

ABSTRACT

LTE and WiMAX is a technology representing the 4th generation or 4G. This thesis is to determine the required number of LTE and Mobile WiMAX by considering the environment characteristics of the coverage areas, Urban, Sub-Urban, and Rural areas, of a new mobile operator in Surabaya from the points of view of technical aspects, market aspects, and economic calculations.

This thesis analyzed the techno-economics for the implementation of LTE Release 10 network and Mobile WiMAX. The method to determine the number of sites applied coverage and capacity analysis. The required number of sites were obtained by selecting the highest number of sites resulted from the analysis of coverage and capacity and taking into account other parameters such as link budget and the related overall data rate.

The calculation using those two methods affected the core network which in turn affected the required CAPEX components. The calculation of the required components resulted the value of NPV for LTE and Mobile WiMAX in three different scenarios, namely the moderate, optimist, and pessimist conditions.

The calculation of economic parameter in this thesis covered NPV, IRR, PBP and NPV sensitivity analysis to the dollar exchange rate, customer penetration, and CAPEX and OPEX values. The new operator might consider the results of sensitivity analysis to look at the feasibility of implementing LTE or Mobile WiMAX in Surabaya for Urban, Suburban, and Rural areas.

The results of the overall analysis showed that from the point of view of economic factors, implementing Mobile WiMAX was more feasible than implementing LTE.

Key word : LTE, Mobile WiMAX, tecno-economy, NPV,PBP,IRR