SMART BIN

- Our IoT Based Solution for Efficient Garbage Monitoring

INTRODUCTION

A major environmental concern of our society today is proper management and disposal of solid waste, which is crucial to the cleanliness and overall health of our society. Traditional monitoring and disposal of waste is highly inefficient as it requires a lot of time and human effort. Using the power of IoT, we are therefore coming up with the idea of Smart Bin for efficient and smart waste monitoring.

PROBLEMS

1. Wastage of Resources

Since the garbage collectors don't get to know exactly when the dustbins are to be cleaned, they need to regularly monitor them. This consumes a lot of time, effort and fuel.

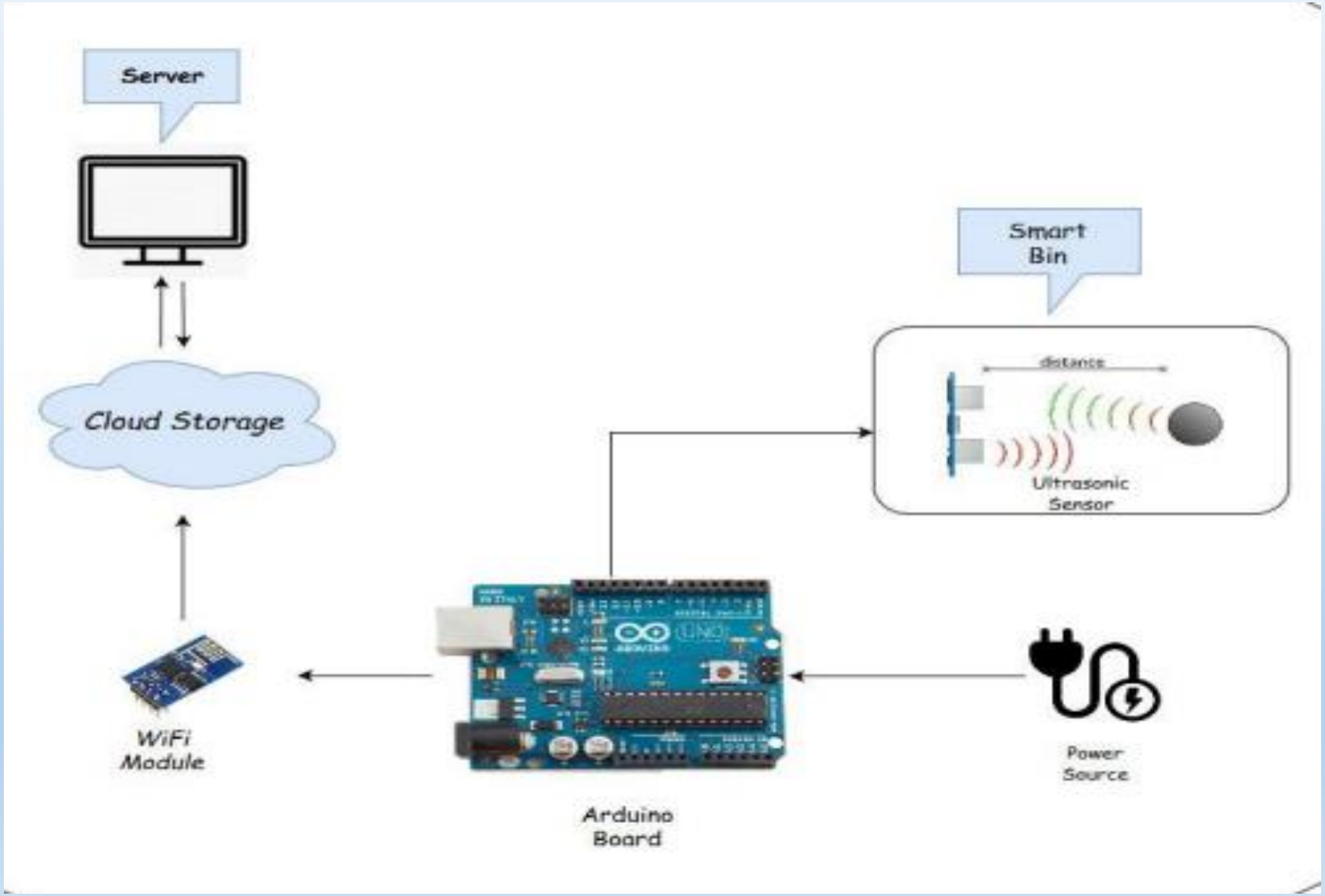
2. Unhygienic environment

Over usage of some dustbins results into wastes getting littered all around. This causes extremely unhygienic situation.

Components Used

- Arduino Mega 2500 Board
- Ultrasonic Sensor- HC-SR04
- ESP8266 (ESP-01) Wi-Fi module
- Breadboard
- Jumper wires

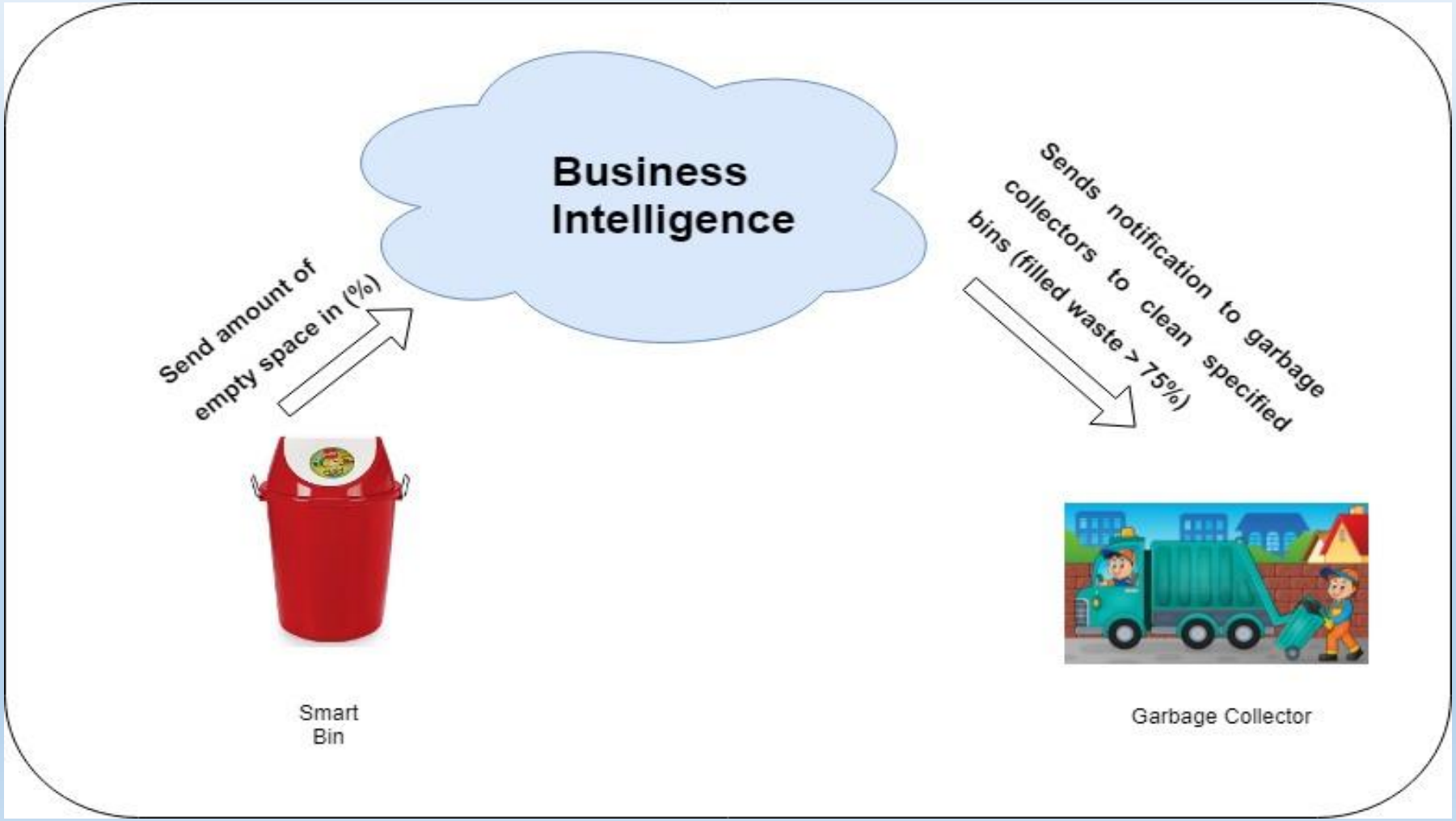
BLOCK DIAGRAM



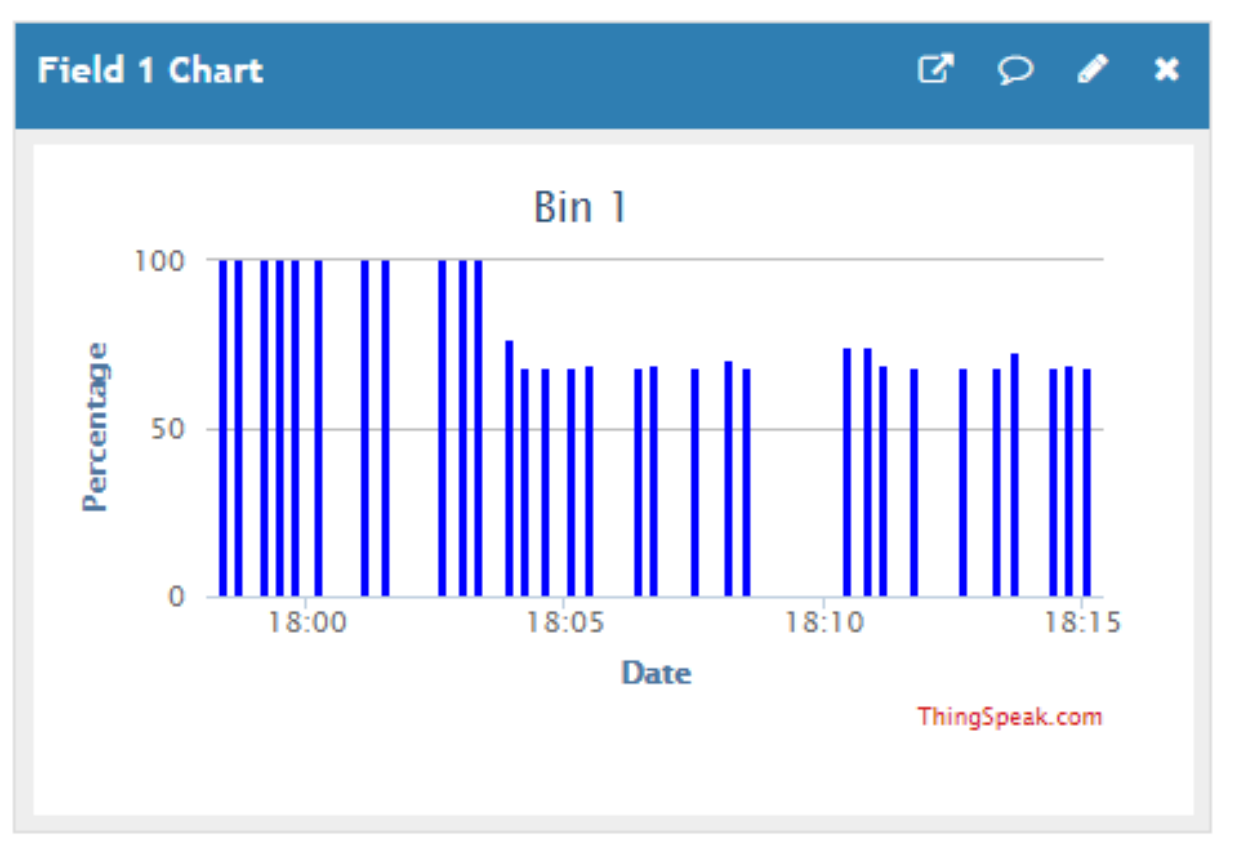
Work flow

- An Ultrasonic sensor is attached to the top of each bin.
- The ultrasonic waves from the sensor are reflected back from the garbage in the bin. Using this, we calculate the percentage of empty space in the bin.
- The percentage of empty space in a bin is constantly sent to the server using our Wi-Fi module.
- As the distance in a bin gets reduced below a threshold, a notification is sent to a driver to collect the garbage and clear the bin.

DATA FLOW


Business Intelligence
Send amount of empty space in (%)
Sends notification to garbage collectors to clean specified bins (filled waste > 75%)
Smart Bin
Garbage Collector

EXPERIMENTAL DATA



Plot of percentage of empty space in a bin over time

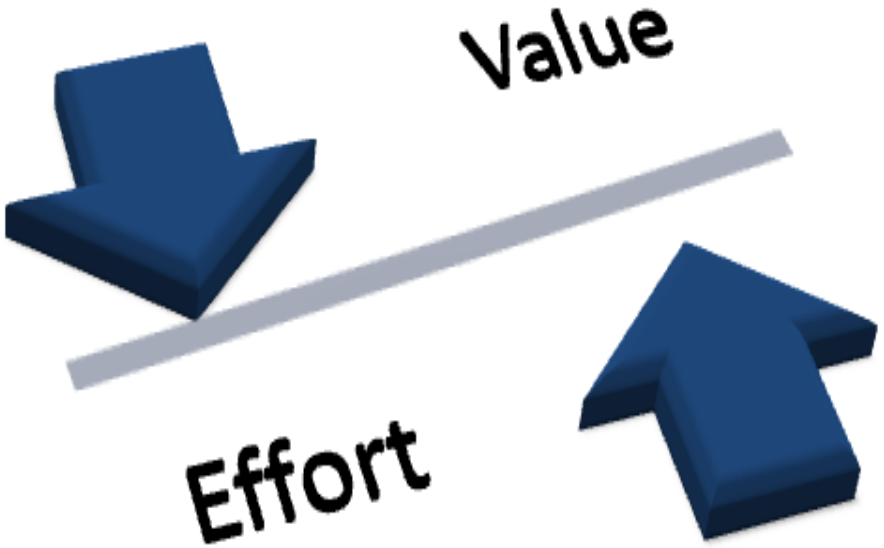
SOCIETAL IMPACT

- Our system can be used on a larger scale to keep our cities clean by monitoring the garbage in dustbins located in different corners of the city. This would solve to a great extent the sanitary and resource wastage problems mentioned earlier.
- Besides, a cleaner city would result in curbing a lot of diseases leading to much better health conditions.

CONCLUSION

Clean and Healthy City

Less Effort, More Value



Thank You