

## **ABSTRACT**

Recently there is a high need in knowing the position of mobile phone. The existing operators in Thailand are currently postponed the implement of any mobile positioning system due to many problem faced. Main problem is very high cost of implementation due to the proprietary interface with the network equipment. This paper proposes complete mobile positioning solution that is independent to the network equipment's vendor. In this thesis, many methods of acquiring raw data have been mentioned to confirm the possibility of implementation. The details of using GSM SIM Application Toolkit protocol to acquire these data are explained. At the current situation, only cell-id will be available. The algorithm to improve positioning accuracy using historical data of cell id information has been proposed.

Comparing with available solutions in the market, there are advantages of implementation cost because this positioning solution can be implemented on the existing SIM Card without any more investment on the network side or using special terminal equipment, i.e. GPS. Existing mobile positioning solution fail to implement on the existing operator because of the multi-vendor nature of both software and hardware on the GSM network.

The only drawback for the proposed solution is its accuracy. To make the solution independent of vendors, the restriction, as the time of this thesis, only Cell ID can be retrieved. Because this method bases only on Cell ID information, its accuracy is poor. Specific algorithm with some calculation to improve accuracy has been proposed.