ABSTRACT

Trash is an urban problem that still becomes a challenge for the city government. The rising of waste products in urban makes waste management more complex. With the effort of urban waste management, The Bandung City Government has provided waste temporary shelter in several locations. But there is a shortage related to garbage collection because it still uses a manual waste collection system that the garbage collector has to take every waste in the waste temporary shelter every day. Then also on waste disposal errors because the lack of community knowledge level is related to the type of waste. This cause ineffectiveness of garbage collector because of the conventional scheduling system, and also have to sort every waste of each waste temporary shelter.

Internet of Things (IoT) is a concept where all products can interact with each other to help human activities by utilizing the internet, and a geographic information system (GIS) is an information system that manages data that has spatial information. These two systems can help to solve the problem related to waste by making an IoT-based waste temporary shelter prototype. Where it can automatically sort waste, monitor the height and the weight of the shelter, and sent the monitor data to the database. Then a web-based GIS will show the monitor data with the location.

This research makes a geographic information system for the IoT-based waste temporary shelter prototype using an Arduino microcontroller with an MQTT protocol for the data transmission process from itself to the broker/server. Then the Application Programming Interface (API) in the Node-RED is used to send the data from the broker to the database for the web-based GIS. This research has obtained results that the prototype has sorted waste well, and the system also produced good QoS by ETSI standards when looking at the network traffic from the MQTT server to the database and from the end-user to the web. As for the QoE results for tools and systems have produced good results according to the ITU-T standard.