A Parking Guidance and Information System for TinyOS

CSE 521S Project Proposal

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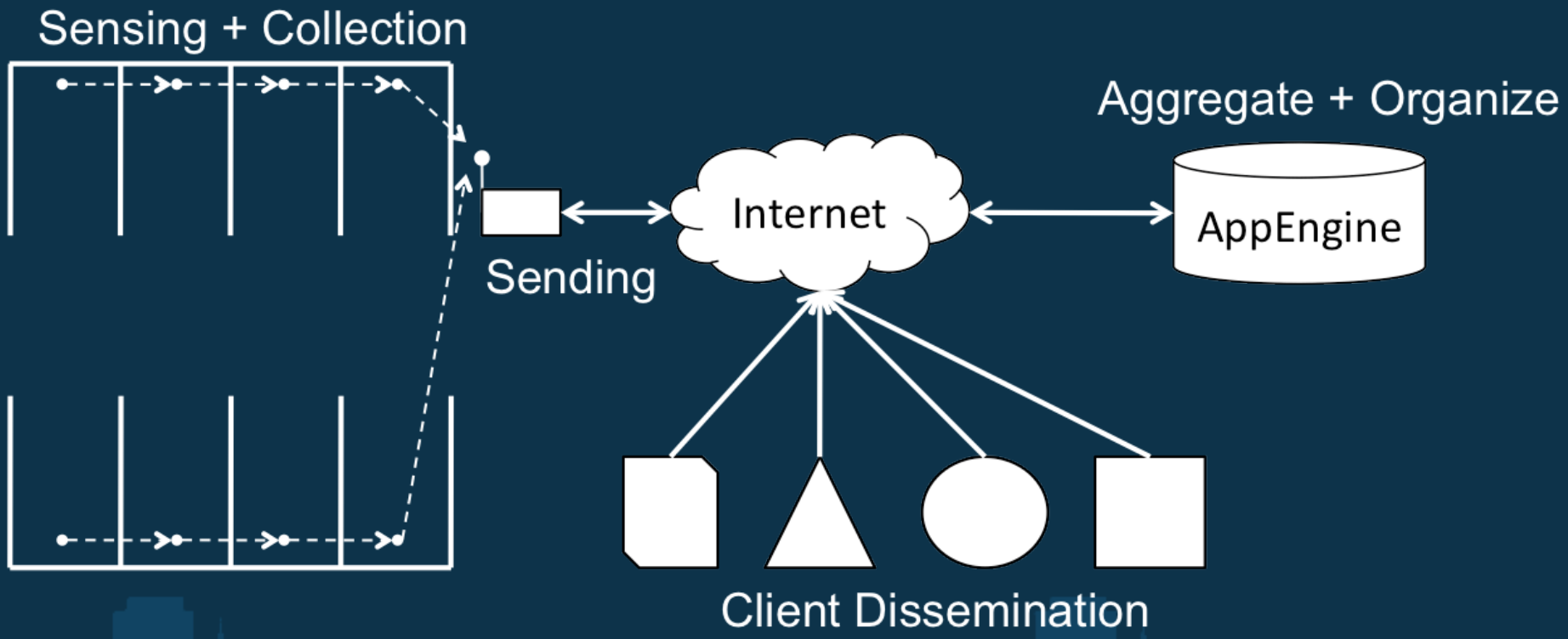
A High-Level View



Sensing

- What Will Be Demoed
  - User Button used to indicate car in space, still waiting on sensor.
- Things Remaining
  - Solder header to new sensor and mote.
  - Integrate sensor with ADC1.
  - Calibrate sensor to accurately detect vehicles.
- Sensor
  - Ultrasonic Range Finder - Maxbotix LV-EZ0
  - detects objects from 0-inches to 254-inches.
  - output format options include pulse width, analog voltage, and serial digital (RS232) output.
  - Multiple beam widths available if needed to improve vehicle sensing.

Collecting

- What Will Be Demoed
  - Due to limited space, CTP can't really be demonstrated.
  - Packets will flow from source to sink through tree (which in this demo is a single hop)
- Things Remaining
  - Fully testing CTP integration with Matt's code and base station.
  - Testing in a realistic parking lot environment.

Sending

- What Will Be Demoed
  - Base Station using CURL and JSON-encoded packets to send parking space status to server.
  - Example
    - HTTP PUT to /lot/wustl_millbrook, used to update space changes

```
[
  {
    "space_id":1,
    "is_empty":true,
    "light": 78,
    "temperature": 56
  }
]
```

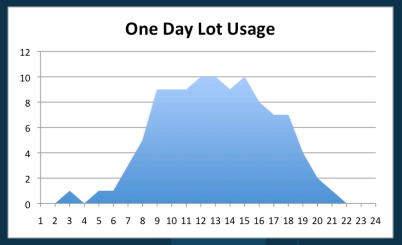
- Things Remaining
  - Possible need to support additional JSON packet types for additional monitoring capabilities.

Aggregating + Organizing

- What Will Be Demoed
  - Won't really be seen, but it must actually happen
  - Data being pushed from local aggregator to AE
- Things Remaining
  - At present, only tracks current usage
  - Want to track changes in status (information is money)
    - Trends, usage patterns, hot spots, ...

Client Dissemination

- What Will Be Demoed
  - Live web interface
- Things Remaining
  - More!
  - Full/Empty Ratio Display
  - Specific Space Display
  - Long-term Usage Display(?)



Demonstration.