

MAIL/PARCEL MANAGEMENT SYSTEM WITH SMS

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## **ABSTRACT**

Mail Management System with SMS (MPMS) is developed to facilitate staffs and students of Residential College at Universiti Malaysia Pahang (UMP). This system can help and easily staff to manage the students' parcel. In the existing system, process is conducted manually that consumes a lot of time and human effort. Therefore, the proposed system is to change the current process to computerized system and also provide Short Message Service (SMS). This system also can generate informative report about the parcel statistics. The methodology that has been applied in the project development is the prototype model. The advantage of prototype model is it can be an early act or representation of the final product and this method can reduce risk and limit expenses and costs. In the development of MPMS, PHP and MySQL has been used as programming tools. PHP is a scripting language widely used to write web applications while MySQL is an open source relational database management system. For the software, Adobe Dreamweaver CS4 has been used. As a result, web-based system and SMS are developed and this system helps increase the efficiency of mail management activity.

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**LIST OF ACRONYMS / ABBREVIATION / GLOSSARY****ABBREVIATIONS****DEFINITIONS**

IT	Information Technology
MPMS	Mail Management System & Mobile Application
SMS	Short Message Service
SRS	Software Requirement Specification
SDD	Software Design Document
UMP	Universiti Malaysia Pahang
POPStation	Pick Own Parcel Station
PODs	Proof of Delivery
STR	Software Test Result
USPS	United States Postal Service

## **PART 1**

### **INTRODUCTION**

#### **1.1 INTRODUCTION**

Information technology (IT) has been widely used nowadays. Importance of IT within today's society cannot be denied and IT has become one of the needs in our community. With the growth of IT, manual data storage now can be replaced with computerized system.

For this project, the current system was used manual system, so the manual system is replaced with computer systems. The name of the system is Mail/Parcel Management System with SMS (MPMS). This system helps staff of the Residential College to handle and manage the students' parcel while for student they can easily know whether they have parcel or not without entering Residential College office.

##### **1.1.1 Problem Statements**

Students at University Malaysia Pahang (UMP) get their parcel at the office of Residential College. Student parcel's information is record by the staff of Residential College. The staff using record book to record the information about the students' mails and packages. The name of the receiver, tracking number of the parcel and other information are recorded in the record book. But, only the parcel with the tracking number is recorded. Parcel without tracking number is not recorded because student can get it in the pigeon hole.

With current system, there are few problems happened. For instance, student need to go to the Residential College office to check whether they have parcel or not. If there are their names in the record book, it means they have parcel and they can get it from the staff. If they don't have, they need to check again later on. This process is waste students' time and they are burdened to go back and forth to the Residential College office just to check if they have parcel or not.

Thus, the MPMS is developing to facilitate staffs and students of Residential College at UMP. This system can help and easily staff to manage the students' parcel. Staff just needs to enter or key in the information of the parcel. Then, when there are student come to collect their parcel, staff need to search their data in the system by enter student's name or student number. If there are parcel for the student and it is confirm that the student is the owner of the parcel, staff give the parcel to the student. Then, staff needs to update the status of the parcel in the system from 'not collect' to 'collected'.

While for student, they get Short Message Service (SMS) which is to alert and notify students that they have parcel. They also can check through the system whether they have a parcel or not without entered the Residential College office because this system is an online system.

If this system is use to manage the students' parcel, the work and the process become more efficient and it ease the staff to handle the work. Students also feel fewer burdens and can easily check their parcel through the system without going back and forth to the Residential College office.

### **1.1.2 Objectives**

In order to develop the MPMS, the overall objectives of this system are:

- i. To computerized the mail management system from manual to computerize.
- ii. To provide SMS to notify students.
- iii. To generate report about the parcel statistics.

### **1.1.3 Scopes**

The scopes for this project are:

- i. The users for MPMS are staffs and students of Residential College at UMP.
- ii. The system allows staff to record student's parcel information. While student can check whether they have parcel or not.
- iii. The system allows a notification message sent to the student to notify student they have parcel via SMS.
- iv. The system can generate informative report about the parcel statistics.
- v. The system can cover about 1500 data.
- vi. The system can support Windows platform.
- vii. The system use Adobe Dreamweaver CS4, PHP, and MySQL as programming tools.
- viii. The system use Toshiba Intel® Pentium® Dual CPU T2390 @1.86GHz

## 1.2 REVIEW PREVIOUS WORK

### 1.2.1 Singapore Post



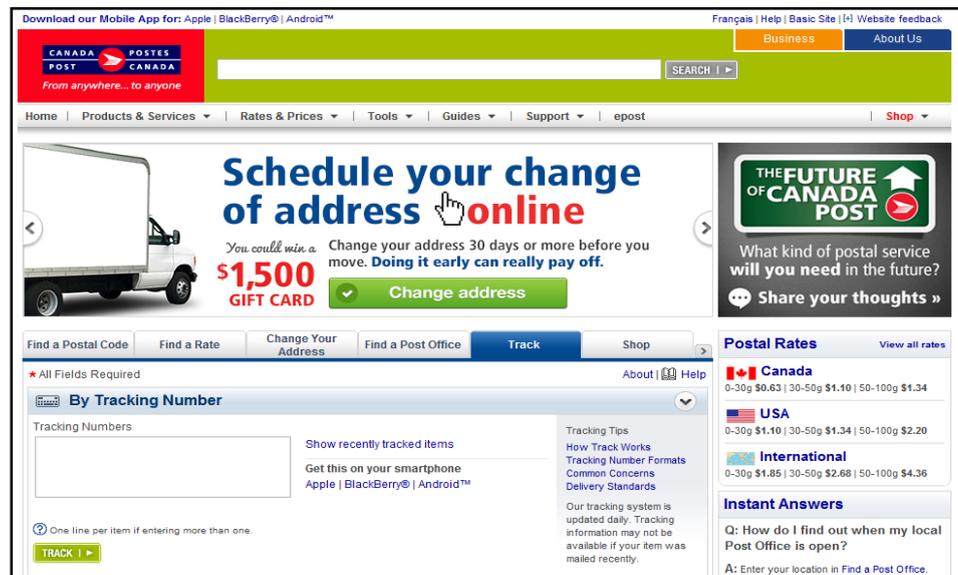
**Figure 1.1** Singapore Post Website

Singapore Post is a company that provide parcel and courier service. This company has its own web site. Figure 1.1 shows the Singapore Post web page. This web site is same as other courier company which is provides tracking an item function in their web site. Customer can check their item current's location if they enter their item's tracking number.

The strength of Singapore Post is they provide SMS Mail service which is a service to notify and alert recipient. Once the item has been delivered to the post or letter box, a SMS is send to alert recipient via their mobile phone. This service is very useful and efficient in notifying and alerting the recipients that the items they are waiting and expecting have been delivered. Singapore Post also provides Pick Own Parcel Station (POPStation) service. POPStation is a new way to pick up and collect parcels at anytime where customer can choose to pick up their parcel from POPStation if the customer not at home to receive their parcels. Unfortunately, the weakness of Singapore Post is customer cannot visit and access the Singapore Post website through mobile because there is no mobile website provided.

Based on strength and weakness of Singapore Post, it is convenient to their customers if they provide mobile application, so their customers can access their website or system at anytime and anywhere. [4]

## 1.2.2 Canada Post



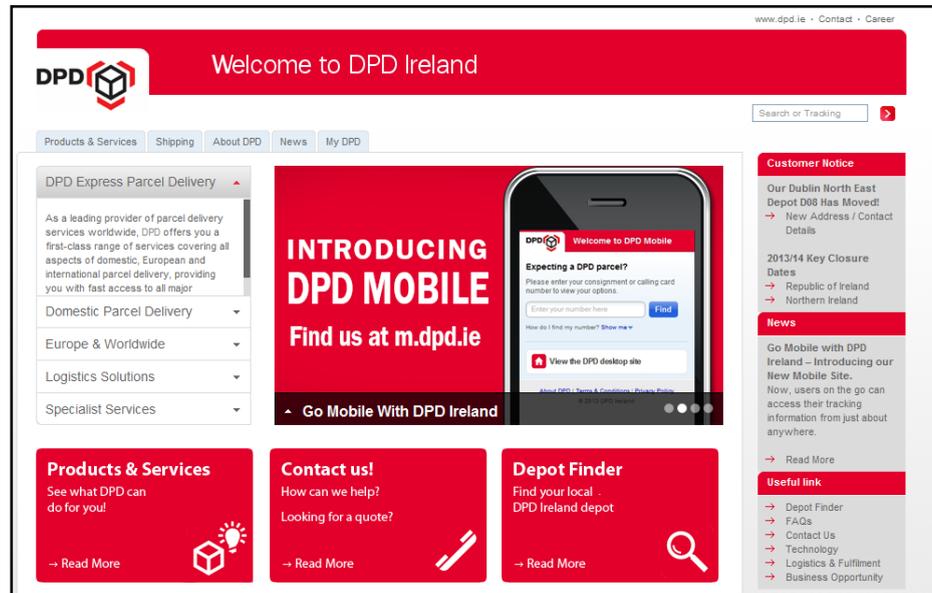
**Figure 1.2** Canada Post Website

Canada Post is a company which is offer and provides parcel delivery based at Canada. Canada Post website is shown in Figure 1.2. Same with other company, Canada Post also has tracking parcel function. Customer can check their parcel's location through this function.

This website also available in mobile website, so customer can visit and access this website through mobile phone at anytime and anywhere. Customer can go directly canadapost.ca on their mobile. Mobile application of Canada Post also available and customer can download it then install in their mobile device. Both mobile website and mobile application has same functions which are can track parcel, find a postal code or find a post office near customer's location. But, with mobile application, customer can check their parcel's delivery status with type tracking number or can use their camera to scan the barcode from delivery slip or delivery notice card. This barcode function is only compatible for iPhone 3GS and above only. These services which are Canada Post provide are very convenient for their customer. Regrettably, the weakness of Canada Post is they did not have service like SMS which can notify customer if their parcel has delivered.

Based on the strength and weakness of Canada Post, if they provide SMS or something that can alert customer, their system is more convenient to use. [5]

### 1.2.3 DPD Ireland



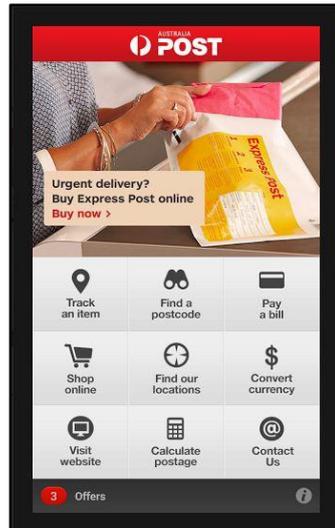
**Figure 1.3** DPD Ireland Website

DPD Ireland is a parcel delivery company in Ireland. Figure 1.3 shows DPD Ireland website. This web base system provides tracking a parcel and other functions. To locate the parcel, customers need to enter their parcel's tracking number and then the current's location of the parcel is appeared. This system is same as other courier companies.

The strength of DPD Ireland is it can be access whenever at customer convenience because it's available in mobile website. Customer can find DPD Ireland at [m.dpd.ie](http://m.dpd.ie) link through their mobile. Customer can easily access tracking details and other delivery information through their mobile. This mobile website provides similar function as the web base system. Other than that, DPD Ireland also provides Real-time Proof of Delivery (PODs). It is available on website within seconds of delivery. The weakness of DPD Ireland is SMS service is not provided to notify and alert customer if their parcel is delivered.

Based on the strength and weakness of DPD Ireland, it is more convenient to their customers if they provide SMS to alert and notify customers. [3]

## 1.2.4 Australia Post Mobile Applications



**Figure 1.4** Australia Post mobile applications

Australia Post mobile application is a mobile version for the Australia Post website. Their customers can access some of their popular services at anytime and anywhere. This mobile application is available for Android platform, iPhone platform, and Windows Phone 7 platform. Figure 1.4 shows the Australia Post mobile applications.

The strengths of this mobile application are, it provides scan or search for tracked item and it can save it in history. It also can scan bills barcodes for quick, easy payment and the details of payment can be saved. Postage calculator also available in this mobile application and their customers also can convert currencies. The weakness of this mobile application is the barcode scanning only available on compatible devices and it currently not available for tablet devices.

Based on strengths and weakness of this mobile application, if this mobile application is available for all platform and all devices, it is convenient for their customers. [8]

### 1.2.5 United States Postal Service Mobile Applications



**Figure 1.5** United States Postal Service mobile applications

United States Postal Service(USPS) mobile applications is an applications which is offer their customers to access the most popular tools they had through mobile device. This is easy and convenient for their customers and they can enjoy and feel like having a post office in their hand. Figure 1.5 shows the United States Postal Service mobile applications.

The strength of this mobile application is it allows customer to find locations of their parcel and get their deliveries information with Track and Confirms service. Customer also can calculate shipping prices. They also can make schedule to pick up their parcel. It also allows customer to look up a zip code and find USPS locations nearby. The weakness of this mobile application is not all tools or services of USPS are available on every phone.

Based on strengths and weakness of this mobile application, it is convenient to their customers if all tools or services can be access and available for all mobile application platform. [9]

### 1.2.6 Hong Kong Post Mobile Applications



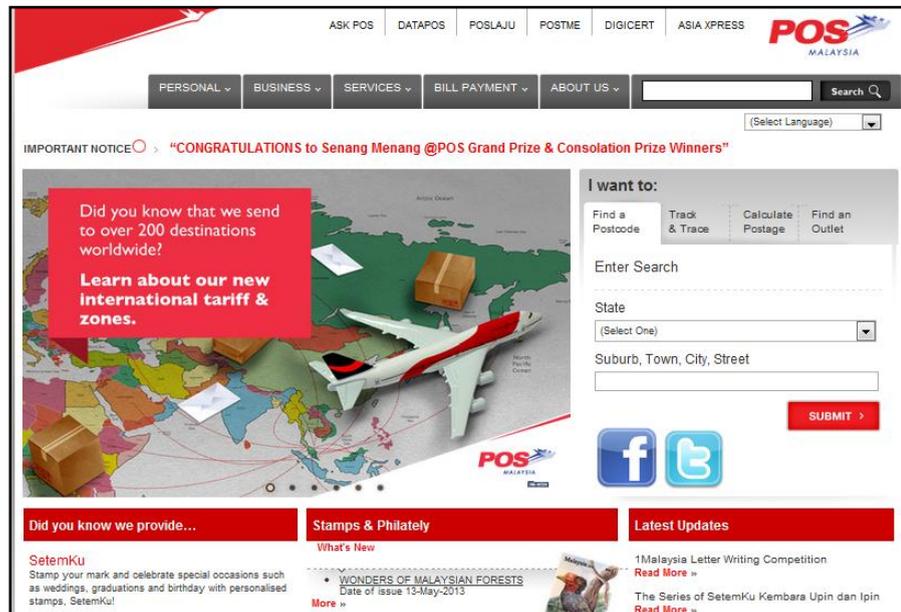
**Figure 1.6** Hong Kong Post mobile applications

Hong Kong Post mobile application is an application which is designed in user friendly interfaces. It also has fast key function. This helped their customers to easily use this application. Figure 1.6 shows the Hong Kong Post mobile application.

The strength of this mobile application is allows customer to trace their delivery status of parcel. It also provides simple and easy calculator postage and comparison. Customer also can get and obtain other services and information of Hong Kong Post. This mobile application also provides locations of nearest Hong Kong Post office and its information such as address and opening hours. The weakness of this mobile application is only android and iPhone platforms are available for this application. For the blackberry platform user, they cannot access this application through their mobile.

Based on strengths and weakness of this mobile application, it is convenient to their customers if this application is available on all mobile application platforms. [10]

## 1.2.7 Pos Malaysia (SMS)



**Figure 1.7** Pos Malaysia website

Pos Malaysia is a provider of parcel and mail services in Malaysia. Other than websites, this company provides SMS functions. This is to ensure their customer convenience because they can check their parcel at anytime and anywhere. This SMS is allowing customer to track their parcel from the point of pick up until the parcel is successfully delivered. Figure 1.7 shows the Pos Malaysia website.

Pos Malaysia customer can track and check their parcel via SMS, but it is available only for domestic delivery. Customer needs to send SMS to track their parcel and the SMS is charged RM 0.50 for each SMS. This function is available for Celcom, Maxis, and DiGi subscribers only. Customer need to type their tracking number and send it to 33333. Then, they will get reply about their parcel.[11]

### 1.2.8 India Post (SMS)

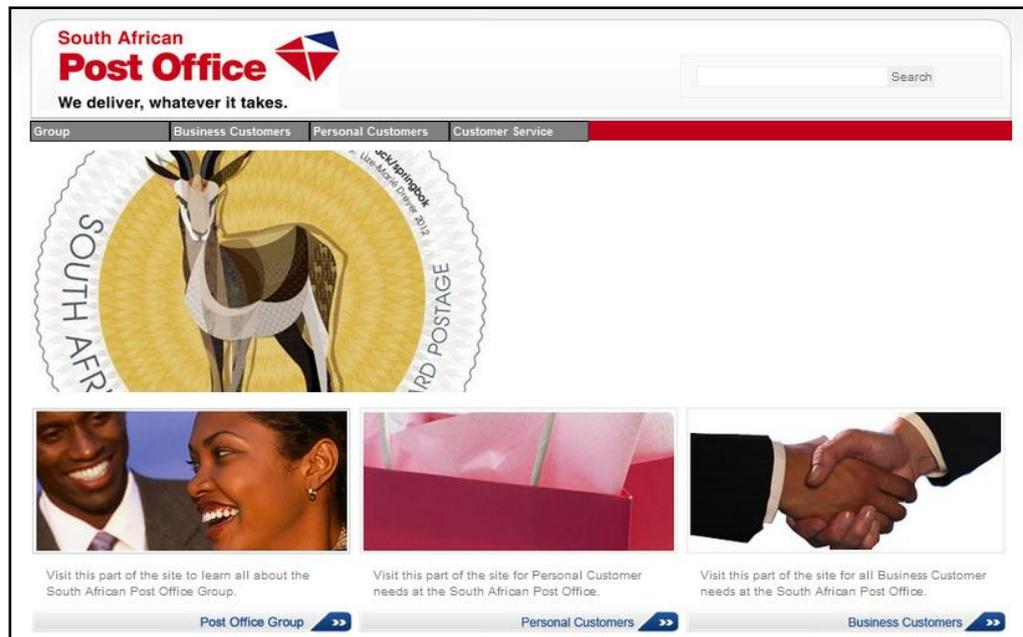


**Figure 1.8** India Post website

India Post is managed by the Department of Posts which is under the Ministry of Communications and Information Technology. India Post has launched SMS tracking. This function has been launched to provide better service to their customers. Figure 1.8 shows the India Post website.

This service is available for Speed Post and electronic money order. Customers need to send SMS to 55352 in the specified format. Customers may use lower or capital case or both because this service is not case sensitive. Then, the customers get a reply about their parcel's status. For the purpose of SMS tracking, the data is retained up to three months from the date of booking. The rate charged by the service provider is applicable. [12]

### 1.2.9 South African Post Office (SMS)



**Figure 1.9** South African Post Office website

South African is company which provides postal and related services. Same as other company, they also have a website. Figure 1.9 shows the South African Post Office website. Other than that, they also provide SMS tracking.

Customers can track their parcel's location via SMS. They need to type tracking number and send the message. There are two categories for this SMS tracking. For the Post Office, Speed Services Couriers, XPS and PX customers, they can SMS the tracking number to 35277 and then get a reply about their parcel's location. While for Secure Mail customers, they can SMS the tracking number to 32932 and also get a reply about their parcel's location. [13]

### 1.2.10 Advantages and Disadvantages of Previous Work

All the previous work has their advantages and disadvantages. Table 1.1 shows the pros and cons between the previous works. The features that have been compared are website, mobile website, mobile application, SMS, tracking number and other features if any. All of the previous work has website and tracking number. While for mobile website, only Singapore Post did not provide it. For mobile application, only Canada Post provides it. Singapore Post is the only one which is provided SMS.

**Table 1.1** Pros and cons between previous works

<b>Previous Work</b>	<b>Singapore Post</b>	<b>Canada Post</b>	<b>DPD Ireland</b>
<b>Website</b>	Yes	Yes	Yes
<b>Mobile Website</b>	No	Yes	Yes
<b>Mobile Application</b>	No	Yes	No
<b>SMS</b>	Yes	No	No
<b>Tracking Number</b>	Yes	Yes	Yes
<b>Others</b>	POPStation	Barcode	PODs

## 1.2 CURRENT SYSTEM AND LIMITATIONS

The current system in overall was managed manually. Students' parcels are arriving in Residential College office in the morning and the staff of Residential College need to record the information of the students' parcel in the record book. They record the name and phone number of the receiver, tracking number of the parcel and other information.

Student can check whether they have parcel or not by going to the Residential College office. If they had, they can get the parcel directly. But if not, they need go back and forth to the Residential College office to check their parcel.

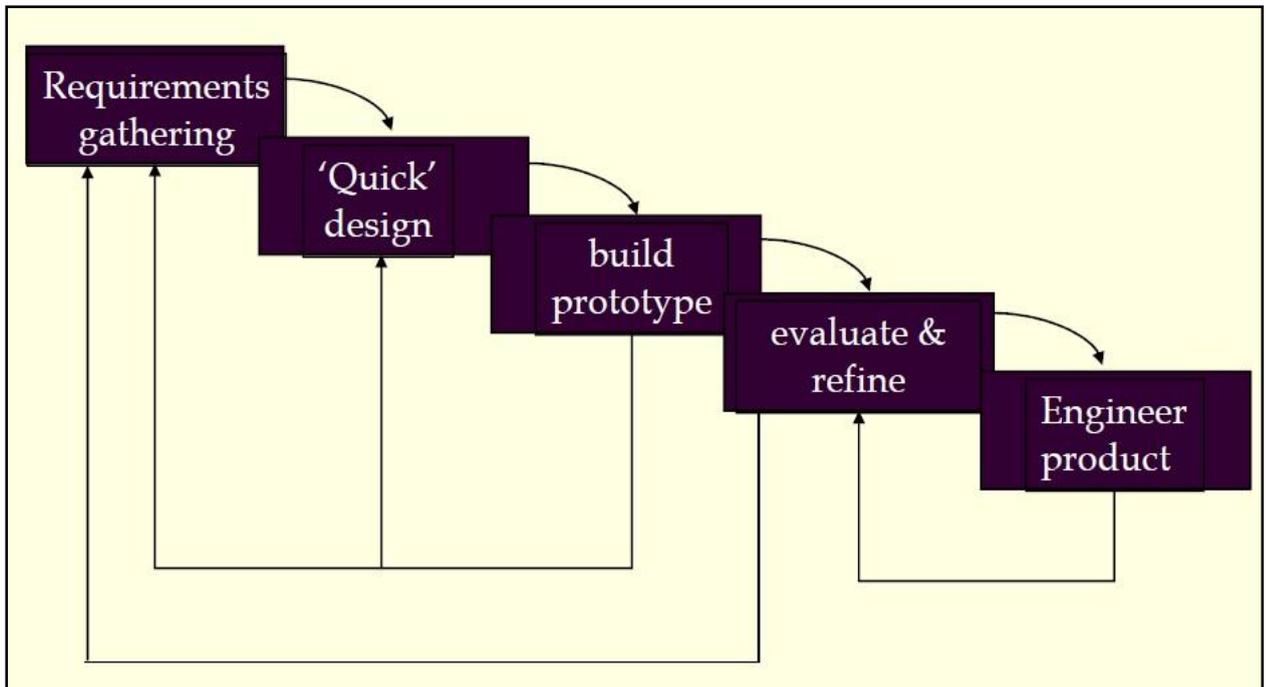
For the student which has the parcel, they need tell staff and then the staff checks their name and student card to ensure the parcel is get to the right owner. The staff gets the parcel and gives to the student if they are really the owner of the parcel. Then, as evidence that the student had collected their parcel, they need to leave their signature in the record book.

There are many limitations and problems that arise by using this method. Student is waste their time and get burden because they have to go back and forth to Residential College office to check if they have a parcel or not. If this system is used by the staff, SMS is send to the students to notify students that there are parcels for them. Students also can check through this system and if they have a parcel, then they can go directly to the Residential College office to get their parcel.

Usually, there is congestion in the Residential College office. This is occurred because students come to the office to check if they get parcel or not. They check their names in the record book by themselves but, this action take few minutes. So, the office is full with the students and congestion is happen. So, with this system, the problem can be solved easily because staff can search the record in the system faster.

Staff records the data by manually so sometimes it is difficult to understand their handwriting. It is because each person has their own style of handwriting and sometimes it is hard to read. So, with this system, all the record is recorded with more efficient and problem such as hard to read the record can be overcome.

### 1.3 METHODOLOGY



**Figure 1.10** Prototyping Model

The methodology that has been implied in the project development is the prototyping model. Figure 1.10 shows the prototyping model. Prototyping is a software development process which allows programmers or developers to create part of the solution to demonstrate technical feasibility and functionality to the client and make needed refinements before developing the final product. This method can reduce risk and limit expenses and costs.

#### 1.3.7 Requirements Gathering

Requirements are gathered by having the developer and client meet. All requirements, data are collected in the meeting. The entire important element, the input and output information desired are also identified. The client of this project is the staff of Residential College Office at University Malaysia Pahang. All the information had been gathered to make sure the system is based on the requirement from the client. Information that needs to be gathered is shown in Table 1.2

Software Requirement Specification (SRS) has been produced in this phase. In the SRS, the behavior of MPMS has been described such as product description, interface requirements, software product features and requirement traceability.

**Table 1.2** Information that need to be gathered

Source	Information Gathering
Client	<ul style="list-style-type: none"> <li>• Flow of the system (How the system should work?)</li> <li>• Data information of the system (What data should be included in the system?)</li> </ul>
System	<ul style="list-style-type: none"> <li>• Users of the system (How many privileges in the database?) Eg: Staff</li> </ul>
Environment	<ul style="list-style-type: none"> <li>• System Environment (Which environment is compatible with the system?) Eg: Web-based, Stand-alone environment</li> </ul>

#### 1.4.2 Quick Design

After gathered the requirements, developer can proceed to the next phase which is a quick design. In this phase, developer is design initial prototype which includes user interfaces. They focus on a representation of those aspects of the system that are visible to the client such as input approaches and the output formats of the system. In this phase, Software Design Document (SDD) has been produced. The MPMS design description and details about design have been described and explain in the SDD.

#### 1.4.3 Build Prototype

The quick design phase leads to the build of a prototype phase. In this phase, developer starts to construct and develop the prototype. Developer start codes the prototype in this phase. The prototype of MPMS has been build based on the design in the previous phase and the requirements gathered in the earlier phase.

#### **1.4.4 Evaluate and Refine**

Evaluate and refine phase are take place after the prototype has been developed. The prototype was evaluated and examined by the client. Client or end-users provides feedback on additions or changes on the prototype. Their feedback can be used to refine the requirements for the system to be developed. MPMS has been evaluated by the client who is Residential College staff and the feedback has been gathered from them. The requirements of MPMS has been refined and repaired based on the feedback. In this phase, Software Test Result (STR) has produced.

#### **1.4.5 Engineer Product**

In this model, iteration occurs as the prototype is tuned to satisfy the requirements of the client. At the same time, developer can be more understand what requirements and needs to be done. By using the feedback, the prototype and specification can be improved. After done all the phases and maybe there are iteration in several times, the system become the end product. If client agree to the end product, user manual for the system are produce.