Emergency Information on Mobile

Traceability Record

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Document History

Document Name	Details	Status	Date	Viewable	Reviewer	Responsible
Documents						
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EIOM-TraceabilityRecord - V.0.2.docx	**Chapter 2** • Traceability Record Table	Draft	2/7/2014	PJ, SK, CD	PJ, SK	PJ, SK
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PJ – Putchakarn Jaikon, SK – Sawatdiporn Kitirot, CD – Chartchai Doungsa-ard

Table of Contents

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 pace. 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 online map
		The user can view the route of distance between the current locations of user to the destination.
		The user can view details of each point on routing the direction.
#2.	Search information system	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
#3.	Rating location	The user can rate the help place.
		The user can view average rating score of each help place in online map.

Feature	Name	User Requirement Specification
		The user can view average rating score of each help place in offline map.
#4.	Automatic collecting data system	The user can set the scope for downloading data.
		The mobile application can collect help place information automatically

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.

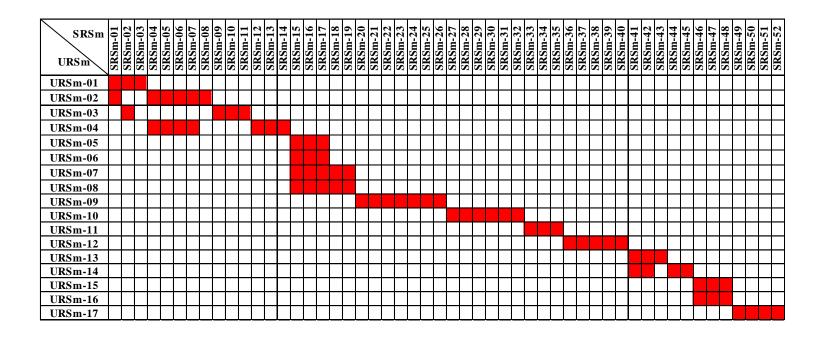| | | The mobile application can get list of help places where locate in the setting scope. |
| | | The mobile application can retrieve the help place with new average rating score. |

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.
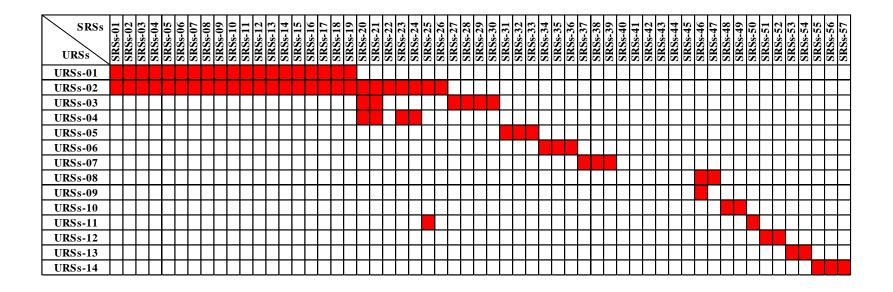
Chapter Two | Traceability Matrix Table

2.1 User Requirement Specification and System Requirement Specification

- Mobile Part

SRSm → / URSm ↓	SRSm-01	SRSm-02	SRSm-03	SRSm-04	SRSm-05	SRSm-06	SRSm-07	SRSm-08	SRSm-09	SRSm-10	SRSm-11	SRSm-12	SRSm-13	SRSm-14	SRSm-15	SRSm-16	SRSm-17	SRSm-18	SRSm-19	SRSm-20	SRSm-21	SRSm-22	SRSm-23	SRSm-24	SRSm-25	SRSm-26	SRSm-27	SRSm-28	SRSm-29	SRSm-30	SRSm-31	SRSm-32	SRSm-33	SRSm-34	SRSm-35	SRSm-36	SRSm-37	SRSm-38	SRSm-39	SRSm-40	SRSm-41	SRSm-42	SRSm-43	SRSm-44	SRSm-45	SRSm-46	SRSm-47	SRSm-48	SRSm-49	SRSm-50	SRSm-51	SRSm-52
URSm-01	X	X	X																																																	
URSm-02				X	X	X	X	X																																												
URSm-03		X							X	X	X																																									
URSm-04					X	X	X	X				X	X	X																																						
URSm-05															X	X	X																																			
URSm-06															X	X	X																																			
URSm-07															X	X	X	X	X																																	
URSm-08															X	X	X																																			
URSm-09																				X	X	X	X	X																												
URSm-10																									X	X	X	X																								
URSm-11																															X	X																				
URSm-12																																			X	X	X	X	X	X											
URSm-13																																									X	X	X								
URSm-14																																									X	X		X	X						
URSm-15																																														X	X	X			
URSm-16																																														X	X	X			
URSm-17																																																	X	X	X	X

Document Name	EIOM-TraceabilityRecord-V.2.0.docx	**Owner**	Putchakarn, Sawatdiporn	**Page**	7 / 42
Document Type	Traceability Record	**Release Date**	21 Oct 2014	**Print Date**	11 Nov 2014

- Server Part

URSs \ SRSs	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57
URSs-01	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X																																						
URSs-02	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X																															
URSs-03																				X	X						X	X	X	X																											
URSs-04																				X	X			X																																	
URSs-05																															X	X	X																								
URSs-06																																		X	X	X																					
URSs-07																																						X	X																		
URSs-08																																														X	X										
URSs-09																																														X											
URSs-10																																																X	X								
URSs-11																								X																																	
URSs-12																																																				X	X				
URSs-13																																																						X	X		
URSs-14																																																							X	X	X

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
URSm-01	■																
URSm-02		■															
URSm-03			■														
URSm-04				■													
URSm-05					■												
URSm-06						■											
URSm-07							■										
URSm-08								■									
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URSm-13													■				
URSm-14														■			
URSm-15															■		
URSm-16																■	
URSm-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	■													
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														■

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		■															
URSm-03			■														
URSm-04				■													
URSm-05					■												
URSm-06						■											
URSm-07							■										
URSm-08								■									
URSm-09									■								
URSm-10										■							
URSm-11											■						
URSm-12												■					
URSm-13													■				
URSm-14														■			
URSm-15															■		
URSm-16																■	
URSm-17																	■

- 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	■													
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														■

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	■	■									
URSm-02	■		■	■	■						
URSm-03	■	■									
URSm-04				■	■	■					
URSm-05							■				
URSm-06						■	■				
URSm-07							■				
URSm-08							■				
URSm-09	■	■						■			
URSm-10	■	■									
URSm-11									■		
URSm-12		■		■							
URSm-13										■	
URSm-14										■	
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				■	■			
URSs-03	■	■	■					
URSs-04						■		
URSs-05	■							
URSs-06	■							
URSs-07	■							
URSs-08							■	
URSs-09	■							
URSs-10								■
URSs-11								
URSs-12								
URSs-13								
URSs-14								

2.5 User Requirement Specification and Method Description

- Mobile Part

URSm \ MDm	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53
URSm-01										■																																											
URSm-02									■			■		■																																							
URSm-03	■	■			■	■					■								■																																		
URSm-04			■	■			■	■	■			■	■	■	■	■					■	■	■																														
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URSm-09	■	■			■	■			■										■						■									■						■		■	■										
URSm-10																								■	■		■					■	■		■						■							■					
URSm-11																																												■									
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URSm-13																																																				■	■
URSm-14																																																				■	■
URSm-15																	■	■						■	■																												
URSm-16																	■	■																																			
URSm-17																		■																																			

- Server Part

Server Part — Traceability Matrix (MDs-01 to MDs-59)

URSs \ MDs	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59
URSs-01			■							■								■							■								■		■		■			■				■		■		■			■						■		
URSs-02			■		■					■		■					■	■							■		■																	■		■		■			■							■	
URSs-03				■	■						■	■					■	■	■							■	■																																	■
URSs-04		■			■				■							■	■									■	■																												■	■	■			
URSs-05						■									■						■							■																												■				
URSs-06							■							■															■																											■				
URSs-07								■					■																	■																										■				
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URSs-14			■		■					■		■					■	■							■		■																																	

Server Part — Traceability Matrix (MDs-46 to MDs-90)

URSs \ MDs	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90
URSs-08																																			■									■	■
URSs-09																																			■										
URSs-10																																				■	■	■	■	■	■	■	■		
URSs-11																											■																		
URSs-12																■	■	■	■	■		■	■	■	■			■																	
URSs-13																	■	■	■			■	■	■	■			■																	
URSs-14																													■	■	■														

Document Name	EIOM-TraceabilityRecord-V.2.0.docx	**Owner**	Putchakarn, Sawatdiporn	**Page**	16 / 42
Document Type	Traceability Record	**Release Date**	21 Oct 2014	**Print Date**	11 Nov 2014

2.6 Class Diagram Server and Method Description

- Mobile Part

MDm / CDm	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	MDm-38	MDm-39	MDm-40	MDm-41	MDm-42	MDm-43	MDm-44	MDm-45	MDm-46	MDm-47	MDm-48	MDm-49	MDm-50	MDm-51	MDm-52	MDm-53	MDm-54
CDm-02	X	X	X	X																				X	X	X	X	X	X	X	X																							
CDm-03					X	X	X	X																								X	X	X	X	X	X	X	X															
CDm-04									X																																													
CDm-05										X	X																													X	X	X	X											
CDm-06												X	X	X	X	X																																						
CDm-07																	X	X																																				
CDm-08																			X																																			
CDm-09																				X																																		
CDm-10														X	X	X					X	X	X																															
CDm-11																																												X	X	X	X							
CDm-12																																																X						
CDm-13																																																	X	X	X			
CDm-14																																																				X	X	

- Server Part

CDs \ MDs	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
CDs-01	■																																																											
CDs-02		■	■	■	■	■	■	■																																																				
CDs-03									■	■	■	■	■	■	■	■																																												
CDs-04																	■	■	■	■	■	■	■																																					■
CDs-05																								■	■	■	■	■	■	■	■																												
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Document Name	EIOM-TraceabilityRecord-V.2.0.docx	**Owner**	Putchakarn, Sawatdiporn	**Page**	18 / 42
Document Type	Traceability Record	**Release Date**	21 Oct 2014	**Print Date**	11 Nov 2014

CDs \ MDs	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
CDs-01																														
CDs-02																														
CDs-03																														
CDs-04	■	■	■	■	■									■																
CDs-05						■	■	■	■	■					■															
CDs-06																														
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CDs-21																							■	■						
CDs-22																									■	■				
CDs-23																											■	■		
CDs-24																													■	■

2.7 Unit Test Case and Method Description Server

- Mobile Part

UTCm \ MDm	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	■																			
UTCs-02				■																
UTCs-03		■																		
UTCs-04			■																	
UTCs-05					■															
UTCs-06						■														
UTCs-07							■													
UTCs-08								■												
UTCs-09									■											
UTCs-10										■										
UTCs-11											■									
UTCs-12												■								
UTCs-13																■				
UTCs-14													■							
UTCs-15														■						
UTCs-16															■					
UTCs-17																	■			
UTCs-18																			■	
UTCs-19																				■

Chapter Three| Traceability Record Table

- Mobile Part

URSm	SRSm	UCm	UI m	SDm	MDm
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

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.

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.

URSs-03: The administrator can remove help place.
URSs-04: The administrator can view help information of each help place.
URSs-05: The administrator can browse the help place by category.

URSs-06: The administrator can browse the help place by province of Thailand.

URSs-07: The administrator can browse the help place by category and province of Thailand.

URSs-08: The administrator can login to the system.

URSs-09: The administrator can logout of the system.

URSs-10: The administrator can update their account's password.

URSs-11: The mobile application can get list of all help places in the database.

URSs-12: The mobile application can get the nearest help place by the selected category.

URSs-13: The mobile application can get list of help places where locate in the setting scope.

URSs-14: The mobile application can retrieve the help place with new average rating score.

4.2 System Requirement Specification

SRSm-42: The system shall obtain the latitude and longitude of the user's current location.

SRSm-43: The system shall show the online map UI.

SRSm-44: SRS-: The system shall show the user's current location on the online map.

SRSm-01: The system shall obtain the latitude and longitude of the user's current location.

SRSm-45: The system shall check MapsWithMe application is installed in the device.

SRSm-46: The system shall show dialog to offer user download MapsWithMe application.

SRSm-47: The system shall connect MapsWithMe application.

SRSm-48: SRS-: The system shall show the offline map UI.

SRSm-49: SRS-: The system shall show the user's current location on the offline map.

SRSm-02: The system shall show the online map UI

SRSm-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.

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

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.

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
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

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

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

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: findJSONObjNearestHelpPlace
MDm-25: findJSONArrayNearestHelpPlace
MDm-26: getHelpPlacesList
MDm-27: getNearestHelpPlace
MDm-28: setHelpPlaceDAO
MDm-29: deleteAllHelpPlaces
MDm-30: getAllHelpPlacesOnDevice
MDm-31: insertHelpPlace
MDm-32: findJSONObjNearestHelpPlace
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

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
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: getNearestHelpPlaceJson
MDs-72: listHelpPlacesJson
MDs-73: listHelpPlacesInScopeJson
MDs-74: calculateAverageRate
MDs-75: calculateAverageRate
MDs-76: helpPlaceNewAverageRate
MDs-77: getUserSession
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
MDs-87: findByName
MDs-88: saveUser
MDs-89: loadByUsername
MDs-90: getAuthorities

4.7 Class Diagram

CDm-01: HelpPlace
CDm-02: HelpPlaceService
CDm-03: HelpPlaceServiceImpl
CDm-04: HelpPlaceSingleton
CDm-05: OnlineMapController
CDm-06: OffllineMapController
CDm-07: InformationView
CDm-08: JSONParser
CDm-09: PhoneCallListener
CDm-10: DatabaseConnection
CDm-11: CheckingDistance
CDm-12: SearchingHelpPlaces
CDm-13: DatabaseConnectionSingleton
CDm-14: DirectionRoute

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

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

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