

# CHAPTER 1

## INTRODUCTION

### 1.1 Introduction of the Project

The title of this project is Automatic Image Capturing System Using Air-Transportation. The objective of this project is to build a system that can capture image on air and at the same time send the image data back to the ground based computer via RF communication system.

The reasons behind the start of this project are due to the nature disaster that had been happening lately. From the recent tsunami disaster, a lot of places cannot be reach by search and rescue party due to dangerous situation and unreachable places. With this project, it is hope that the problem can be solved by sending the air-transportation to places that are dangerous or cannot be reached by humans to search and rescue the remaining survivors. This project also can be used to reduce human casualties and dangers by enabling the air-transportation to be sent to dangerous places such as mine territories. It is also hoped that the air transportation can be used to detect dangerous material such as toxic waste and mines. Commercially, the air transportation can be used for security purposes in highly restricted or dangerous area and also use to detect car plate numbers provided proper system are incorporated.

This project also demonstrates how to interface a camera with 8051 microcontroller. The microcontroller that will be used is the AT89S52 type. The Atmel AT89S52 is an 8051 based Full Static CMOS controller. The hardware control are design

using circuit and electronic devices. The microcontroller is main component to the hardware controller.

As explained earlier, there are unlimited prospect with this project. This project also can be modified to fit into any situation such as military operation or even space exploration. Future add-on such as using laser as a detection tool and data can be send in real time via internet can be considered to make it more appealing.

This project is actually a prototype project that can be incorporated into a fully automation flying vehicle that can capture image that can be use in search and rescue operation in the future and also other potential usages.

## 1.2 Project Objective

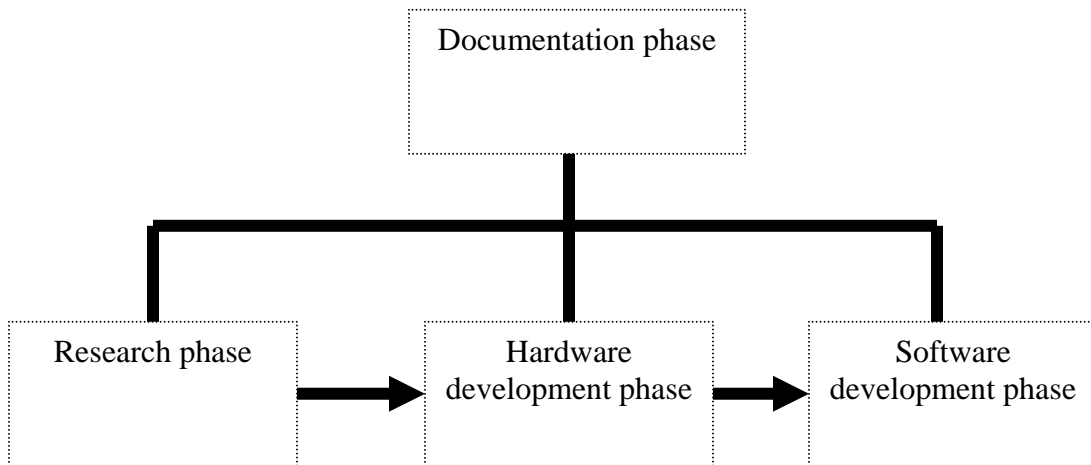
The following are the objective of this project in no particular order:

- To design a RF module that enables communication between the camera and the pc based station.
- To enable image capturing and send the data back via RF signal.
- To enable communication between the microcontroller board and PC based station via RF
- To display the data in ASCII code and binary form properly from the camera on the computer screen.

## 1.3 Project Planning

This project can be divided into 4 phases

- Research phase
- Hardware development phase
- Software development phase
- Documentation phase



**Figure 1.0:** Block Diagram of Project Phases

### 1.3.1 Research Phase

This is the starting phase of this project where research were done regarding to the project. During this phase also, hardwares and softwares related to the project were researched and tested. During this phase, a lot of testing were done to find the compatibility between the hardwares and the softwares. This is to make sure that the during the next three phases, problems that might arise can be minimised.

### 1.3.2 Hardware Development Phase

In this phase, the microcontroller board were developed. The microcontroller is main component to the hardware controller. This board function to receive the data from the camera via ADC and process the data before sending the data back to pc based station via RF module. During this phase also, communication of the RF module between the microcontroller and also the PC based station were develop. The camera were also tested to ensure that data can be send to the microcontroller via ADC.

### 1.3.3 Software Development Phase

This is the phase where software was developed to ensure that the data from the camera can be received and read using a pc based station. Visual Basic 6.0 were used to develop the essential software to receive the data from the camera via RF module through the serial port. Low level assembly language was required to program the microcontroller board. For the microcontroller board, Macro assembler program were used to assemble the program for the microcontroller.

### 1.3.4 Documentation Phase

Documentation is an ongoing process which culminates with this report. During the documentation process, results from the three phases mentioned above were recorded. The difficulty and the problems that arise during the process were also recorded for further references.