

# **Chapter 7**

## **Traceability Record**

# **Emergency Information on Mobile**

Traceability Record

By

Putchakarn Jaikon 542115031  
Sawatdiporn Kitirot 542115065

Department of Software Engineering  
College of Arts, Media and Technology  
Chiang Mai University

Project Advisor

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**Aj.Chartchai Doungsa-ard**

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## Table of Contents

<b>Chapter One   Introduction.....</b>	<b>5</b>
1.1 Purpose.....	5
1.2 Project Scope .....	5
<b>Chapter Two   Traceability Matrix Table .....</b>	<b>7</b>
2.1 User Requirement Specification and System Requirement Specification.....	7
2.2 User Requirement Specification and Use Case .....	9
2.3 User Requirement Specification and Sequence Diagram .....	11
2.4 User Requirement Specification and User Interface Design .....	13
2.5 User Requirement Specification and Method Description .....	15
2.6 Class Diagram Server and Method Description.....	17
2.7 Unit Test Case and Method Description .....	20
<b>Chapter Three  Traceability Record Table .....</b>	<b>22</b>
<b>Chapter Four   Appendix .....</b>	<b>24</b>
4.1 User Requirement Specification .....	24
4.2 System Requirement Specification .....	25
4.3 Use Case.....	32
4.4 Sequence Diagram .....	34
4.5 User Interface Design .....	35
4.6 Method Description .....	36
4.7 Class Diagram.....	41
4.8 Unit Test Case .....	42

## Chapter One | Introduction

### 1.1 Purpose

The purpose of traceability record for Emergency Information on Mobile project is to show the relation of the project. The traceability is linked between user requirements to system requirement specification, use case, sequence diagram and user interface design.

### 1.2 Project Scope

Emergency Information on Mobile is an application that runs on android operating system. The application provides online map and offline map to help people about the information of the help place. Emergency Information on Mobile will provide the offline map with information around the user when they lost Internet connection.

The main features of EIOM will be following:

#### Mobile Part

Feature	Name	User Requirement Specification
		Name
#1.	Map and help information system	The user can view the online map with their current location.
		The user can view the offline map with their current location.
		The user can view the help places in online map.
		The user can view the help places in offline map.
		The user can view help information of each help place in online map
		The user can view help information of each help place in offline map
		The user can make emergency call to each help place in online map
		The user can make emergency call to each help place in offline map
		The user can view the route of distance between the current locations of user to the destination.
#2.	Search information system	The user can view details of each point on routing the direction.
#3.	Rating location	The user can search help place's name by keyword in online map.
		The user can find the nearest help place by selection the category in online map
#4.	Automatic	The user can rate the help place.
		The user can view average rating score of each help place in online map.
		The user can view average rating score of each help place in offline map.
#4.	Automatic	The user can set the scope for downloading data.

	collecting data system	The mobile application can collect help place information automatically
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### Server Part

Feature	Name	User Requirement Specification
		Name
#5.	Manage information system	The administrator can add help place's information, which includes name, address, district, province, zip code, phone number, category, latitude and longitude.
		The administrator can edit help place's information, which includes name, address, district, province, zip code, phone number, category, latitude and longitude.
		The administrator can remove help place.
		The administrator can view help information of each help place.
		The administrator can browse the help place by category.
		The administrator can browse the help place by province of Thailand.
		The administrator can browse the help place by category and province of Thailand.
		The mobile application can get list of all help places in the database.
		The mobile application can get the nearest help place by the selected category.
		The mobile application can get list of help places where locate in the setting scope.
		The administrator can login to the system.
		The administrator can logout of the system.
		The administrator can update their account's password.
#6.	Support information for mobile	The mobile application can get list of all help places in the database.
		The mobile application can get the nearest help place by the selected category.
		The mobile application can get list of help places where locate in the setting scope.
		The mobile application can retrieve the help place with new average rating score.

The document will include Traceability Record, Requirement Specification, User Requirement Specification, Class Diagram, Sequence Diagram and User Interface Design.

**Traceability Record** is a document which shows relation of the entire project.

## 2.1 User Requirement Specification and System Requirement Specification

- Mobile Part

[illegible]

SRSs		URSs	URSs-01	URSs-02	URSs-03	URSs-04	URSs-05	URSs-06	URSs-07	URSs-08	URSs-09	URSs-10	URSs-11	URSs-12	URSs-13	URSs-14
SRSs-01																
SRSs-02																
SRSs-03																
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SRSs-49																
SRSs-50																



## 2.2 User Requirement Specification and Use Case

- Mobile Part

UCm \ URSm	UCm-01	UCm-02	UCm-03	UCm-04	UCm-05	UCm-06	UCm-07	UCm-08	UCm-09	UCm-10	UCm-11	UCm-12	UCm-13	UCm-14	UCm-15	UCm-16	UCm-17
URS m-01																	
URS m-02																	
URS m-03																	
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URS m-16																	
URS m-17																	

- Server Part

UCs \ URSs	UCs-01	UCs-02	UCs-03	UCs-04	UCs-05	UCs-06	UCs-07	UCs-08	UCs-09	UCs-10	UCs-11	UCs-12	UCs-13	UCs-14
URSs-01														
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URSs-13														
URSs-14														

## 2.3 User Requirement Specification and Sequence Diagram

- Mobile Part

SDm URSm	SDm-01	SDm-02	SDm-03	SDm-04	SDm-05	SDm-06	SDm-07	SDm-08	SDm-09	SDm-10	SDm-11	SDm-12	SDm-13	SDm-14	SDm-15	SDm-16	SDm-17
URSm-01																	
URSm-02																	
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- Server Part

SDs URSS	SDs-01	SDs-02	SDs-03	SDs-04	SDs-05	SDs-06	SDs-07	SDs-08	SDs-09	SDs-10	SDs-11	SDs-12	SDs-13	SDs-14
URSS-01														
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URSS-14														

2.4 User Requirement Specification and User Interface Design

- Mobile Part

UIm URSm	UIm-01	UIm-02	UIm-03	UIm-04	UIm-05	UIm-06	UIm-07	UIm-08	UIm-09	UIm-10	UIm-11
URSm-01											
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URSm-15											
URSm-16											
URSm-17											

- Server Part

UIs URSS	UIs-12	UIs-13	UIs-14	UIs-15	UIs-16	UIs-17	UIs-18	UIs-19
URSS-01								
URSS-02								
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URSS-14								

- Mobile Part

[illegible]

- Server Part

MDs URSS	MDs-01	MDs-02	MDs-03	MDs-04	MDs-05	MDs-06	MDs-07	MDs-08	MDs-09	MDs-10	MDs-11	MDs-12	MDs-13	MDs-14
	URSS-01	URSS-02	URSS-03	URSS-04	URSS-05	URSS-06	URSS-07	URSS-08	URSS-09	URSS-10	URSS-11	URSS-12	URSS-13	URSS-14
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MDs URSS	MDs-46	MDs-47	MDs-48	MDs-49	MDs-50	MDs-51	MDs-52	MDs-53	MDs-54	MDs-55	MDs-56	MDs-57	MDs-58	MDs-59
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- Server Part

MDS CDs	MDS-01	MDS-02	MDS-03	MDS-04	MDS-05	MDS-06	MDS-07	MDS-08	MDS-09	MDS-10	MDS-11	MDS-12	MDS-13	MDS-14	MDS-15	MDS-16	MDS-17
CDs-01																	
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MDS CDs	MDS-61	MDS-62	MDS-63	MDS-64	MDS-65	MDS-66	MDS-67	MDS-68	MDS-69	MDS-70	MDS-71	MDS-72	MDS-73	MDS-74	MDS-75	MDS-76	MDS-77	MDS-78	MDS-79	MDS-80	MDS-81	MDS-82	MDS-83	MDS-84	MDS-85	MDS-86	MDS-87	MDS-88	MDS-89	MDS-90
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2.7 Unit Test Case and Method Description

- Mobile Part

MDm UTCm	MDm-01	MDm-02	MDm-03	MDm-04	MDm-05	MDm-06	MDm-07	MDm-08	MDm-09	MDm-10	MDm-11	MDm-12	MDm-13	MDm-14	MDm-15	MDm-16	MDm-17	MDm-18	MDm-19	MDm-20	MDm-21	MDm-22	MDm-23	MDm-24	MDm-25	MDm-26	MDm-27	MDm-28	MDm-29	MDm-30	MDm-31	MDm-32	MDm-33	MDm-34	MDm-35	MDm-36	MDm-37	
	UTCm-01	UTCm-02	UTCm-03	UTCm-04																																		

- Server Part

MDs UTCs																				
	MDs-24	MDs-25	MDs-26	MDs-27	MDs-28	MDs-29	MDs-30	MDs-40	MDs-41	MDs-51	MDs-52	MDs-66	MDs-67	MDs-68	MDs-69	MDs-70	MDs-75	MDs-76	MDs-87	MDs-88
UTCs-01																				
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Chapter Three| Traceability Record Table

- Mobile Part

URS <sub>m</sub>	SRS <sub>m</sub>	UC <sub>m</sub>	UI <sub>m</sub>	SD <sub>m</sub>	MD <sub>m</sub>
01	01-03	01	01, 02	01	10
02	01, 04-08	02	01, 03-05	02	09, 12, 14
03	02, 09-11	03	01-02	03	01-02, 05-06, 11, 19
04	04-07, 12-14	04	04-06	04	03-04, 07-09, 12-16, 21-23
05	15-17	05	07	05	18
06	15-17	06	06-07	06	09, 17-18
07	15-19	07	07	07	18, 20
08	15-19	08	07	08	09, 18, 20
09	20-26	09	01, 02, 08	09	01, 05, 06, 10, 19, 26, 34, 40, 42-43
10	27-32	10	01-02	10	24, 25, 27, 32, 33, 35, 41, 48
11	33-35	11	09	11	44
12	36-40	12	02, 04	12	03-04, 07-08, 14-16, 19, 21-23, 26, 28, 29, 31, 34, 36, 37, 38, 45, 46, 47, 49-51
13	41-43	13	10	13	52-53
14	41, 42, 44, 45	14	10	14	52-53
15	47-49	15	07	15	17-18, 24-25
16	47-49	16	07	16	17-18
17	49-52	17	11	17	18

- Server Part

URSs	SRSs	UCs	UI s	SDs	MDs
01	01-24	01	04, 05	01	03, 10, 18, 25, 33, 35, 37, 40, 44, 46, 48, 51, 57, 60
02	01-22, 25-31	02	04, 05	02	03, 05, 10, 12, 17-18, 25, 27, 33, 35, 37, 40, 44, 46, 48, 51, 58, 60
03	25-26, 32-35	03	01-03	03	04-05, 11-12, 17, 19, 26-27, 59
04	25-26, 28-29	04	06	04	02, 05, 09, 12, 16-17, 24, 27, 54, 56
05	36-38	05	01	05	06, 13, 20, 28, 55
06	39-41	06	01	06	07, 14, 21, 29, 55
07	42-44	07	01	07	08, 15, 22, 30, 55
08	46, 47	08	18	08	80, 89, 90
09	46	09	12	09	80
10	48-49	10	19	10	81-88
11	25, 50	11	-	11	02, 09, 16, 24, 72
12	51, 52	12	-	12	61-64, 66-69, 71
13	53, 54	13	-	13	62-65, 67-70, 73
14	55-57	14	-	14	03, 05, 10, 12, 17, 18, 25, 27, 74-76

## Chapter Four | Appendix

### 4.1 User Requirement Specification

- Mobile Part

- URSm-01:** The user can view the online map with their current location.
- URSm-02:** The user can view the offline map with their current location.
- URSm-03:** The user can view the help places in online map.
- URSm-04:** The user can view the help places in offline map.
- URSm-05:** The user can view help information of each help place in online map.
- URSm-06:** The user can view help information of each help place in offline map.
- URSm-07:** The user can make emergency call to each help place in online map.
- URSm-08:** The user can make emergency call to each help place in offline map.
- URSm-13:** The user can view the route of distance between the current locations of user to the destination.
- URSm-14:** The user can view details of each point on routing the direction.
- URSm-09:** The user can search help place's name by keyword in online map.
- URSm-10:** The user can find the nearest help place by selection the category in online map.
- URSm-15:** The user can view average rating score of each help place in online map.
- URSm-16:** The user can view average rating score of each help place in offline map.
- URSm-17:** The user can rate the help place in online map.
- URSm-11:** The user can set the scope for downloading data.
- URSm-12:** The mobile application can collect help place information automatically.

- Server Part

- URSs-01:** The administrator can add help place's information, which include name, address, district, province, zip code, phone number, category, latitude and longitude.
- URSs-02:** The administrator can edit help place's information, which include name, address, district, province, zip code, phone number, category, latitude and longitude.



- URSSs-03: The administrator can remove help place.
- URSSs-04: The administrator can view help information of each help place.
- URSSs-05: The administrator can browse the help place by category.
- URSSs-06: The administrator can browse the help place by province of Thailand.
- URSSs-07: The administrator can browse the help place by category and province of Thailand.
- URSSs-08: The administrator can login to the system.
- URSSs-09: The administrator can logout of the system.
- URSSs-10: The administrator can update their account's password.
- URSSs-11: The mobile application can get list of all help places in the database.
- URSSs-12: The mobile application can get the nearest help place by the selected category.
- URSSs-13: The mobile application can get list of help places where locate in the setting scope.
- URSSs-14: The mobile application can retrieve the help place with new average rating score.

## 4.2 System Requirement Specification

- Mobile Part

- SRSsm-42: The system shall obtain the latitude and longitude of the user's current location.
- SRSsm-43: The system shall show the online map UI.
- SRSsm-44: SRS-: The system shall show the user's current location on the online map.
- SRSsm-01: The system shall obtain the latitude and longitude of the user's current location.
- SRSsm-45: The system shall check MapsWithMe application is installed in the device.
- SRSsm-46: The system shall show dialog to offer user download MapsWithMe application.
- SRSsm-47: The system shall connect MapsWithMe application.
- SRSsm-48: SRS-: The system shall show the offline map UI.
- SRSsm-49: SRS-: The system shall show the user's current location on the offline map.
- SRSsm-02: The system shall show the online map UI
- SRSsm-50: The system will retrieve all help places from server.

- SRSm-51:** The system shall input marker of help places into online map UI.
- SRSm-52:** The system shall show all markers of help places on an online map UI.
- SRSm-04:** The system shall check MapsWithMe application is installed in device.
- SRSm-05:** The system shall show dialog to offer user download MapsWithMe application.
- SRSm-06:** The system shall connect MapsWithMe application.
- SRSm-07:** The system shall show the offline map UI.
- SRSm-12:** The system shall retrieve the loaded help places from the user's device.
- SRSm-13:** The system shall input marker of help places into offline map UI.
- SRSm-14:** The system shall show all markers of help places on an offline map UI.
- SRSm-15:** The system shall receive the help place object that user selected
- SRSm-16:** The system shall retrieve information of help place object.
- SRSm-17:** The system provides information UI to show the help information, which are name, address, district, province, zip code, and phone number.
- SRSm-15:** The system shall receive the help place object that user selected.
- SRSm-16:** The system shall retrieve information of help place object.
- SRSm-17:** The system provides information UI to show the help information, which are name, address, district, province, zip code, and phone number.
- SRSm-15:** The system shall receive the help place object that user selected from offline map.
- SRSm-16:** The system shall retrieve information of help place object.
- SRSm-17:** The system provides information UI to show the help information, which are name, address, district, province, zip code, and phone number.
- SRSm-18:** The system shall provide the call UI.
- SRSm-19:** The system shall call to the selected help place.
- SRSm-15:** The system shall receive the help place object that user selected from offline map.
- SRSm-16:** The system shall retrieve information of help place object.

- SRSm-17:** The system provides information UI to show the help information, which are name, address, district, province, zip code, and phone number.
- SRSm-18:** The system shall provide the call UI.
- SRSm-19:** The system shall call to the selected help place.
- SRSm-20:** The system shall provide search button UI.
- SRSm-21:** The system shall provide text field UI.
- SRSm-22:** The system shall receive all help places from server.
- SRSm-23:** The system shall search help places by keyword from user inputting.
- SRSm-24:** The system shall matching keyword with help places.
- SRSm-25:** The system shall display help places which matching with keyword.
- SRSm-26:** The system shall provide map with help place that user selection from searching by keyword.
- SRSm-27:** The system shall provide category button.
- SRSm-28:** The system shall receive the current location of user and category's id.
- SRSm-29:** The system shall send the current location of user and category's id to the server.
- SRSm-30:** The system shall receive help place object from the server.
- SRSm-31:** The system shall change color of marker to show the position of nearest help place by searching.
- SRSm-32:** The system shall display the nearest help place of each category from user selection.
- SRSm-33:** The system shall provide menu setting UI.
- SRSm-34:** The system shall provide number for setting scope with radio button UI.
- SRSm-35:** The system shall define a default value of scope.
- SRSm-36:** The system shall check distance between original coordinates and new coordinates position automatically.
- SRSm-37:** The system shall send latitude and longitude of user to the server.
- SRSm-38:** The system shall receive help places from server.
- SRSm-39:** The system shall delete the latest data of help places from the database.
- SRSm-40:** The system shall add new data of help places into database.
- SRSm-41:** The system shall retrieve information file from XML file of Google direction API.

- SRSm-42:** The system shall provide Map UI for showing route distance.
- SRSm-43:** The system shows polyline of distance from current location to destination
- SRSm-42:** The system shall provide Map UI for showing route distance.
- SRSm-44:** The system shall provide UI for viewing the details.
- SRSm-41:** The system shall retrieve information file from XML file of Google direction API.
- SRSm-45:** The system provides UI to show details of distances, which are distance of each point on the map, time to use for driving to each point, average time and the average point.
- SRSm-46:** The system shall receive the help place object that user selected.
- SRSm-47:** The system shall retrieve information of help place object.
- SRSm-48:** The system provides information UI to show the help information and rating score of help place
- SRSm-46:** The system shall receive the help place object that user selected.
- SRSm-47:** The system shall retrieve information of help place object.
- SRSm-48:** The system provides information UI to show the help information and rating score of help place
- SRSm-49:** The system provides UI with the rating bar.
- SRSm-50:** The system shall send help place's id and score that user rate to the server.
- SRSm-51:** The system shall retrieve the new average score of help place's that user rate from the server.
- SRSm-52:** The system shall refresh the average score on the information page.

- Server Part

- SRSs-01:** The system provides the UI, which receive name, address, district, province, zip code, phone number, category, latitude and longitude.
- SRSs-02:** The system provides map UI.
- SRSs-03:** The system provides searched province UI.
- SRSs-04:** The system shall receive latitude and longitude from map.
- SRSs-05:** The system shall check the name length. The name must be 1- 50 characters.

- SRSs-06:** The system shall check the address length. The address must be 0- 50 characters.
- SRSs-07:** The system shall check the district length. The district must be 0- 50 characters.
- SRSs-08:** The system shall check the zip code length. The zip code must be 0-5 characters.
- SRSs-09:** The system shall check the phone number format. The phone number should be 9-10 digits.
- SRSs-10:** The system shall check the latitude format. The latitude should not be null.
- SRSs-11:** The system shall check the longitude format. The longitude should not be null.
- SRSs-12:** The system shall check the province format. The province should not be null.
- SRSs-13:** The system shall check the category format. The category should not be null.
- SRSs-14:** The system shall display the error message “Name must between 1 to 50 characters”
- SRSs-15:** The system shall display the error message “The address length should be 0-50 characters”
- SRSs-16:** The system shall display the error message “The district length should be 0-50 characters”
- SRSs-17:** The system shall display the error message “The zip code length should be 0-5 characters”
- SRSs-18:** The system shall display the error message “Please choose province”
- SRSs-19:** The system shall display the error message “The phone number length should be 9-10 characters”
- SRSs-20:** The system shall display the error message “Please put latitude”
- SRSs-21:** The system shall display the error message “Please put longitude”
- SRSs-22:** The system shall display the error message “Please choose province”
- SRSs-23:** The system shall add a new help place into the database.
- SRSs-24:** The system shall provide the successful adding help information UI with message “The help place has been added to database.”
- SRSs-25:** The system shall retrieve all help places from system database.
- SRSs-26:** The system shall provide UI to show all lists of help places.
- SRSs-27:** The system shall provide edit UI for all lists of help places.
- SRSs-28:** The system retrieves information of the selected help place from database.
- SRSs-29:** The system shall show information of the selected help place which include name, address, district, province, zip code, phone number, category, latitude and longitude.

- SRSs-01:** The system provides the UI, which receive name, address, district, province, zip code, phone number, category, latitude and longitude.
- SRSs-02:** The system provides map UI.
- SRSs-03:** The system provides searched province UI.
- SRSs-04:** The system shall receive latitude and longitude from map.
- SRSs-05:** The system shall check the name length. The name must be 1- 50 characters.
- SRSs-06:** The system shall check the address length. The address must be 0- 50 characters.
- SRSs-07:** The system shall check the district length. The district must be 0- 50 characters.
- SRSs-08:** The system shall check the zip code length. The zip code must be 0-5 characters.
- SRSs-09:** The system shall check the phone number format. The phone number should be 9-10 digits.
- SRSs-10:** The system shall check the latitude format. The latitude should not be null.
- SRSs-11:** The system shall check the longitude format. The longitude should not be null.
- SRSs-12:** The system shall check the province format. The province should not be null.
- SRSs-13:** The system shall check the category format. The category should not be null.
- SRSs-14:** The system shall display the error message “Name must between 1 to 50 characters”
- SRSs-15:** The system shall display the error message “The address length should be 0-50 characters”
- SRSs-16:** The system shall display the error message “The district length should be 0-50 characters”
- SRSs-17:** The system shall display the error message “The zip code length should be 0-5 characters”
- SRSs-18:** The system shall display the error message “Please choose province”
- SRSs-19:** The system shall display the error message “The phone number length should be 9-10 characters”
- SRSs-20:** The system shall display the error message “Please put latitude”
- SRSs-21:** The system shall display the error message “Please put longitude”
- SRSs-22:** The system shall display the error message “Please choose province”
- SRS-30:** The system shall update the help information into the database.
- SRS-31:** The system shall provide the successful editing help information UI with message “The help place has been added to database.”
- SRSs-25:** The system shall retrieve all help places from system database.

- SRSs-26:** The system shall provide UI to show all lists of help places.
- SRS-32:** The system shall provide remove UI for all lists of help places.
- SRS-33:** The system shall provide UI with message “Are you sure to delete?” to ask permission before remove help place.
- SRS-34:** The system shall delete the help place out of the database.
- SRS-35:** The system shall provide the successful removing help place UI with message “The help place has been removed!”
- SRSs-25:** The system shall retrieve all help places from system database.
- SRSs-26:** The system shall provide UI to show all lists of help places.
- SRSs-28:** The system retrieves information of the selected help place from database.
- SRSs-29:** The system shall show information of the selected help place which include name, address, district, province, zip code, phone number, category, latitude, longitude, and average rate.
- SRS-36:** The system provides categories UI, which are police station, highway police station, hospital, and garage.
- SRS-37:** The system shall retrieve help places from database by the selected category.
- SRS-38:** The system shall show lists of help places by selected category.
- SRS-39:** The system provides UI to show lists of Thailand’s provinces.
- SRS-40:** The system shall retrieve the help place from database by the selected province.
- SRS-41:** The system shall show lists of help places by the selected province.
- SRSs-42:** The system provides UI to show lists of categories and Thailand’s provinces.
- SRSs-43:** The system shall retrieve help places from database by the selected category and province.
- SRSs-44:** The system shall show lists of help places by the selected category and selected province
- SRSs-45:** The system provides the login page with UI to receive username and password.
- SRSs-46:** The system checks username and password in database.
- SRSs-47:** The system shows home page.
- SRSs-45:** The system provides log in page with UI to receive username and password.
- SRSs-48:** The system provides change password UI.
- SRSs-49:** The system updates a new password into the system database.
- SRSs-25:** The system shall retrieve all help places from system database.

- SRSs-50:** The system shall show list of all help places in form of JSON.
- SRSs-51:** The system shall find the nearest help place by the selected category.
- SRSs-52:** The system shall show the nearest help place in form of JSON.
- SRSs-53:** The system shall retrieve list of help places where locate in the setting scope from the database.
- SRSs-54:** The system shall show list of help places where locate in setting scope in form of JSON.
- SRSs-55:** The system calculates a new average rating score from the new rating score that the mobile application requested.
- SRSs-56:** The system updates a new average rating score into the system database.
- SRSs-57:** The system shows help place with new average rating score in form of JSON.

### 4.3 Use Case

- Mobile Part
  - UCm-01:** View the online map
  - UCm-02:** View the offline map
  - UCm-03:** View help places in online map
  - UCm-04:** View help places in offline map
  - UCm-05:** View information of each help place in online map
  - UCm-06:** View information of each help place in offline map
  - UCm-07:** Make emergency call to each help place in online map
  - UCm-08:** Make emergency call to each help place in offline map
  - UCm-09:** Search help place's name by keyword in online map
  - UCm-10:** Find the nearest help place
  - UCm-11:** Set the scope for downloading data
  - UCm-12:** Collect help place information automatically
  - UCm-13:** View the route of distance between the current locations of user to the destination.
  - UCm-14:** View details of each point on routing the direction.
  - UCm-15:** View average rating score of each help place in online map.
  - UCm-16:** View average rating score of each help place in offline map.



UCm-17: Rate the help place in online map.  
 UCm-01: View the online map  
 UCm-02: View the offline map  
 UCm-03: View help places in online map  
 UCm-04: View help places in offline map  
 UCm-05: View information of each help place in online map  
 UCm-06: View information of each help place in offline map  
 UCm-07: Make emergency call to each help place in online map  
 UCm-08: Make emergency call to each help place in offline map  
 UCm-09: Search help place's name by keyword in online map  
 UCm-10: Find the nearest help place  
 UCm-11: Set the scope for downloading data  
 UCm-12: Collect help place information automatically  
 UCm-13: View the route of distance between the current locations of user to the destination.  
 UCm-14: View details of each point on routing the direction.  
 UCm-15: View average rating score of each help place in online map.  
 UCm-16: View average rating score of each help place in offline map.  
 UCm-17: Rate the help place in online map.

- Server Part

UCs-01: Add help place  
 UCs-02: Edit help place  
 UCs-03: Remove help place  
 UCs-04: View help place's information  
 UCs-05: Browse the help place by category  
 UCs-06: Browse the help place by province  
 UCs-07: Browse the help place by province and category  
 UCs-08: Login to the system  
 UCs-09: Logout of the system  
 UCs-10: Update account's password

Document name: EIOM-TraceabilityRecord-V.3.0.docx

Release Date: 26/12/2014

- UCs-11: Get list of all help places
- UCs-12: Get nearest help place
- UCs-13: Get list of all help places in setting scope
- UCs-14: Retrieve new average rating score

## 4.4 Sequence Diagram

- Mobile Part
  - SDm-01: View online map diagram
  - SDm-02: View offline map diagram
  - SDm-03: View the help places in online map diagram
  - SDm-04: View the help places in offline map diagram
  - SDm-05: View information of each help place in online map diagram
  - SDm-06: View information of each help place in offline map diagram
  - SDm-07: Make emergency call to each help place in online map diagram
  - SDm-08: Make emergency calls to each help place in offline map diagram
  - SDm-09: Search help place's name by keyword in online map diagram
  - SDm-10: Find the nearest help place diagram
  - SDm-11: Set the scope for downloading data diagram
  - SDm-12: Collect help place information automatically diagram
  - SDm-13: View the route of distance between the current locations of user to the destination
  - SDm-14: View details of each point on routing the direction
  - SDm-15: View average rating score of each help place in online map
  - SDm-16: View average rating score of each help place in offline map
- Server Part
  - SDs-01: Add help place sequence diagram
  - SDs-02: Edit help place sequence diagram
  - SDs-03: Remove help place sequence diagram

- SDs-04:** View information sequence diagram
- SDs-05:** Search by category sequence diagram
- SDs-06:** Search by province sequence diagram
- SDs-07:** Search by category and province sequence diagram
- SDs-08:** Login to the system
- SDs-09:** Logout of the system
- SDs-10:** Update account's password
- SDs-11:** Get all help places diagram
- SDs-12:** Get nearest help place diagram
- SDs-13:** Get all help places in setting scope diagram
- SDs-14:** Retrieve new average rating score

4.5 User Interface Design

- UI-01:** Start Page
- UI-02:** Show Online map
- UI-03:** Connect Offline map
- UI-04:** Show Offline map
- UI-05:** MapsWithMe application installed
- UI-06:** MapsWithMe application
- UI-07:** Show Information Page
- UI-08:** Search Help place Page
- UI-09:** Setting scope
- UI-10:** Routing direction
- UI-11:** Give rating score
- UI-12:** Home Page
- UI-13:** Remove Confirm Dialog
- UI-14:** Successfully Remove Dialog
- UI-15:** Update Information Page

- UI-16: Successfully Add Dialog
- UI-17: View Information Page
- UI-18: Login Page
- UI-19: Change Password Page

4.6 Method Description

- Mobile Part
  - MDm-01: getJSONObjShowHelpPlacesInOnlineMap
  - MDm-02: getJSONArrayShowHelpPlacesInOnlineMap
  - MDm-03: getJSONObjToSaveInDB
  - MDm-04: getJSONArrayToSaveInDB
  - MDm-05: getJSONObjShowHelpPlacesInOnlineMap
  - MDm-06: getJSONArrayShowHelpPlacesInOnlineMap
  - MDm-07: getJSONObjToSaveInDB
  - MDm-08: getJSONArrayToSaveInDB
  - MDm-09: getHelpPlaceService
  - MDm-10: OnlineMapController
  - MDm-11: createMarker
  - MDm-12: OfflineMapController
  - MDm-13: getAllHelpPlaceSaved
  - MDm-14: DatabaseConnection
  - MDm-15: insertHelpPlaces
  - MDm-16: deleteAllHelpPlaces
  - MDm-17: getPendingIntent
  - MDm-18: handleIntent
  - MDm-19: getJSONFromUrl
  - MDm-20: onCallStateChanged
  - MDm-21: selectDatabase

MDm-22: copyDatabase  
MDm-23: getAllHelpPlaces  
MDm-24: findJSONObjectNearestHelpPlace  
MDm-25: findJSONArrayNearestHelpPlace  
MDm-26: getHelpPlacesList  
MDm-27: getNearestHelpPlace  
MDm-28: setHelpPlaceDAO  
MDm-29: deleteAllHelpPlaces  
MDm-30: getAllHelpPlacesOnDevice  
MDm-31: insertHelpPlace  
MDm-32: findJSONObjectNearestHelpPlace  
MDm-33: findJSONArrayNearestHelpPlace  
MDm-34: getHelpPlacesList  
MDm-35: getNearestHelpPlace  
MDm-36: setHelpPlaceDAO  
MDm-37: deleteAllHelpPlaces  
MDm-38: getAllHelpPlacesOnDevice  
MDm-39: insertHelpPlace  
MDm-40: setURL  
MDm-41: findNearestHelpPlace  
MDm-42: setHelpPlacesForSearching  
MDm-43: getShowSearchPoint  
MDm-44: setScope  
MDm-45: calculateDistance  
MDm-46: getDistanceBetweenPoint  
MDm-47: saveDistance  
MDm-48: findNearestHelpplace  
MDm-49: setDB  
MDm-50: getDB  
MDm-51: getInstance

**MDm-52:** showDetailsOfPosition  
**MDm-53:** getNodeIndex

- Server Part

- MDs-01:** HelpPlaces
- MDs-02:** getHelpPlaces
- MDs-03:** updateHelpPlace
- MDs-04:** deleteHelpPlace
- MDs-05:** findById
- MDs-06:** getHelpPlacesByCategory
- MDs-07:** getHelpPlacesByProvince
- MDs-08:** getHelpPlacesByCategoryAndProvince
- MDs-09:** getHelpPlaces
- MDs-10:** updateHelpPlace
- MDs-11:** deleteHelpPlace
- MDs-12:** findById
- MDs-13:** getHelpPlacesByCategory
- MDs-14:** getHelpPlacesByProvince
- MDs-15:** getHelpPlacesByCategoryAndProvince
- MDs-16:** getHelpPlaces
- MDs-17:** findById
- MDs-18:** updateHelpPlace
- MDs-19:** deleteHelpPlace
- MDs-20:** getHelpPlacesByCategory
- MDs-21:** getHelpPlacesByProvince
- MDs-22:** getHelpPlacesByCategoryAndProvince
- MDs-23:** setHelpPlaceDAO
- MDs-24:** getHelpPlaces
- MDs-25:** updateHelpPlace
- MDs-26:** deleteHelpPlace

MDs-27: findById  
MDs-28: getHelpPlacesByCategory  
MDs-29: getHelpPlacesByProvince  
MDs-30: getHelpPlacesByCategoryAndProvince  
MDs-31: setHelpPlaceDAO  
MDs-32: Category  
MDs-33: getCategories  
MDs-34: getCategoryById  
MDs-35: getCategories  
MDs-36: getCategoryById  
MDs-37: getCategories  
MDs-38: getCategoryById  
MDs-39: setCategoryDAO  
MDs-40: getCategories  
MDs-41: getCategoryById  
MDs-42: setCategoryDAO  
MDs-43: Province  
MDs-44: getProvinces  
MDs-45: getProvinceById  
MDs-46: getProvinces  
MDs-47: getProvinceById  
MDs-48: getProvinces  
MDs-49: getProvinceById  
MDs-50: setProvinceDAO  
MDs-51: getProvinces  
MDs-52: getProvinceById  
MDs-53: setProvinceDAO  
MDs-54: listHelpPlaces  
MDs-55: getHelpPlaceByCategoryAndProvince  
MDs-56: getHelpPlaceById

Document name: EIOM-TraceabilityRecord-V.3.0.docx  
Release Date: 26/12/2014

Document Type: Traceability Record  
Page: 39 / 43

MDs-57: addHelpPlace  
MDs-58: updateHelpPlace  
MDs-59: removeHelpPlace  
MDs-60: addValidHelpPlace  
MDs-61: getNearestHelpPlace  
MDs-62: getLatitudeDistance  
MDs-63: getLongitudeDistance  
MDs-64: findDistance  
MDs-65: getHelpPlacesInScope  
MDs-66: getNearestHelpPlace  
MDs-67: getLatitudeDistance  
MDs-68: getLongitudeDistance  
MDs-69: findDistance  
MDs-70: getHelpPlacesInScope  
MDs-71: getNearestHelpPlace.Json  
MDs-72: listHelpPlaces.Json  
MDs-73: listHelpPlacesInScope.Json  
MDs-74: calculateAverageRate  
MDs-75: calculateAverageRate  
MDs-76: helpPlaceNewAverageRate  
MDs-77: getSession  
MDs-78: updateAdmin  
MDs-79: addValidAdmin  
MDs-80: getLoginPage  
MDs-81: findByName  
MDs-82: saveUser  
MDs-83: findByName  
MDs-84: saveUser  
MDs-85: findByName  
MDs-86: saveUser

Document name: EIOM-TraceabilityRecord-V.3.0.docx

Release Date: 26/12/2014



**MDs-87:** findByName  
**MDs-88:** saveUser  
**MDs-89:** loadByUsername  
**MDs-90:** getAuthorities

4.7 Class Diagram

- Mobile Part
  - CDm-01:** HelpPlace
  - CDm-02:** HelpPlaceService
  - CDm-03:** HelpPlaceServiceImpl
  - CDm-04:** HelpPlaceSingleton
  - CDm-05:** OnlineMapController
  - CDm-06:** OfflineMapController
  - CDm-07:** InformationView
  - CDm-08:** JSONParser
  - CDm-09:** PhoneCallListener
  - CDm-10:** DatabaseConnection
  - CDm-11:** CheckingDistance
  - CDm-12:** SearchingHelpPlaces
  - CDm-13:** DatabaseConnectionSingleton
  - CDm-14:** DirectionRoute
- Server Part
  - CDs-01:** HelpPlace
  - CDs-02:** HelpPlaceDAO
  - CDs-03:** HelpPlaceDAOImpl
  - CDs-04:** HelpPlaceService

CDs-05: HelpPlaceServiceImpl  
CDs-06: Category  
CDs-07: CategoryDAO  
CDs-08: CategoryDAOImpl  
CDs-09: CategoryService  
CDs-10: CategoryServiceImpl  
CDs-11: Province  
CDs-12: ProvinceDAO  
CDs-13: ProvinceDAOImpl  
CDs-14: ProvinceService  
CDs-15: ProvinceServiceImpl  
CDs-16: HelpPlaceController  
CDs-17: AdminController  
CDs-18: LoginLogoutController  
CDs-19: Admin  
CDs-20: AdminDAO  
CDs-21: AdminDAOImpl  
CDs-22: AdminService  
CDs-23: AdminServiceImpl  
CDs-24: UserDetailsServiceImpl

4.8 Unit Test Case

- Mobile Part  
UTCm-01: testGetHelpPlaceByJsonOBJ (JSONObject jsonObj):JSONArray  
UTCm-02: testGetHelpPlacesOnDevice():HelpPlace []  
UTCm-03: insertHelpPlace(ArrayList <HelpPlace> helpPlace): int  
UTCm-04: deleteAllHelpPlaces (): Boolean

- Server Part

UTCs-01: getHelpPlaces():List<HelpPlace>  
 UTCs-02: findById(Integer id):HelpPlace  
 UTCs-03: updateHelpPlace(HelpPlace helpPlace):HelpPlace  
 UTCs-04: deleteHelpPlace(HelpPlace helpPlace):boolean  
 UTCs-05: getHelpPlacesByCategory(Integer categoryId):List<HelpPlace>  
 UTCs-06: getHelpPlacesByProvince(Integer provinceId):List<HelpPlace>  
 UTCs-07: getHelpPlacesByCategoryAndProvince(Integer categoryId,Integer provinceId):List<HelpPlace>  
 UTCs-08: getCategories():List<Category>  
 UTCs-09: getCategoryById (Integer id):Category  
 UTCs-10: getProvinces():List<Province>  
 UTCs-11: getProvinceById (Integer id): Province  
 UTCs-12: getNearestHelpPlace(double userLatitude,double userLongitude,Integer categoryId ):HelpPlace  
 UTCs-13: getHelpPlacesInScope(double userLatitude, double userLongitude, double scope):List<HelpPlace>  
 UTCs-14: getLatitudeDistance(double latitude):double  
 UTCs-15: getLongitudeDistance(double longitude):double  
 UTCs-16: findDistance(double la1, double long1, double la2, double long2):double  
 UTCs-17: calculateAverageRate(Integer id, double score):HelpPlace  
 UTCs-18: findByName(String name):Admin  
 UTCs-19: saveUser(Admin admin):Admin