

## ***ABSTRACT***

PT. Excelcomindo, Tbk as one GSM operator, has a division that deals with the GSM network, namely Network Optimization Division. One task of this division is to analyze GSM network performance. Network performance can be analyzed through the data that has been processed. However, data management and calculations are still using a semi manual system. The data is processed and stored in Microsoft Excel software. And to display the location map via mapinfo, RBS also are not yet integrated with Microsoft Excel. With the processing and management system is quite complicated because the data contained quite a lot. Distribution data will not be automatic because the system can only be accessed at the division office Network Optimization.

This geographic information system design through six stages: the preliminary phase, identification, system design phase, construction phase, analysis phase of the design results, and conclusions and recommendations phase. This web-based system that has the ease in data distribution. In an effort to improve Quality of Service cellular telephone network is carried out qualitative and quantitative analysis. Qualitative analysis is done by using Reliability Centered Maintenance (RCM) to determine appropriate preventive maintenance tasks for each component based on its reliability characteristics

From the results of research conducted conclude that geographical information system has several capabilities such as data processing with automatic calculation process, can update information quickly, it can display the graph of the performance, capable of displaying a map of the performance of RBS, it can be online in a web , and ensure data security.

Key word : Geographic Information System , RCM, Network Performance