# ABSTRACT

Garbage is the one of the things that can be a problem for the environment. The increasing amount of waste must be accompanied by good waste management. But in fact, there are still many waste problems that are found during its management. Examples include the accumulation of waste in Temporary Disposal Sites (TPS) in each area due to delays in picking up waste from Temporary Disposal Sites (TPS) to Final Disposal Sites (TPA) and the process of sorting each waste if someone disposes of waste that does not match its type. This causes the officers to unable to work effectively because they must first check each TPS and then sort the waste from TPS.

Internet Of Things (IoT) is a technology that uses the internet to do things. IoT is expected to help solve existing problems in TPS by making tools that can sort and monitor the height of each type of waste along with its weight in a TPS. The tool can then send data from the TPS using IoT and the system will display data from the TPS along with its location which can be seen in the android application.

This final project makes a geographic information system and TPS prototype using an Arduino microcontroller with the MQTT protocol to send data from the microcontroller to the server, then uses the Node-RED Application Programming Interface (API) to send data from the server to the database then uses the android application to monitor the data. This Final Project also examines the Quality of Service (QoS), Quality of Experience (QoE) and tool accuracy on the prototype TPS and geographic information system that have been made.

The results of the QoS test on the delay parameter get an average of 139.9 ms when it is free and 144.5 ms when it is busy. The QoS test results on packet loss parameters get an average result of 0.05% ms when apart and 0.11% when busy. The results of the QoS test on the throughput parameter get an average of 9.35 Mbps when it is free and 9.38 Mbps when it is busy. The three parameters get an index value of 4 or fall into the perfect category.

The results of the QoE test on tools and systems get the MOS value with an average value above 4, this value is accompanied by a low standard deviation. A low standard deviation value indicates that the sample value of each respondent is around the MOS average, this indicates that the results of the test can be classified as accurate.

The results of testing the accuracy of the tool for sorting organic waste get an accuracy rate of 84.15%, non-organic waste gets an accuracy rate of 83.30%, and metal waste gets an accuracy rate of 100%.