CHAPTER 3

METHODOLOGY

3.1 INTRODUCTION

In this section, it will comprise all the methods and processes that will be used in order to achieve the three objective which are to analyze the wind speed distribution of UMP, Pekan Campus and Kuantan, to determine the optimum speed in order to choose type of wind mill to be used and to determine the optimum wind speed to design the blade of the wind mill.

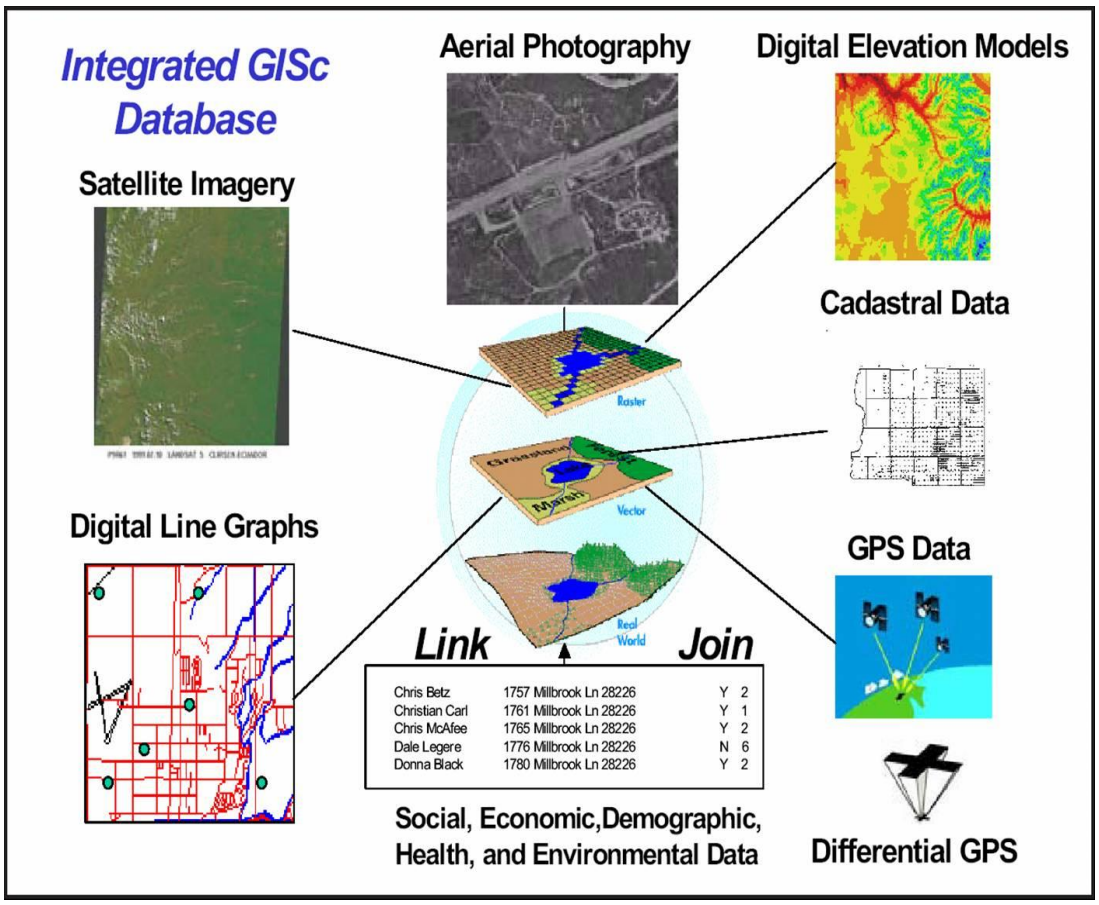
The project has been started with finding all the materials related to the topic of research including journals, articles and books. After the research and study have been made, it followed with project planning. This is where prediction is being made and determining the next step in order to ensure the smoothness of the project. For methodology it is important to stress the steps taken to complete the studies

3.2 METHODOLOGY THEORY

The ideal way to predict the wind potential of a location is by acquiring long term records of wind speed from a numerous number of whether stations but the process is quite costly and rather required complicated standard procedure.

Only the data for Kuantan area were available for a long term records because of the availability of establish weather station in the area. The data available for Kuantan was for three consecutive years from 2010 up to 2012.But for Ump Pekan due to the cost and time constraint, the wind speed data were collected for only a period of one week from 2nd May to 8th May 2013.

A Geographic information system (GIS) is used for mapping wind resources spatially and to quantify and analyses temporal changes. Based on these, GIS thematic layers were generated, which help in assessing the variability. The maps then will helps to identify the most and the least suitable potential areas for harnessing wind energy. GIS is used for identifying and quantifying the effect of local constraints on the wind energy potential. This helped in providing the flexibility to enrich the database with spatial data on which decisions are based. By using GIS, a thematic map of the wind potential can be generated in considering the temporal and spatial data of seasonal wind velocities. This will help in knowing which spot is the best location to set up a wind mill for harvesting wind energy.



(Figure 3.1: Example of GIS database)

Geographic Information System (GIS) is a system designed to capture, store, manipulate, analyze, manage and present all types of geographic data.

After generating the GIS, we can get the wind speed data for the studied area. Later a Weilbull distribution and mean wind speed frequency distribution graph need to be tabulate in order to decide which location is best to harness the optimum wind energy.