

## ABSTRACT

The importance of punctuality is an indicator of passengers to use transportation. Trans Metro Bandung (TMB) is a bus transportation with the concept of Bus Rapid Transit (BRT). However, TMB still applies the system Checkpoint to manually check when the bus has arrived at that point, this affecting the next arrival time. Handling this can be done with the help of the Internet of Things (IoT).

This Final Project (FP) is a combined FP of three different topics, such as implementing the Internet of Things using the Logitech C270 Webcam, and implementing Android applications. In this FP the author focuses on the implementation of GPS using the Ublox Neo-6M. Therefore, the design of a tool that can monitor the position of the bus in real time in the form of the coordinates of the bus position, the speed that the bus is traveling at that time, and can save the time and history of bus trips using Firebase. The data can be visualized using Google Maps.

The results of this final project, the accuracy rate on GPS is 90%. The results Quality of Service test from the tool to Firebase for an average delay of 84,421 ms in the morning, and 82.259 ms in the afternoon. The average throughput is 19200 bps in the morning, and 19833.33 bps in the afternoon. The results test of the Availability is 97.91% and test result Reliability is 97.87%.

**Keywords:** Monitoring, Realtime, Firebase, Internet of Things (IoT), Microcontroller, Ublox Neo-6M GPS Sensor, Quality of Service (QoS).