

## **ABSTRACT**

Vehicular Ad-hoc Network (VANET) is a popular choice in wireless communication for users with high mobility. In addition, the Long Term Evolution (LTE) communication protocol is the most promising in wireless broadband technology. LTE provides a high data rate and low delay in a wide range. Both technologies have advantages that offer communication convenience. The advantages of each technology are perceived as compatible, where 802.11p-based VANET has good service in a short distance, LTE has advantages in service in a long range.

This final project will channel 802.11p-based VANET with LTE to form a hybrid network. Network simulation uses NS3 and SUMO as a mobility generator. The research was conducted on multimedia service performance with several metric parameters, namely packet delivery ratio, throughput, and delay. Based on the results obtained from the data rate scenario of 256 kbps, PDR obtained is 57%, throughput is 166 Kbps, and the delay is 0.09 s. While in the 512 kbps scenario, the large PDR obtained is 47%, the throughput is 270 Kbps, and the delay is 0.16 s.

Routing protocols comparison scenario have also been implemented, namely using the OLSR and DSDV protocols. OLSR has a PDR of 57%, throughput of 166 Kbps, and delay of 0.09 s. As for the DSDV protocol, the PDR is 51%, throughput is 152 Kbps, and delay is 0.07 s.

Keywords : IEEE 802.11p, LTE, VANET, NS-3, SUMO, MULTIMEDIA