**MINISTRY OF EDUCATION AND TRAINING**

**FPT UNIVERSITY**

Capstone Project Document

**Insurance Card**

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| **Group 2** | |
| **Group members** | Đinh Quang Trung – SE60994  Nguyễn Hữu Phúc – SE60749  Phùng Quang Minh Trí – SE60746  Nguyễn Chí Kha – 60351 |
| **Supervisor** | Kiều Trọng Khánh |
| **Ext. Supervisor** | N/A |
| **Capstone Project Code** | MIC |

- Ho Chi Minh City, 12 May 2015 -

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Table of Contents

[A. Introduction 7](#_Toc419302497)

[1. Project Information 7](#_Toc419302498)

[2. Introduction 7](#_Toc419302499)

[3. Current Situation 7](#_Toc419302500)

[4. Problem Definition 7](#_Toc419302501)

[5. Proposed Solution 7](#_Toc419302502)

[5.1. Feature functions 7](#_Toc419302503)

[5.2. Advantages and disadvantages 7](#_Toc419302504)

[6. Functional Requirements 8](#_Toc419302505)

[7. Roles and Responsibility 8](#_Toc419302506)

[B. Software Project Management Plan 9](#_Toc419302507)

[1. Problem Definition 9](#_Toc419302508)

[1.1. Name of this Capstone Project 9](#_Toc419302509)

[1.2. Problem Abstract 9](#_Toc419302510)

[1.3. Project Overview 9](#_Toc419302511)

[2. Project organization 12](#_Toc419302512)

[2.1. Software Process Model 12](#_Toc419302513)

[2.2. Roles and responsibilities 13](#_Toc419302514)

[2.3. Tools and Techniques 14](#_Toc419302515)

[3. Project Management Plan 14](#_Toc419302516)

[3.1. Tasks 14](#_Toc419302517)

[3.2. Task sheet 15](#_Toc419302518)

[3.3. All Meeting Minutes 15](#_Toc419302519)

[4. Coding Convention 15](#_Toc419302520)

[C. Software Requirement Specification 16](#_Toc419302521)

List of Tables

[Table 1: Definitions, Acronyms, and Abbreviations 6](#_Toc419298480)

[Table 2 Hardware requirement for continuous integrating server 11](#_Toc419298481)

[Table 3 Hardware requirement for web development 11](#_Toc419298482)

[Table 4 Hardware requirement for mobile development 12](#_Toc419298483)

[Table 5 Software requirement 12](#_Toc419298484)

List of Figures

[Figure 1 Waterfall model 13](#_Toc419302522)

Definitions, Acronyms, and Abbreviations

|  |  |
| --- | --- |
| Name | Definition |
| MIC | Motor Insurance Card |
| NFC | Near field communication |
|  |  |

Table 1: Definitions, Acronyms, and Abbreviations

# Introduction

## Project Information

## Introduction

## Current Situation

When participating in traffic, vehicle owners are required to have compulsory insurance. Therefore, vehicle owners buy insurance from insurance companies or its agents. They pay by cash and receive an insurance certificate with a term of one year, the term can be shorter in some specific situation.

## Problem Definition

Below are disadvantages of current situation:

* **Forget insurance’s expired date**: Vehicle owners usually keeps their insurance certificate in wallet or somewhere on their vehicle. However, except in cases of necessity, people are not often check their insurance so they could forget its expired date. An expired insurance is not good while it be revealed by traffic officers and could become worse in case of accident.
* **Have to buy insurance directly**: This is time-consuming and inconvenient.
* **Hard for traffic officers to check and verify insurance**: Traffic officers must compare insurance certificate’s information with vehicle registration certificate to check validation of traffic participants.

## Proposed Solution

The proposed solution is to build an insurance NFC card system, include a web application and a mobile application with following functions:

### Feature functions

* Web application:
  + User can register and renewals the insurance using online payments.
  + User can check card information.
  + User can request compensation.
  + Staff can create/manage contracts.
  + Staff can resolve compensation requests.
  + Notify the insured one when their insurance is expired.
* Mobile application:
  + Check specified Motor Insurance Card expired or not.
  + Update the punishment of violator.

### Advantages and disadvantages

* Advantages:
  + The interaction between the insured one and the insurance company.
  + Reduce fake insurance card.
  + Support police to check valid card easier.
* Disadvantages:
  + An android device with internet connection is required.

## Functional Requirements

## Roles and Responsibility

# Software Project Management Plan

## Problem Definition

### Name of this Capstone Project

* **Official name**: Insurance Card
* **Vietnamese name**: Thẻ bảo hiểm
* **Abbreviation**: MIC

### Problem Abstract

Nowadays motorbike is the most familiar vehicle in Vietnam and many developed countries. By 2013, there are about 37 million motorbikes was registered in Vietnam (statistic from Vietnam Ministry of Transport), therefore the needs of motorbike insurance is very high.

There are many insurance companies in Vietnam who provide insurance services which include motorbike insurance. Motorbike insurance card is compulsory by government, every motorbike owner is required to bring insurance when they are in the traffic. However there are many problems with current insurance companies that need to be improved to help motorbike owners to use the insurance services more efficiently.

### Project Overview

#### Current Situation

In current insurance services, especially for motorbike insurance services in Vietnam, we have some problems that need to be improved:

* **Vehicle owners forget about insurance expired date:** current insurance services in Vietnam have no method to notify their customer about the expired insurance card, therefore there are many situation when vehicle owners have problem with traffic police officer when their insurance card have expired.
* **Inconvenient to buy/renew insurance card:** when a vehicle owner has his/her insurance card expired, they have to go to an insurance agent shop to register a new one which is very inconvenient and take worthless effort. We need to improve this work.
* **Inconvenient to check/verify insurance card validation**: when traffic police officers check an insurance card they need to take looks and compare by bare eye, this process might be difficult in some situations like when the card is old and difficult to read or the paper is damaged by water or burned. Beside that this process might include a risk of fake insurance card or hijacked/modified expired date on an old insurance card.

#### The Proposed System

Based on the current situation, Vietnam Insurance Law and researches about the cutting edge technologies related. We came up with a proposal of a system which can help the insurance companies to solve those problems in a convenient way.

According to the technology researches, we found out that the NFC technology is very capable of resolve the current situations in insurance companies. The basic idea is to use a NFC tag (or NFC “card”) as an insurance card instead of paper card currently.

Our system includes three main subsystems: an online website for company’s staffs, a mobile application for police officers and a mobile application to simulate the card printer.

##### Website

Website is a common communication portal for insurance company’s staffs and users (customers). Website provide following features:

* For users (customers):
  + Users can register new insurance card with online payment.
  + Users can look up information about their insurance card: compensation history, punishment history, expired date…
  + Users can renew current insurance contract with online payment.
  + Users can request compensations to insurance company when an accident occurs.
  + Users will be notified by emails when insurance card is nearly expired or a compensation request is approved/rejected.
* For staffs:
  + Staffs can create new contract for customer.
  + Staffs can manage contracts, see all insurance cards published and see statistics
  + Staffs can update compensation requests, resolve a compensation request when the case is done.

Beside above, website system also provides an API interface for two mobile applications to retrieve, update data from mobile applications.

##### Checker Mobile Application

This mobile application is used by traffic officer. This application do followings:

* Check if an insurance card (NFC card) is valid or not.
* Send punishment if the customer has law violations. Punishment information will be updated in server.

##### Printer Mobile Application

This is a simulating application to simulate the work of Card Printer. In reality the company who deploy this system need to have a NFC Card Printer to write information about the insurance company and customer information into an NFC card. However our system currently only support this as a simulating application. This application is used by company’s staffs and do followings:

* Retrieves insurance contract information and write data to a physical NFC card.

#### Boundaries of the System

This section suppose that the government law in local area supports the method of using NFC cards as insurance cards, and accept NFC insurance cards are legal.

* Every company who has Information System infrastructure can deploy this system.
* Companies who deployed this system has to equip enough devices for the system to run, includes:
  + Computer system with internet connection.
  + Smartphone devices with built-in NFC technology.
* The language of this system is Vietnamese
* The complete product includes:
  + Website application for staffs and users
  + Printer mobile application for staffs.
  + Checker mobile application for traffic police officers

#### Development Environment

##### Hardware requirement

* For continuous integrating server:

|  |  |  |
| --- | --- | --- |
| Hardware | Minimum Requirements | Recommended |
| Internet Connection | 512Kbps | 8 Mbps |
| Operating System | Ubuntu Server 12 LTS | Ubuntu Server 14.04.2 LTS |
| Computer Processor | Intel® Core 2 Duo | Intel® Core(TM) i5 CPU , M 460 @ 2.53GHz |
| Computer Memory | 2GB RAM | 3GB or more |

Table 2 Hardware requirement for continuous integrating server

* For web development:

|  |  |  |
| --- | --- | --- |
| Hardware | Minimum Requirements | Recommended |
| Internet Connection | 512Kbps | 8 Mbps |
| Operating System | Window XP, Vista, 7, 8 | Window 7, 8 |
| Computer Processor | Intel® Core 2 Duo | Intel® Core(TM) i5 CPU , M 460 @ 2.53GHz |
| Computer Memory | 2GB RAM | 3GB or more |

Table 3 Hardware requirement for web development

* For mobile development:

|  |  |  |
| --- | --- | --- |
| Hardware | Minimum Requirements | Recommended |
| Internet Connection | Wi-Fi Connection 2MB | Wi-Fi Connection 12MB |
| Operating System | Android 4.0 | Android 5.0 |
| Hardware | NFC supported | NFC supported |
| Memory | 1 GB RAM | 2 GB or more |

Table 4 Hardware requirement for mobile development

##### Software requirement

|  |  |
| --- | --- |
| Software | Name / Version |
| Operating system | Windows 7 or above |
| Environment | Java EE 6 |
| Modeling tool | Microsoft Visio 2013 |
| IDE | Netbeans 7.2.1, Intellij IDEA 14.1 |
| DBMS | MySQL 5.6 |
| Source control | TortoiseSVN 1.8.11 |
| Web browser | Chrome 42 or above |

Table 5 Software requirement

## Project organization

### Software Process Model

This project is developed under waterfall model. We choose this model because the following reasons:

* This project is 4 months long due to the FPT University Capstone Project timeline, which can be consider a short project.
* The requirements of this project are stable, clear, fixed and well understood by all team members.
* We have strong background knowledge about technologies used in this project.

Requirement Specifications

System and Software Designs

Implementation and Unit Testing

Integration and System Testing

Operation and Maintenance

Figure 1 Waterfall model

More information about waterfall model:

<http://www.tutorialspoint.com/sdlc/sdlc_waterfall_model.htm>

### Roles and responsibilities

|  |  |  |  |
| --- | --- | --- | --- |
| No | Full name | Role in Group | Responsibilities |
| 1 | Kiều Trọng Khánh | Supervisor / Project Manager | - Clarify user requirement.  - Technical support and business analysis.  - Tracking development process.  - Review document and product. |
| 2 | Đinh Quang Trung | Team leader, BA, Developer, Tester | - Tracking process.  - Planning project, distribute tasks.  - Requirement analysis.  - Database design.  - Documentation.  - GUI Design.  - Coding.  - Testing.  - Deploy product. |
| 3 | Nguyễn Hữu Phúc | BA, Developer, Tester | - Requirement analysis.  - Database design.  - Documentation.  - GUI Design.  - Coding.  - Testing. |
| 4 | Phùng Quang Minh Trí | BA, Developer, Tester | - Requirement analysis.  - Database design.  - Documentation.  - GUI Design.  - Coding.  - Testing. |
| 5 | Nguyễn Chí Kha | BA, Developer, Tester | - Requirement analysis.  - Database design.  - Documentation.  - GUI Design.  - Coding.  - Testing. |

Table 6 Roles and responsibilities

### Tools and Techniques

|  |  |
| --- | --- |
| Tool / Technique | Name / version |
| Frontend | HTML, CSS, JavaScript, jQuery, Bootstrap |
| Backend | JavaEE, Servlet, JSP, Hibernate |
| Web server | Apache Tomcat 7 |
| Development tool | Netbeans 7.2.1, Intellij IDEA 14 |
| DBMS | MySQL 5.6 |
| Source control | TortoiseSVN 1.8.11 |
| Modeling tool | Microsoft Visio 2013 |
| Document tool | Microsoft Word 2013 |

Table 7 Tools and Techniques

## Project Management Plan

### Tasks

#### Task 1: Initiating

#### Task 2: Planning

#### Task 3: Specifying requirements

#### Task 4: Designing database

#### Task 5: Create Software Design Description

#### Task 6: Implementing

#### Task 7: Testing

#### Task 8: Creating User’s Manual

### Task sheet

Refer to “Task sheet” folder.

### All Meeting Minutes

Refer to “Meeting minutes” folder.

## Coding Convention

This project follows “Code Conventions for the Java TM Programming Language, by Sun Microsystems, rev April 20, 1999”.

<http://www.oracle.com/technetwork/java/codeconventions-150003.pdf>

We try our best to follow the code conventions to make the source code beautiful but some part of the project might not satisfies the conventions due to resource limitation.

# Software Requirement Specification