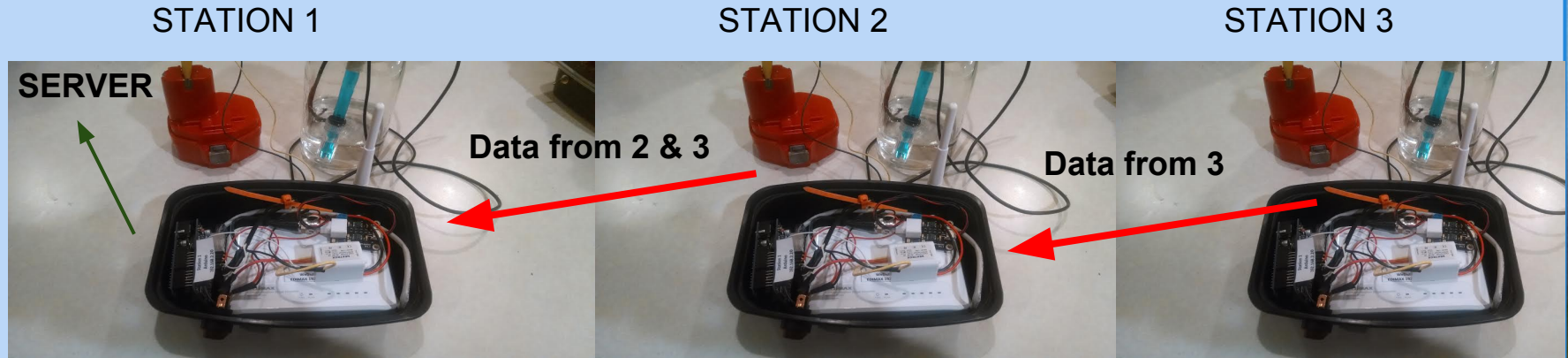
Arduino
with
Ethernet
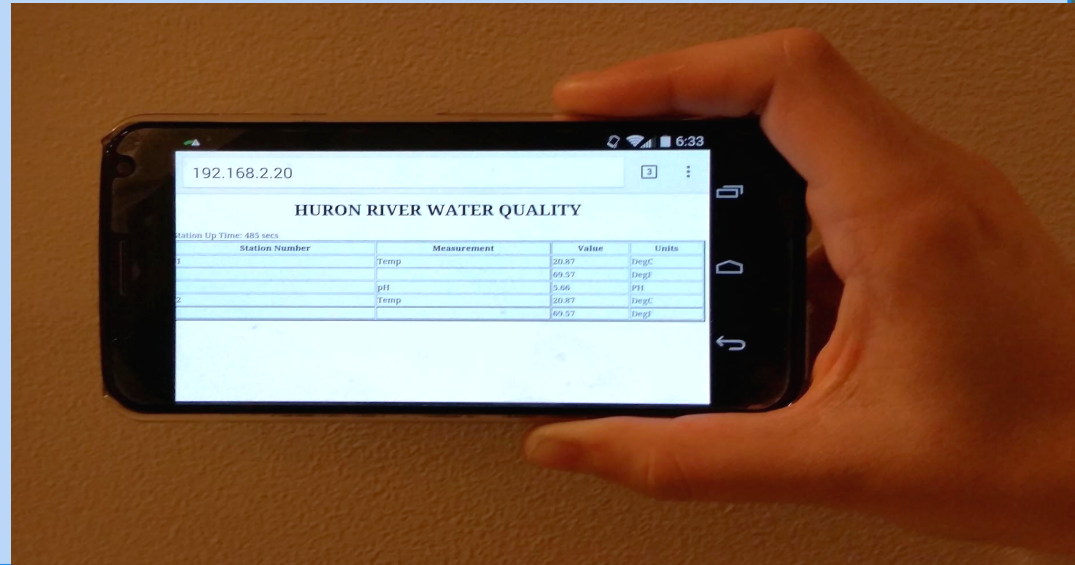Shield

Wifi Emitter
(or Repeater)

Networking

- Multiple stations
  - daisy chaining data

STATION 1   STATION 2   STATION 3

SERVER

Data from 2 & 3

Data from 3

Usage

- Html onto server's page
- Any device on Station 1's Wifi
- compatible with any Arduino sensors

Future Plans

- solar powered
- cellular 3G network
  - Electron/SPARK core
  - L3 Antenna (long distance)
- alerts/notifications
- weather proofing
- trendlines available online
- additional sensors
  - oil spill, TDS, conductivity, dissolved oxygen

Pros

- remotely accessible
- continuous data
- instant notification
- more locations monitored
- eliminates hassle
  - only requires maintenance
- relatively cheap

SCIENCE FAIR COST
Arduino………………….....10
Ethernet Shield…………...10
Edimax WiFi emitter……...20
Temp. Sensor……………...2
pH Sensor………………...50
Container………………….....5
Switch & Wiring………….…10
Battery…………………….....60

TOTAL: $167

Cons

- installation
- currently prototype
- cost
- training (learning curve)
  - usage
  - maintenance