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MESSIR Analysis Document
- v 0.0 -

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Contents

1	Introduction	9
1.1	Overview	9
1.2	Purpose and recipients of the document	9
1.3	Application Domain	9
1.4	Definitions, acronyms and abbreviations	9
1.5	Document structure	9
2	General Description	11
2.1	Domain Stakeholders	11
2.2	System's Actors	12
2.3	Use Cases Model	12
2.3.1	Use Cases	12
2.3.2	Use Case Instance(s)	18
3	Environment Model	21
3.1	Environment model view(s)	21
3.2	Actors and Interfaces Descriptions	21
3.2.1	actAbstractDispatchCoordinator Actor	21
3.2.2	actCentralCoordinator Actor	21
3.2.3	actCommunicationCompany Actor	22
3.2.4	actFiremenCoordinator Actor	22
3.2.5	actPoliceCoordinator Actor	22
3.2.6	actTowServiceCoordinator Actor	22
4	Concept Model	25
4.1	PrimaryTypes-Classes	25
4.1.1	Local view 12	25
4.2	PrimaryTypes-Datatypes	25
4.2.1	Local view 15	25
4.3	Concept Model Types Descriptions	25
4.3.1	Primary types - Class types descriptions	25
4.3.2	Primary types - Datatypes types descriptions	26
4.3.3	Primary types - Association types descriptions	29
4.3.4	Primary types - Aggregation types descriptions	29
4.3.5	Secondary types - Class types descriptions	29
4.3.6	Secondary types - Datatypes types descriptions	29
4.3.7	Secondary types - Association types descriptions	30
4.3.8	Secondary types - Aggregation types descriptions	30
4.3.9	Secondary types - Composition types descriptions	31

5 Operation Model	33
5.1 Environment - Out Interface Operation Scheme for actAbstractDispatchCoordinator	33
5.1.1 Operation Model for oeCloseCrisisEvent	33
5.1.2 Operation Model for oeGetCrisisEventInformation	33
5.1.3 Operation Model for oeMessage	34
5.1.4 Operation Model for oeRefreshMap	34
5.1.5 Operation Model for oeUpdateDispatchStatus	35
5.2 Environment - Out Interface Operation Scheme for actCentralCoordinator	35
5.2.1 Operation Model for oeAddNewCrisisEvent	35
5.2.2 Operation Model for oeCreateNewCrisisEvent	36
5.2.3 Operation Model for oeRequestCrisisEventLocation	37
5.3 Environment - Out Interface Operation Scheme for actCommunicationCompany	37
5.3.1 Operation Model for oeReceiveCrisisEventLocation	37
5.4 Environment - Out Interface Operation Scheme for actFiremenCoordinator	38
5.4.1 Operation Model for oeRequestHelp	38
5.5 Environment - Actor Operation Schemes	38
5.6 Primary Types - Operation Schemes for Classes	38
5.7 Primary Types - Operation Schemes for Datatypes	38
5.8 Primary Types - Operation Schemes for Enumerations	38
5.9 Secondary Types - Operation Schemes for Classes	38
5.10 Secondary Types - Operation Schemes for Datatypes	39
5.11 Secondary Types - Operation Schemes for Enumerations	39
6 Test Model(s)	41
7 Additional Constraints	43
A Undocumented Messir Specification Elements	45
A.1 Undocumented Use Cases	45
A.1.1 Undocumented Use Cases - Subfunction Level	45
A.2 Undocumented Primary Types	45
A.2.1 Undocumented Primary Enumeration Types	45
A.3 Undocumented Operation Specifications	46
B Messir Specification Files Listing	47
B.1 File /src-gen/messir-spec/.views.msr	47
B.2 File /.../environment-actAbstractDispatchCoordinator-oeCloseCrisisEvent.msr	47
B.3 File /.../environment-actAbstractDispatchCoordinator-oeGetCrisisEventInformation.msr	47
B.4 File /src-gen.../environment-actAbstractDispatchCoordinator-oeMessage.msr	48
B.5 File /src-gen.../environment-actAbstractDispatchCoordinator-oeRefreshMap.msr	48
B.6 File /.../environment-actAbstractDispatchCoordinator-oeUpdateDispatchStatus.msr	49
B.7 File /src-gen.../environment-actCentralCoordinator-oeAddNewCrisisEvent.msr	49
B.8 File /.../environment-actCentralCoordinator-oeConfirmCrisisEventLocation.msr	49
B.9 File /src-gen.../environment-actCentralCoordinator-oeCreateNewCrisisEvent.msr	50
B.10 File /.../environment-actCentralCoordinator-oeInitialiseNewCrisisEvent.msr	50
B.11 File /.../environment-actCentralCoordinator-oeRequestCrisisEventLocation.msr	50
B.12 File /.../environment-actCommunicationCompany-oeReceiveCrisisEventLocation.msr	51
B.13 File /src-gen.../environment-actFiremenCoordinator-oeRequestHelp.msr	51
B.14 File /src-gen/messir-spec/environment/environment.msr	52
B.15 File /src-gen/messir-spec/concepts.../primarytypes-associations.msr	54

B.16	File /src-gen/messir-spec/concepts/primarytypes-classes/primarytypes-classes.msr	54
B.17	File /src-gen/messir-spec/concepts.../primarytypes-datatypes.msr	56
B.18	File /src-gen/messir-spec/concepts.../secondarytypes-associations.msr	57
B.19	File /src-gen/messir-spec/concepts.../secondarytypes-classes.msr	57
B.20	File /src-gen/messir-spec/concepts.../secondarytypes-datatypes.msr	57
B.21	File /src-gen/messir-spec/tests/tests.msr	58
B.22	File /.../usecaseinstance-ugCreateNewCrisisEvent-uciugCreateNewCrisisEvent.msr	59
B.23	File /.../usecaseinstance-ugGlobalDispatchManagement-uciugGlobalDispatchManagement.msr	59
B.24	File /src-gen/messir-spec/usecases/usecases.msr	61

List of Figures

2.1	lu.uni.lassy.excalibur.group09.spec Use Case Diagram: uc-suGlobalManagementOfEvent	13
2.2	lu.uni.lassy.excalibur.group09.spec Use Case Diagram: uc-ugCreateNewCrisisEvent . . .	15
2.3	lu.uni.lassy.excalibur.group09.spec Use Case Diagram: uc-ugGlobalDispatchManagement	17
2.4	lu.uni.lassy.excalibur.group09.spec Sequence Diagram: uci-uciugCreateNewCrisiEvent .	18
2.5	lu.uni.lassy.excalibur.group09.spec Sequence Diagram: uci-uciugGlobalDispatchManagement	20
4.1	Concept Model - PrimaryTypes-Classes local view 12 -	27
4.2	Concept Model - PrimaryTypes-Datatypes local view 15 -	28

Listings

B.1	Messir Spec. file .views.msr.	47
B.2	Messir Spec. file environment-actAbstractDispatchCoordinator-oeCloseCrisisEvent.msr.	47
B.3	Messir Spec. file environment-actAbstractDispatchCoordinator-oeGetCrisisEventInformation.msr.	47
B.4	Messir Spec. file environment-actAbstractDispatchCoordinator-oeMessage.msr.	48
B.5	Messir Spec. file environment-actAbstractDispatchCoordinator-oeRefreshMap.msr.	48
B.6	Messir Spec. file environment-actAbstractDispatchCoordinator-oeUpdateDispatchStatus.msr.	49
B.7	Messir Spec. file environment-actCentralCoordinator-oeAddNewCrisisEvent.msr.	49
B.8	Messir Spec. file environment-actCentralCoordinator-oeConfirmCrisisEventLocation.msr.	49
B.9	Messir Spec. file environment-actCentralCoordinator-oeCreateNewCrisisEvent.msr.	50
B.10	Messir Spec. file environment-actCentralCoordinator-oeInitialiseNewCrisisEvent.msr.	50
B.11	Messir Spec. file environment-actCentralCoordinator-oeRequestCrisisEventLocation.msr.	50
B.12	Messir Spec. file environment-actCommunicationCompany-oeReceiveCrisisEventLocation.msr.	51
B.13	Messir Spec. file environment-actFiremenCoordinator-oeRequestHelp.msr.	52
B.14	Messir Spec. file environment.msr.	52
B.15	Messir Spec. file primarytypes-associations.msr.	54
B.16	Messir Spec. file primarytypes-classes.msr.	54
B.17	Messir Spec. file primarytypes-datatypes.msr.	56
B.18	Messir Spec. file secondarytypes-associations.msr.	57
B.19	Messir Spec. file secondarytypes-classes.msr.	57
B.20	Messir Spec. file secondarytypes-datatypes.msr.	58
B.21	Messir Spec. file tests.msr.	58
B.22	Messir Spec. file usecaseinstance-ugCreateNewCrisisEvent-uciugCreateNewCrisisEvent.msr.	59
B.23	Messir Spec. file usecaseinstance-ugGlobalDispatchManagement-uciugGlobalDispatchManagement.msr.	59
B.24	Messir Spec. file usecases.msr.	61

Chapter 1

Introduction

1.1 Overview

1.2 Purpose and recipients of the document

1.3 Application Domain

1.4 Definitions, acronyms and abbreviations

1.5 Document structure

Chapter 2

General Description

2.1 Domain Stakeholders

2.2 System's Actors

The objective of this section is not to provide the full requirement elicitation document in this section but to reuse a part of this document to provide a informal introduction to the **Messip** specification of the system under development. The use case model is made of a use case diagrams modelling abstractly and informally the actors and their use cases together with a set of use cases descriptions. In addition, those diagrams and description tables are adapted to the **Messip** specification since actor and messages names together with parameters are partly adapted to be consistent with the specification identifiers (see [?] for more details).

2.3 Use Cases Model

This section contains the use cases elicited during the requirements elicitation phase. The use cases are textually described as suggested by the **Messip** method and inspired by the standard Cokburn template [?].

2.3.1 Use Cases

2.3.1.1 summary-suGlobalManagementOfEvent

The goal is to manage the creation of a new crisis event including all the necessary information and to have the requested coordinators arrive on the crisis event's location.

USE-CASE DESCRIPTION	
Name	suGlobalManagementOfEvent
Scope	system
Level	summary
<i>Primary actor(s)</i>	
1	actCentralCoordinator[active]
<i>Secondary actor(s)</i>	
1	actCommunicationCompany[active]
2	actFiremenCoordinator[active]
3	actTowServiceCoordinator[active]
<i>Goal(s) description</i>	
The goal is to manage the creation of a new crisis event including all the necessary information and to have the requested coordinators arrive on the crisis event's location.	
<i>Reuse</i>	
1	<u>ugCreateNewCrisisEvent</u> [1..*]
2	<u>ugGlobalDispatchManagement</u> [1..*]
<i>Protocol condition(s)</i>	
1	none.
<i>Pre-condition(s)</i>	
1	none.
<i>Main post-condition(s)</i>	
1	a new crisis event has been created and modifications have been made by the coordinators to the system and its environment concerning a crisis event.
<i>Main Steps</i>	
a	the actor actCentralCoordinator executes the <u>ugCreateNewCrisisEvent</u> use case
<i>continues in next page ...</i>	

... Use-Case Description table continuation

b	the actor	actFiremenCoordinator	executes the	<u>ugGlobalDispatchManagement</u>	use case
c	the actor	actTowServiceCoordinator	executes the	<u>ugGlobalDispatchManagement</u>	use case
Steps Ordering Constraints					
1	step (a) must be executed before step (b) or step (c)				
2	step (b) XOR step (c)				
Additional Information					
none					

Figure 2.1 Shows the suGlobalManagementOfEvent use-case and its actors.

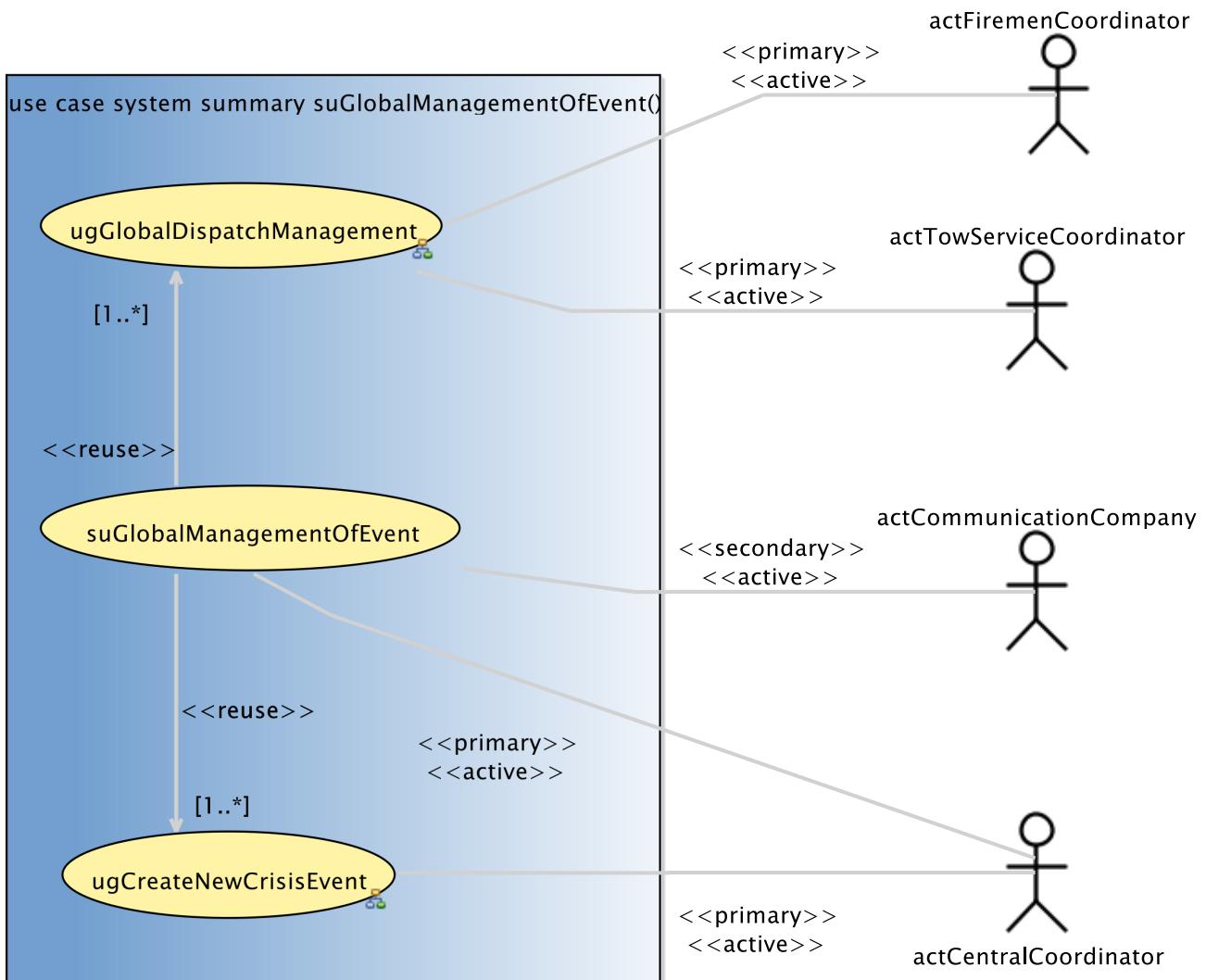


Figure 2.1:

2.3.1.2 usergoal-ugCreateNewCrisisEvent

The goal is to manage the creation of a new crisis event including all the necessary information.

USE-CASE DESCRIPTION	
Name	ugCreateNewCrisisEvent
Scope	system
Level	usergoal
Primary actor(s)	
1	actCentralCoordinator [active]
Secondary actor(s)	
1	actCommunicationCompany [active]
2	actFiremenCoordinator [passive]
3	actTowServiceCoordinator [passive]
Goal(s) description	
The goal is to manage the creation of a new crisis event including all the necessary information.	
Reuse	
1	<u>oeAddNewCrisisEvent [1..*]</u>
2	<u>oeRequestCrisisEventLocation [0..*]</u>
3	<u>oeReceiveCrisisEventLocation [0..*]</u>
4	<u>oeCreateNewCrisisEvent [1..*]</u>
Protocol condition(s)	
1	none.
Pre-condition(s)	
1	none.
Main post-condition(s)	
1	a dispatch order including the crisis event's information such as the id, map with pins, witness's phone number, etc. is sent to nearest, free Firemen Team and Tow Service Team.
Main Steps	
a	the actor actCentralCoordinator executes the <u>oeAddNewCrisisEvent</u> use case
b	the actor actCentralCoordinator executes the <u>oeRequestCrisisEventLocation</u> use case
c	the actor actCommunicationCompany executes the <u>oeReceiveCrisisEventLocation</u> use case
d	the actor actCentralCoordinator executes the <u>oeCreateNewCrisisEvent</u> use case
Steps Ordering Constraints	
1	step (a) must be executed first
2	if step (c) then previously step (b)
Additional Information	
none	

Figure 2.2 Shows the ugCreateNewCrisisEvent use-case and its actors.

2.3.1.3 usergoal-ugGlobalDispatchManagement

The goal is to have the requested coordinators arrive on the crisis event's location.

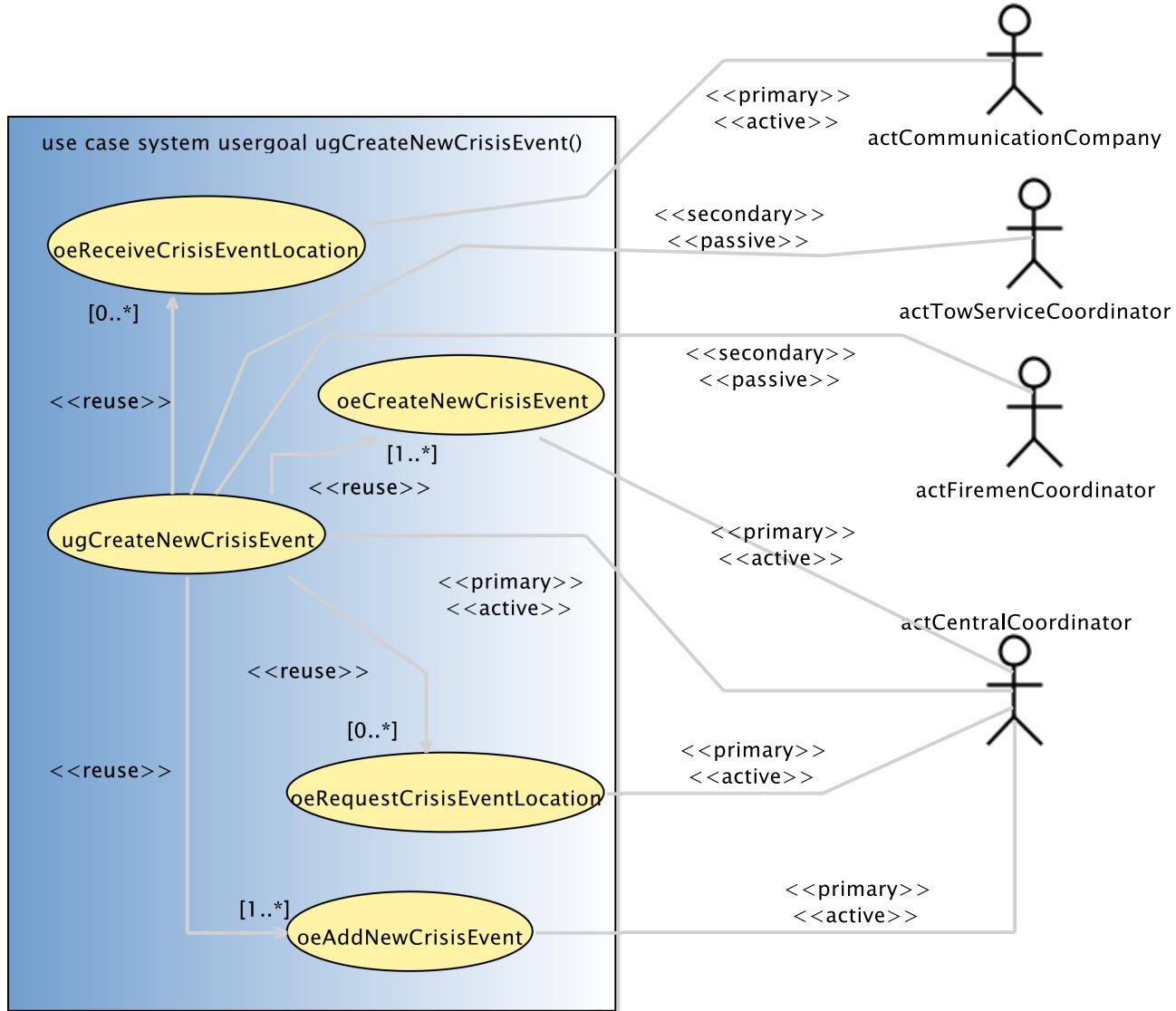


Figure 2.2: ugCreateNewCrisisEvent

USE-CASE DESCRIPTION	
<i>Name</i>	ugGlobalDispatchManagement
<i>Scope</i>	system
<i>Level</i>	usergoal
Primary actor(s)	
1	actFiremenCoordinator [active]
2	actTowServiceCoordinator [active]
Secondary actor(s)	
1	actCentralCoordinator [passive]
2	actPoliceCoordinator [active]
Goal(s) description	
The goal is to have the requested coordinators arrive on the crisis event's location.	
Reuse	
1	<u>oeGetCrisisEventInformation</u> [2...*]
2	<u>oeUpdateDispatchStatus</u> [4...*]
3	<u>oeRefreshMap</u> [0...*]
4	<u>oeMessage</u> [0...*]
5	<u>oeRequestHelp</u> [0...*]
6	<u>oeCloseCrisisEvent</u> [2...*]
Protocol condition(s)	
1	none.
Pre-condition(s)	
1	the sender is associated to a crisis event.
Main post-condition(s)	
1	modifications have been made to the system and its environment concerning a crisis event.
Main Steps	
a	the actor actFiremenCoordinator executes the <u>oeGetCrisisEventInformation</u> use case
b	the actor actFiremenCoordinator executes the <u>oeUpdateDispatchStatus</u> use case
c	the actor actTowServiceCoordinator executes the <u>oeGetCrisisEventInformation</u> use case
d	the actor actTowServiceCoordinator executes the <u>oeUpdateDispatchStatus</u> use case
e	the actor actTowServiceCoordinator executes the <u>oeRefreshMap</u> use case
f	the actor actTowServiceCoordinator executes the <u>oeMessage</u> use case
g	the actor actFiremenCoordinator executes the <u>oeRequestHelp</u> use case
h	the actor actPoliceCoordinator executes the <u>oeGetCrisisEventInformation</u> use case
i	the actor actPoliceCoordinator executes the <u>oeUpdateDispatchStatus</u> use case
j	the actor actFiremenCoordinator executes the <u>oeCloseCrisisEvent</u> use case
k	the actor actTowServiceCoordinator executes the <u>oeCloseCrisisEvent</u> use case
l	the actor actPoliceCoordinator executes the <u>oeCloseCrisisEvent</u> use case
Steps Ordering Constraints	
1	if step (b) then previously step (a)
2	if step (d) then previously step (c)
3	step (h) can only be executed if step (g) has at least been executed once previously
4	if step (i) then previously step (h)

continues in next page ...

... Use-Case Description table continuation

- | | |
|---|---|
| 5 | if step (j) then previously step (b) at least two times |
| 6 | if step (k) then previously step (d) at least two times |
| 7 | if step (l) then previously step (i) at least two times |

Additional Information

none

Figure 2.3 Shows the ugGlobalDispatchManagement use-case and its actors.

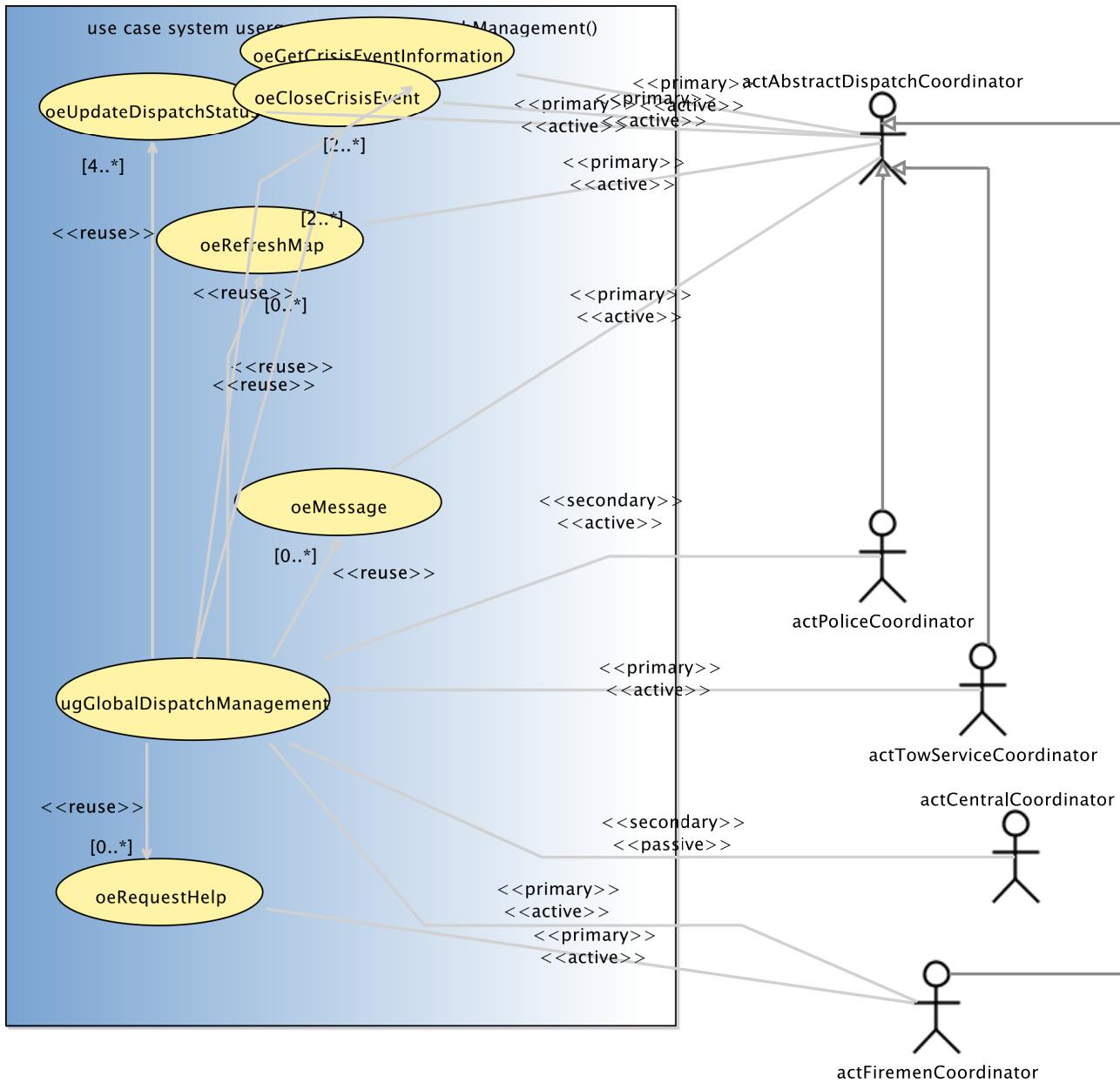


Figure 2.3: ugGlobalDispatchManagement

2.3.2 Use Case Instance(s)

2.3.2.1 Use-Case Instance - uciugCreateNewCrisiEvent:ugCreateNewCrisisEvent

Shows the ugCreateNewCrisisEvent instance.

USERGOAL USE-CASE INSTANCE	
<i>Instantiated Use Case</i>	
ugCreateNewCrisisEvent	
<i>Instance ID</i>	
uciugCreateNewCrisiEvent	

Figure 2.4 Shows the ugCreateNewCrisisEvent instance.

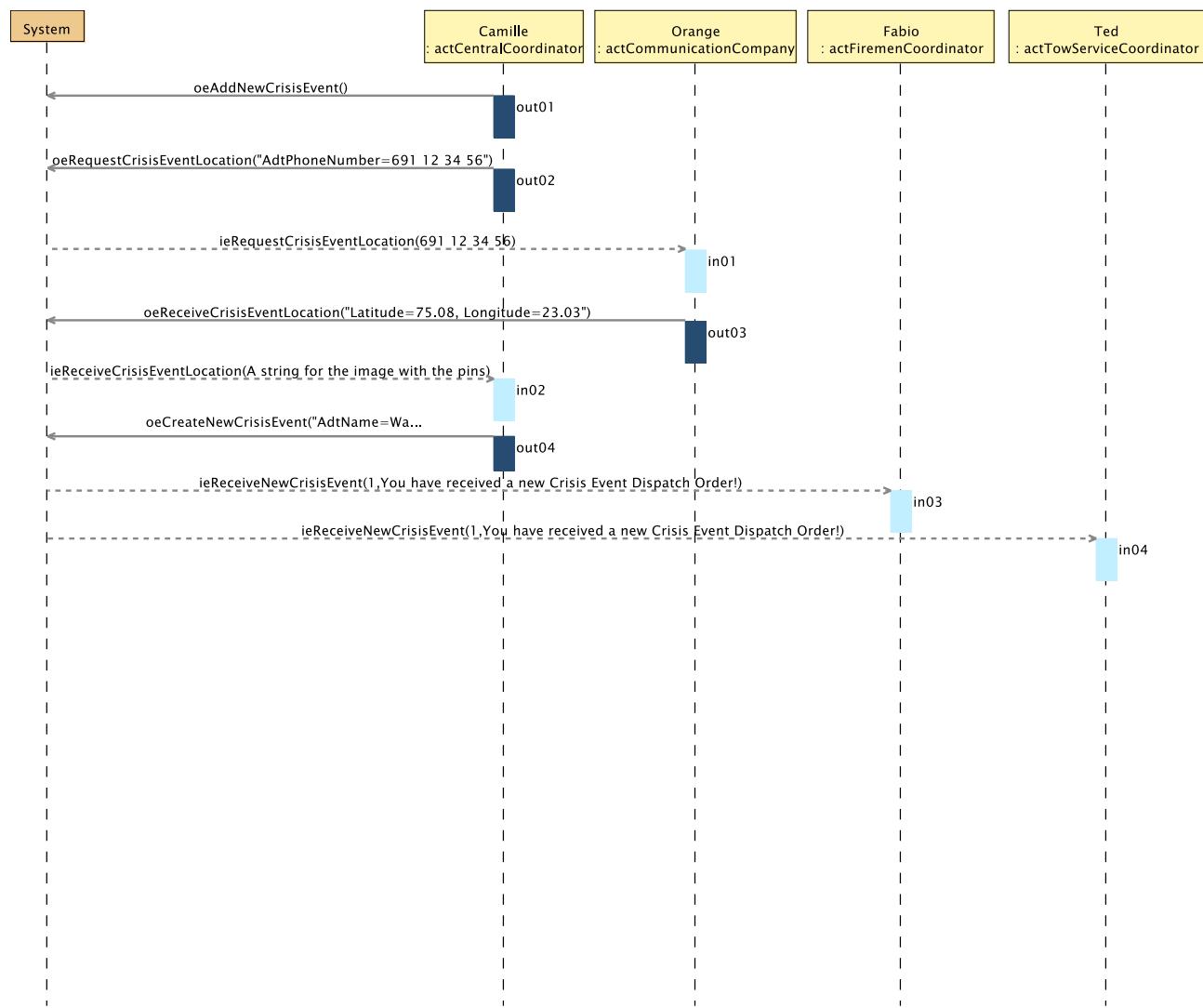


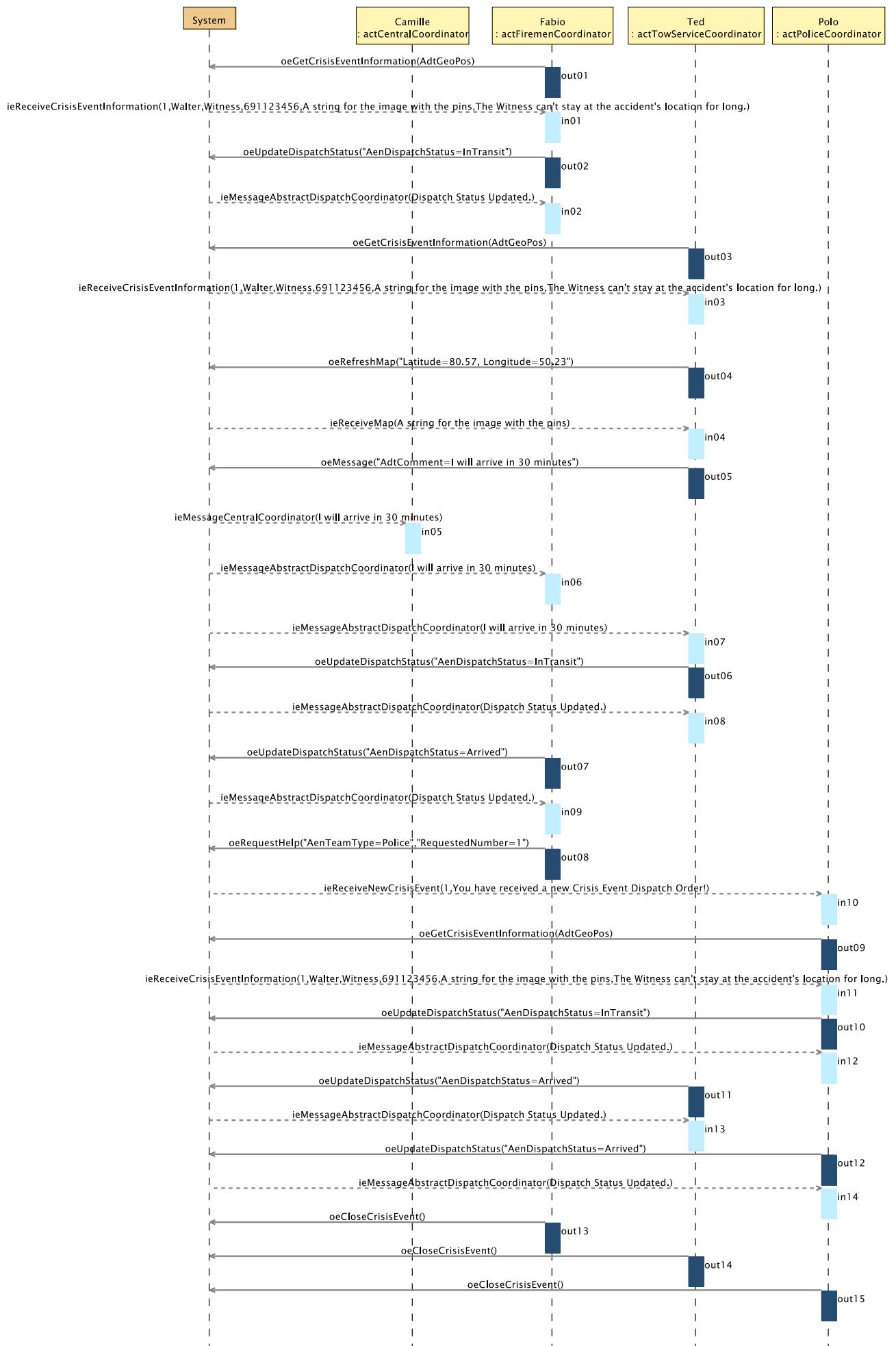
Figure 2.4: ugCreateNewCrisisEvent

2.3.2.2 Use-Case Instance - uciugGlobalDispatchManagement:ugGlobalDispatchManagement

Shows the ugGlobalDispatchManagement instance.

USERGOAL USE-CASE INSTANCE
<i>Instantiated Use Case</i> ugGlobalDispatchManagement
<i>Instance ID</i> uciugGlobalDispatchManagement

Figure 2.5 Shows the ugGlobalDispatchManagement instance.



Chapter 3

Environment Model

3.1 Environment model view(s)

There are no view(s) for the **Messir** environment model.

3.2 Actors and Interfaces Descriptions

We provide for the given views the description of the actors together with their associated input and output interface descriptions.

3.2.1 **actAbstractDispatchCoordinator** Actor

ACTOR
<i>actAbstractDispatchCoordinator</i>
An abstract Actor which brings together the common operations of the FiremanCoordinator, the PoliceCoordinator and the TowServiceCoordinator.
<i>OutputInterfaces</i>
OUT 1 oeMessage (AdtComment : dtComment) : ptBoolean
OUT 2 oeUpdateDispatchStatus (AetDispatchStatus : etDispatchStatus) : ptBoolean
<i>InputInterfaces</i>
IN 1 ieReceiveNewCrisisEvent (AdtCrisisID : dtCrisisID, AdtComment : dtComment) : ptBoolean
IN 2 ieMessageAbstractDispatchCoordinator (AdtComment : dtComment) : ptBoolean

3.2.2 **actCentralCoordinator** Actor

ACTOR
<i>actCentralCoordinator</i>
Is representing the person that receives the victim's or witness' call in the emergency central.
<i>OutputInterfaces</i>
OUT 1 oeRequestCrisisEventLocation (AdtPhoneNumber : dtPhoneNumber) : ptBoolean

continues in next page ...

...Actor table continuation

OUT 2	<code>oeCreateNewCrisisEvent (AdtName:ptString, AetHumanType:etHumanType, AdtPhoneNumber:dtPhoneNumber, AdtMapWithPin:dtMapWithPin, AdtComment:dtComment) :ptBoolean</code>
-------	---

InputInterfaces

IN 1	<code>ieReceiveCrisisEventLocation (AdtMapWithPin:dtMapWithPin) :ptBoolean</code>
------	---

IN 2	<code>ieMessageCentralCoordinator (AdtComment:dtComment) :ptBoolean</code>
------	--

3.2.3 actCommunicationCompany Actor**ACTOR***actCommunicationCompany*

Is representing any communication company in Luxembourg.

OutputInterfaces

OUT 1	<code>oeReceiveCrisisEventLocation (AdtGeoPos:dtGeoPos) :ptBoolean</code>
-------	---

InputInterfaces

IN 1	<code>ieRequestCrisisEventLocation (AdtPhoneNumber:dtPhoneNumber) :ptBoolean</code>
------	---

3.2.4 actFiremenCoordinator Actor**ACTOR***actFiremenCoordinator*

Is representing any firemen team leader able to manage a two Ambulances.

Extends

lu.uni.lassy.excalibur.group09.spec.environment.actAbstractDispatchCoordinator

OutputInterfaces

OUT 1	<code>oeRequestHelp (AetTeamType:etTeamType, ARequestedNumber:ptInteger) :ptBoolean</code>
-------	--

3.2.5 actPoliceCoordinator Actor**ACTOR***actPoliceCoordinator*

Is representing a police team leader.

Extends

lu.uni.lassy.excalibur.group09.spec.environment.actAbstractDispatchCoordinator

3.2.6 actTowServiceCoordinator Actor

ACTOR
<i>actTowServiceCoordinator</i>
Is representing a tow service driver.
<i>Extends</i>
lu.uni.lassy.excalibur.group09.spec.environment.actAbstractDispatchCoordinator

Chapter 4

Concept Model

4.1 PrimaryTypes-Classes

4.1.1 Local view 12

Figure 4.1 View of all the associations.

4.2 PrimaryTypes-Datatypes

4.2.1 Local view 15

Figure 4.2 View of all the datatypes

4.3 Concept Model Types Descriptions

This section provides the textual descriptions of all the types defined in the concept model and that can be part of the graphical views provided.

4.3.1 Primary types - Class types descriptions

The table below is providing comments on the graphical views given for the class types of the primary types. Type logical operations are precisely specified in the operation model.

CLASSES	
<i>ctComment</i>	
A class containing a comment.	
attribute	comment: dtComment
operation	init (AComment : dtComment) : ptBoolean
<i>ctCrisisEvent</i>	
A class containing the attributes identifying a crisis event.	
attribute	id: dtCrisisID
operation	init (Aid:dtCrisisID, AgeoPos:dtGeoPos) : ptBoolean

continues in next page ...

... Classes table continuation

<i>ctDispatchedCoordinator</i>	
A class containing the attributes identifying a dispatched team.	
attribute	status: <code>etDispatchStatus</code>
attribute	type: <code>etTeamType</code>
operation	<code>init (Atype:etTeamType, Astatus:etDispatchStatus, AgeoPos:dtGeoPos, AisFree:ptBoolean, Amode:etDispatchCoordinatorMode)</code>
<i>ctHuman</i>	
A class containing the attributes identifying an human.	
attribute	id: <code>dtPhoneNumber</code>
attribute	name: <code>ptString</code>
attribute	type: <code>etHumanType</code>
operation	<code>init (Aid:dtPhoneNumber, Aname:ptString, Atype:etHumanType) :ptBoolean</code>
<i>ctMapWithPin</i>	
A class containing an image which is the map including the pins.	
attribute	mapWithPin: <code>dtMapWithPin</code>
operation	<code>init (AmapWithPin:dtMapWithPin) :ptBoolean</code>
<i>ctState</i>	
used to model the system.	
attribute	vpStarted: <code>ptBoolean</code>
operation	<code>init (ANextValueForAlertID:ptInteger, AvpStarted:ptBoolean) :ptBoolean</code>

4.3.2 Primary types - Datatypes types descriptions

The table below is providing comments on the graphical views given for the datatype types of the primary types.

DATATYPES	
<i>dtGeoPos</i>	
Two Real numbers used to identify a geographical position on earth.	
attribute	latitude: <code>dtLatitude</code>
attribute	longitude: <code>dtLongitude</code>
operation	<code>is () :ptBoolean</code>

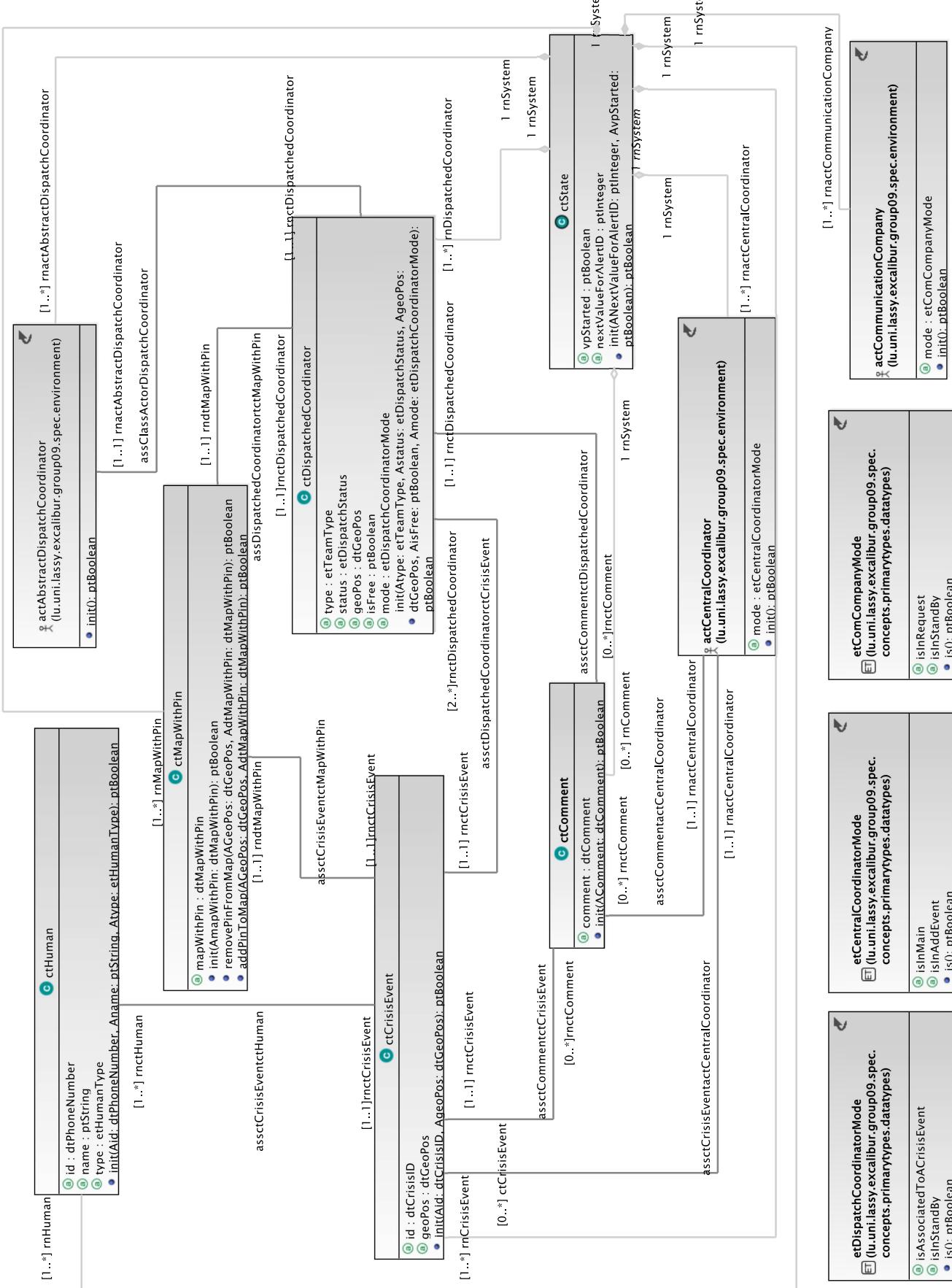


Figure 4.1: Concept Model - PrimaryTypes-Classes local view 12. .

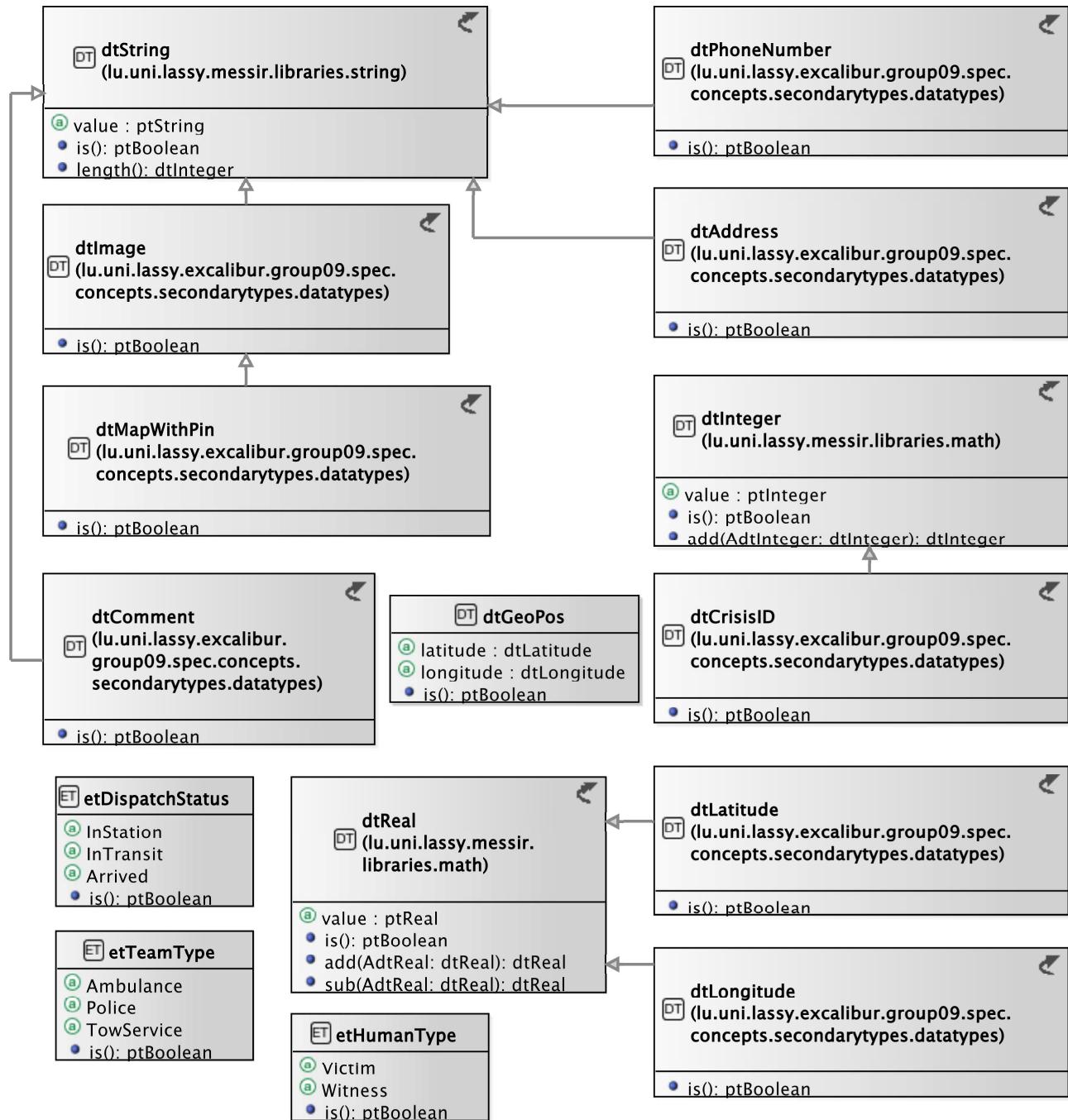


Figure 4.2: Concept Model - PrimaryTypes-Datatypes local view 15. .

ENUMERATIONS
<i>etDispatchStatus</i> A String used to identify a dispatch status.
<i>etHumanType</i> A String used to identify an Human type.
<i>etTeamType</i> A String used to identify a team type.

4.3.3 Primary types - Association types descriptions

The table below is providing comments on the association types of the primary types.

UNDIRECTED ASSOCIATIONS
<i>assClassActorDispatchCoordinator</i> Association of a dispatched coordinator to an actor of the same type.
<i>assctCommentactCentralCoordinator</i> Association of a comment to a central coordinator actor.
<i>assctCommentctCrisisEvent</i> Association of a comment to a crisis event.
<i>assctCommentctDispatchedCoordinator</i> Association of a comment to a dispatched coordinator.
<i>assctCrisisEventactCentralCoordinator</i> Association of a crisis event to the central coordinator actor (who created it).
<i>assctCrisisEventctHuman</i> Association of a crisis event to an human.
<i>assctCrisisEventctMapWithPin</i> Association of a crisis event with a MapWithPin image.
<i>assctDispatchedCoordinatorctCrisisEvent</i> Association of a dispatched coordinator to a crisis event.
<i>assDispatchedCoordinatorctMapWithPin</i> Association of a dispatched coordinator with a MapWithPin image.

4.3.4 Primary types - Aggregation types descriptions

There are no aggregation types for the primary types.

4.3.4.1 Primary types - Composition types descriptions

There are no composition types for the primary types.

4.3.5 Secondary types - Class types descriptions

There are no elements in this category in the system analysed.

4.3.6 Secondary types - Datatypes types descriptions

The table below is providing comments on the graphical views given for the datatype types of the secondary types.

DATATYPES	
<i>dtAddress</i>	
A String used to identify an address.	
<i>extends</i>	dtString
<i>operation</i>	is () :ptBoolean
<i>dtComment</i>	
A String used to identify a comment.	
<i>extends</i>	dtString
<i>operation</i>	is () :ptBoolean
<i>dtCrisisID</i>	
An Integer used to identify a crisis id.	
<i>extends</i>	dtInteger
<i>operation</i>	is () :ptBoolean
<i>dtImage</i>	
A String used to identify an image.	
<i>extends</i>	dtString
<i>operation</i>	is () :ptBoolean
<i>dtLatitude</i>	
used to define a latitude value of a geographical positions on earth.	
<i>extends</i>	dtReal
<i>operation</i>	is () :ptBoolean
<i>dtLongitude</i>	
used to define a longitude value of a geographical positions on earth.	
<i>extends</i>	dtReal
<i>operation</i>	is () :ptBoolean
<i>dtMapWithPin</i>	
An image which is a map including pins.	
<i>extends</i>	dtImage
<i>operation</i>	is () :ptBoolean
<i>dtPhoneNumber</i>	
A String used to store a phone number.	
<i>extends</i>	dtString
<i>operation</i>	is () :ptBoolean

4.3.7 Secondary types - Association types descriptions

There are no association types for the secondary types.

4.3.8 Secondary types - Aggregation types descriptions

There are no aggregation types for the secondary types.

4.3.9 Secondary types - Composition types descriptions

There are no composition types for the secondary types.

Chapter 5

Operation Model

This section contains the operation schemes of each operation defined in either an actor, its output interface, in a primary or secondary type (class, datatype or enumeration types). The **Messir** OCL code listing is joined to the comment table.

5.1 Environment - Out Interface Operation Scheme for actAbstractDispatchCoordinator

5.1.1 Operation Model for oeCloseCrisisEvent

The oeCloseCrisisEvent operation has the following properties:

OPERATION
<i>oeCloseCrisisEvent</i>
sent to close up the associated crisis event for the current coordinator.
<i>Return type</i>
ptBoolean
<i>Pre-Condition (protocol)</i>
PreP 1 The dispatch coordinator's mode has been set to <code>isInMainWithCloseEventUnlocked</code> .
<i>Pre-Condition (functional)</i>
PreF 1 it is supposed that a dispatched coordinator can only be associated to a single crisis event at the same time.
<i>Post-Condition (functional)</i>
PostF 1 The coordinator's attribute <code>isFree</code> is set back to true and can thus be associated to another crisis event.
<i>Post-Condition (protocol)</i>
PostP 1 The dispatch coordinator is no longer associated to the current crisis event.
PostP 2 The dispatch coordinator's mode has been set to <code>isInStandBy</code> .

5.1.2 Operation Model for oeGetCrisisEventInformation

The oeGetCrisisEventInformation operation has the following properties:

OPERATION
<i>oeGetCrisisEventInformation</i>
sent to get the stored information of the crisis event to which the dispatch coordinator is associated.

continues in next page ...

... Operation table continuation

<i>Parameters</i>	
1	AdtGeoPos: dtGeoPos a geographical position that identifies the actor's current position.
<i>Return type</i>	
ptBoolean	
<i>Pre-Condition (protocol)</i>	
PreP 1	The dispatch coordinator's mode has been set to <code>hasBeenAssociatedToACrisisEvent</code> .
<i>Pre-Condition (functional)</i>	
PreF 1	it is supposed that a dispatched coordinator can only be associated to a single crisis event at the same time.
PreF 2	the GeoPos given by the coordinator is a valid one.
<i>Post-Condition (functional)</i>	
PostF 1	the map with pins returned to coordinator includes a pin of the actor's current position and another one of the crisis event's location.
<i>Post-Condition (protocol)</i>	
PostP 1	The dispatch coordinator's mode has been set to <code>isInMain</code> .

5.1.3 Operation Model for oeMessage

The `oeMessage` operation has the following properties:

OPERATION	
<i>oeMessage</i>	
sent to transmit a message.	
<i>Parameters</i>	
1	AdtComment: dtComment
<i>Return type</i>	
ptBoolean	
<i>Pre-Condition (protocol)</i>	
PreP 1	The dispatch coordinator's mode has been set to <code>isInMain</code> .
<i>Pre-Condition (functional)</i>	
PreF 1	it is supposed that a dispatched coordinator can only be associated to a single crisis event at the same time.

5.1.4 Operation Model for oeRefreshMap

The `oeRefreshMap` operation has the following properties:

OPERATION	
<i>oeRefreshMap</i>	
sent to refresh the map.	
<i>Parameters</i>	
1	AdtGeoPos: dtGeoPos
<i>Return type</i>	

continues in next page ...

...Operation table continuation

ptBoolean
<i>Pre-Condition (protocol)</i>
PreP 1 The dispatch coordinator's mode has been set to <code>isInMain</code> .
<i>Pre-Condition (functional)</i>
PreF 1 it is supposed that a dispatched coordinator can only be associated to a single crisis event at the same time.
PreF 2 the GeoPos given by the coordinator is a valid one.
<i>Post-Condition (functional)</i>
PostF 1 the map with pins returned to the coordinator includes a pin of the actor's current position and another one of the crisis event's location.

5.1.5 Operation Model for oeUpdateDispatchStatus

The `oeUpdateDispatchStatus` operation has the following properties:

OPERATION
<i>oeUpdateDispatchStatus</i>
sent to update the dispatch status.
<i>Parameters</i>
1 <code>AetDispatchStatus: etDispatchStatus</code>
<i>Return type</i>
ptBoolean
<i>Pre-Condition (protocol)</i>
PreP 1 The dispatch coordinator's mode has been set to <code>isInMain</code> .
<i>Pre-Condition (functional)</i>
PreF 1 it is supposed that a dispatched coordinator can only be associated to a single crisis event at the same time.
<i>Post-Condition (functional)</i>
PostF 1 the attribute status of the coordinator is modified either from 'InStation' to 'InTransit' or from 'InTransit' to 'Arrived'
<i>Post-Condition (protocol)</i>
PostP 1 when the attribute status of the coordinator is set to 'Arrived', the mode is set to <code>isInMainWithCloseEventUnlocked</code> .

5.2 Environment - Out Interface Operation Scheme for actCentralCoordinator**5.2.1 Operation Model for oeAddNewCrisisEvent**

The `oeAddNewCrisisEvent` operation has the following properties:

OPERATION
<i>oeAddNewCrisisEvent</i>
sent with the intention to add a new crisis event.
<i>Return type</i>

continues in next page ...

... Operation table continuation

ptBoolean
Pre-Condition (protocol)
PreP 1 The actor's mode has been set to <code>isInMain</code> .
Post-Condition (protocol)
PostP 1 The actor's mode has been set to <code>isInAddEvent</code> .

5.2.2 Operation Model for oeCreateNewCrisisEvent

The `oeCreateNewCrisisEvent` operation has the following properties:

OPERATION	
<i>oeCreateNewCrisisEvent</i>	
sent to create a new crisis event and to alert the corresponding coordinators.	
Parameters	
1	AdtName: ptString the name of the notifier that informed the Central Coordinator of the crisis event.
2	AetHumanType: etHumanType the notifier can be either a victim or a witness.
3	AdtPhoneNumber: dtPhoneNumber the phone number of the notifier.
4	AdtMapWithPin: dtMapWithPin a map with pins showing the crisis event's location.
Return type	
ptBoolean	
Pre-Condition (protocol)	
PreP 1 The actor's mode has been set to <code>isInAddEvent</code> .	
Post-Condition (functional)	
PostF 1	An alert message 'You have received a new dispatch order!' is sent to a free FiremenCoordinator and a free TowServiceCoordinator that are geographically the nearest of the crisis event's location.
PostF 2	The selected <code>ctDispatchCoordinators</code> ' attribute <code>isFree</code> is set to false and can thus no more be associated to another crisis event.
PostF 3	the attribute <code>nextValueForAlertID</code> in <code>ctState</code> instance should be equal to the one @pre incremented by one.
Post-Condition (protocol)	
PostP 1	A new crisis event is created and initialised with a new crisis event ID which is the <code>nextValueForAlertID@pre</code> in <code>ctState</code> and a geographical position of the crisis event (which is used to illustrate the pin on <code>AdtMapWithPin</code>).

continues in next page ...

...Operation table continuation

PostP 2	The new crisis event is then associated with the <code>actCentralCoordinator</code> who created this instance, two <code>ctDispatchCoordinators</code> selected by PostF 1 and their mode are set to <code>hasBeenAssociatedToACrisisEvent</code> , a <code>ctHuman</code> which may be initialised, if it is not yet in the database, with his/her phone number as the unique id, a name and a type (witness/victim), a <code>ctMapWithPin</code> which is initialised using the geographical position of the crisis event, illustrated as a pin, and a google map image that shows the 15km surroundings of 15km of that pin, <code>ctComments</code> which is initialised if the actor has given some additional comments to the crisis event.
PostP 3	The actor's mode is set to <code>isInMain</code> .

5.2.3 Operation Model for oeRequestCrisisEventLocation

The `oeRequestCrisisEventLocation` operation has the following properties:

OPERATION	
<i>oeRequestCrisisEventLocation</i>	
sent to request a crisis event's location.	
Parameters	
1	<code>AdtPhoneNumber: dtPhoneNumber</code>
Return type	
<code>ptBoolean</code>	
Pre-Condition (protocol)	
PreP 1	The actor's mode has been set to <code>isAddEvent</code> .
Pre-Condition (functional)	
PreF 1	it is supposed that the phone number given by the <code>CentralCoordinator</code> is always sent to the correct communication company.
Post-Condition (functional)	
PostF 1	the phone number can be identified by the communication company.
Post-Condition (protocol)	
PostP 1	The communication company's mode is set to <code>isInRequest</code> .

5.3 Environment - Out Interface Operation Scheme for actCommunicationCompany**5.3.1 Operation Model for oeReceiveCrisisEventLocation**

The `oeReceiveCrisisEventLocation` operation has the following properties:

OPERATION	
<i>oeReceiveCrisisEventLocation</i>	
sent to get a map with pin returned to the central coordinator.	
Parameters	

continues in next page ...

... Operation table continuation

1	AdtGeoPos: dtGeoPos
<i>Return type</i>	
ptBoolean	
<i>Pre-Condition (protocol)</i>	
PreP 1	The actor's mode has been set to <code>isInRequest</code> .
<i>Pre-Condition (functional)</i>	
PreF 1	the GeoPos given by the communication company is a valid one.
<i>Post-Condition (functional)</i>	
PostF 1	the map with pins returned to the CentralCoordinator includes a pin of the crisis event's location.
<i>Post-Condition (protocol)</i>	
PostP 1	The actor's mode has been set to <code>isInStandBy</code> .

5.4 Environment - Out Interface Operation Scheme for actFiremenCoordinator

5.4.1 Operation Model for oeRequestHelp

The `oeRequestHelp` operation has the following properties:

OPERATION	
<i>oeRequestHelp</i>	
1	sent to request help from the corresponding team type.
<i>Parameters</i>	
1	AetTeamType: etTeamType
2	ARRequestedNumber: ptInteger
<i>Return type</i>	
ptBoolean	
<i>Pre-Condition (protocol)</i>	
PreP 1	the coordinator has been associated to a crisis event.
<i>Pre-Condition (functional)</i>	
PreF 1	it is supposed that a dispatched coordinator can only be associated to one crisis event at the same time.
<i>Post-Condition (functional)</i>	
PostF 1	An alert message is sent to the nearest and free requested coordinator type.
<i>Post-Condition (protocol)</i>	
PostP 1	The selected ctDispatchCoordinator's attribute <code>isFree</code> is set to false and can thus no more be associated to another crisis event.

5.5 Environment - Actor Operation Schemes

There are no elements in this category in the system analysed.

5.6 Primary Types - Operation Schemes for Classes

There are no elements in this category in the system analysed.

5.7 Primary Types - Operation Schemes for Datatypes

There are no elements in this category in the system analysed.

5.8 Primary Types - Operation Schemes for Enumerations

There are no elements in this category in the system analysed.

5.9 Secondary Types - Operation Schemes for Classes

There are no elements in this category in the system analysed.

5.10 Secondary Types - Operation Schemes for Datatypes

There are no elements in this category in the system analysed.

5.11 Secondary Types - Operation Schemes for Enumerations

There are no elements in this category in the system analysed.

Chapter 6

Test Model(s)

There are no elements in this category in the system analysed.

Chapter 7

Additional Constraints

Appendix A

Undocumented Messir Specification Elements

A.1 Undocumented Use Cases

A.1.1 Undocumented Subfunction Level Use Cases

- lu.uni.lassy.excalibur.group09.spec.usecases.oeCloseCrisisEvent
- lu.uni.lassy.excalibur.group09.spec.usecases.oeCreateNewCrisisEvent
- lu.uni.lassy.excalibur.group09.spec.usecases.oeGetCrisisEventInformation
- lu.uni.lassy.excalibur.group09.spec.usecases.oeAddNewCrisisEvent
- lu.uni.lassy.excalibur.group09.spec.usecases.oeMessage
- lu.uni.lassy.excalibur.group09.spec.usecases.oeRefreshMap
- lu.uni.lassy.excalibur.group09.spec.usecases.oeRequestCrisisEventLocation
- lu.uni.lassy.excalibur.group09.spec.usecases.oeRequestHelp
- lu.uni.lassy.excalibur.group09.spec.usecases.oeReceiveCrisisEventLocation
- lu.uni.lassy.excalibur.group09.spec.usecases.oeUpdateDispatchStatus

A.2 Undocumented Primary Types

A.2.1 Undocumented Primary Enumeration Types

- lu.uni.lassy.excalibur.group09.spec.concepts.primarytypes.datatypes.etCentralCoordinatorMode
- lu.uni.lassy.excalibur.group09.spec.concepts.primarytypes.datatypes.etComCompanyMode
- lu.uni.lassy.excalibur.group09.spec.concepts.primarytypes.datatypes.etDispatchCoordinatorMode

A.3 Undocumented Operation Specifications

- lu.uni.lassy.excalibur.group09.spec.concepts.primarytypes.classes.ctMapWithPin.addPinToMap
- lu.uni.lassy.excalibur.group09.spec.concepts.primarytypes.classes.ctMapWithPin.removePinFromMap
- lu.uni.lassy.excalibur.group09.spec.concepts.primarytypes.datatypes.etCentralCoordinatorMode.is
- lu.uni.lassy.excalibur.group09.spec.concepts.primarytypes.datatypes.etComCompanyMode.is
- lu.uni.lassy.excalibur.group09.spec.concepts.primarytypes.datatypes.etDispatchCoordinatorMode.is

Appendix B

Messir Specification Files Listing

B.1 File ./src-gen/messir-spec/.views.msr

```
1 //  
2 //DON'T TOUCH THIS FILE !!!  
3 //  
4 package uidff8a216549a64951bf055c8b5a9dde2a {  
5   Concept Model {}  
6 }
```

Listing B.1: Messir Spec. file .views.msr.

B.2 File ./src-gen/messir-spec/operations/environment/environment-actAbstractDispatchCoordinator-oeCloseCrisisEvent.msr

```
1 package lu.uni.lassy.excalibur.group09.spec.environment.operations.actAbstractDispatchCoordinator.  
    outactAbstractDispatchCoordinator.oeCloseCrisisEvent {  
2  
3   import lu.uni.lassy.messir.libraries.primitives  
4   import lu.uni.lassy.messir.libraries.math  
5   import lu.uni.lassy.messir.libraries.string  
6   import lu.uni.lassy.messir.libraries.calendar  
7   import lu.uni.lassy.excalibur.group09.spec.concepts.secondarytypes.datatypes  
8   import lu.uni.lassy.excalibur.group09.spec.concepts.primarytypes.datatypes  
9  
10  Operation Model {  
11  
12    operation: lu.uni.lassy.excalibur.group09.spec.environment.actAbstractDispatchCoordinator.  
        outactAbstractDispatchCoordinator.oeCloseCrisisEvent():ptBoolean{  
13      // include below the specification information (pre, post or ocl or prolog)  
14  
15    }  
16  }  
17 }
```

Listing B.2: Messir Spec. file environment-actAbstractDispatchCoordinator-oeCloseCrisisEvent.msr.

B.3 File ./src-gen/messir-spec/operations/environment/environment-actAbstractDispatchCoordinator-oeGetCrisisEventInformation.msr

```
1 package lu.uni.lassy.excalibur.group09.spec.environment.operations.actAbstractDispatchCoordinator.  
    outactAbstractDispatchCoordinator.oeGetCrisisEventInformation {  
2  
3   import lu.uni.lassy.messir.libraries.primitives  
4   import lu.uni.lassy.messir.libraries.math  
5   import lu.uni.lassy.messir.libraries.string  
6   import lu.uni.lassy.messir.libraries.calendar
```

```

7 import lu.uni.lassy.excalibur.group09.spec.concepts.secondarytypes.datatypes
8 import lu.uni.lassy.excalibur.group09.spec.concepts.primarytypes.datatypes
9
10 Operation Model {
11
12   operation: lu.uni.lassy.excalibur.group09.spec.environment.actAbstractDispatchCoordinator.
      outactAbstractDispatchCoordinator.oeGetCrisisEventInformation(AdtGeoPos:dtGeoPos):ptBoolean{
13   // include below the specification information (pre,post or ocl or prolog)
14
15   }
16 }
17 }
```

Listing B.3: Messir Spec. file environment-actAbstractDispatchCoordinator-oeGetCrisisEventInformation.msr.

B.4 File ./src-gen/messir-spec/operations/environment/environment-actAbstractDispatchCoordinator-oeMessage.msr

```

1 package lu.uni.lassy.excalibur.group09.spec.environment.operations.actAbstractDispatchCoordinator.
  outactAbstractDispatchCoordinator.oeMessage {
2
3 import lu.uni.lassy.messir.libraries.primitives
4 import lu.uni.lassy.messir.libraries.math
5 import lu.uni.lassy.messir.libraries.string
6 import lu.uni.lassy.messir.libraries.calendar
7 import lu.uni.lassy.excalibur.group09.spec.concepts.secondarytypes.datatypes
8 import lu.uni.lassy.excalibur.group09.spec.concepts.primarytypes.datatypes
9
10 Operation Model {
11
12   operation: lu.uni.lassy.excalibur.group09.spec.environment.actAbstractDispatchCoordinator.
      outactAbstractDispatchCoordinator.oeMessage(AdtComment:dtComment):ptBoolean{
13   // include below the specification information (pre,post or ocl or prolog)
14
15   }
16 }
17 }
```

Listing B.4: Messir Spec. file environment-actAbstractDispatchCoordinator-oeMessage.msr.

B.5 File ./src-gen/messir-spec/operations/environment/environment-actAbstractDispatchCoordinator-oeRefreshMap.msr

```

1 package lu.uni.lassy.excalibur.group09.spec.environment.operations.actAbstractDispatchCoordinator.
  outactAbstractDispatchCoordinator.oeRefreshMap {
2
3 import lu.uni.lassy.messir.libraries.primitives
4 import lu.uni.lassy.messir.libraries.math
5 import lu.uni.lassy.messir.libraries.string
6 import lu.uni.lassy.messir.libraries.calendar
7 import lu.uni.lassy.excalibur.group09.spec.concepts.secondarytypes.datatypes
8 import lu.uni.lassy.excalibur.group09.spec.concepts.primarytypes.datatypes
9
10 Operation Model {
11
12   operation: lu.uni.lassy.excalibur.group09.spec.environment.actAbstractDispatchCoordinator.
      outactAbstractDispatchCoordinator.oeRefreshMap(AdtGeoPos:dtGeoPos):ptBoolean{
13   // include below the specification information (pre,post or ocl or prolog)
14
15   }
16 }
17 }
```

Listing B.5: Messir Spec. file environment-actAbstractDispatchCoordinator-oeRefreshMap.msr.

B.6 File ./src-gen/messir-spec/operations/environment/environment-actAbstractDispatchCoordinator-oeUpdateDispatchStatus.msr

```

1 package lu.uni.lassy.excalibur.group09.spec.environment.operations.actAbstractDispatchCoordinator.
    outactAbstractDispatchCoordinator.oeUpdateDispatchStatus {
2
3 import lu.uni.lassy.messir.libraries.primitives
4 import lu.uni.lassy.messir.libraries.math
5 import lu.uni.lassy.messir.libraries.string
6 import lu.uni.lassy.messir.libraries.calendar
7 import lu.uni.lassy.excalibur.group09.spec.concepts.secondarytypes.datatypes
8 import lu.uni.lassy.excalibur.group09.spec.concepts.primarytypes.datatypes
9
10 Operation Model {
11
12     operation: lu.uni.lassy.excalibur.group09.spec.environment.actAbstractDispatchCoordinator.
        outactAbstractDispatchCoordinator.oeUpdateDispatchStatus(AetDispatchStatus:etDispatchStatus):
            ptBoolean{
13         // include below the specification information (pre,post or ocl or prolog)
14
15     }
16 }
17 }
```

Listing B.6: Messir Spec. file environment-actAbstractDispatchCoordinator-oeUpdateDispatchStatus.msr.

B.7 File ./src-gen/messir-spec/operations/environment/environment-actCentralCoordinator-oeAddNewCrisisEvent.msr

```

1 package lu.uni.lassy.excalibur.group09.spec.environment.operations.actCentralCoordinator.
    outactCentralCoordinator.oeAddNewCrisisEvent {
2
3 import lu.uni.lassy.messir.libraries.primitives
4 import lu.uni.lassy.messir.libraries.math
5 import lu.uni.lassy.messir.libraries.string
6 import lu.uni.lassy.messir.libraries.calendar
7
8 Operation Model {
9
10     operation: lu.uni.lassy.excalibur.group09.spec.environment.actCentralCoordinator.
        outactCentralCoordinator.oeAddNewCrisisEvent():ptBoolean{
11         // include below the specification information (pre,post or ocl or prolog)
12
13     }
14 }
15 }
```

Listing B.7: Messir Spec. file environment-actCentralCoordinator-oeAddNewCrisisEvent.msr.

B.8 File ./src-gen/messir-spec/operations/environment/environment-actCentralCoordinator-oeConfirmCrisisEventLocation.msr

```

1 //package lu.uni.lassy.excalibur.group09.spec.environment.operations.actCentralCoordinator.
    outactCentralCoordinator.oeConfirmCrisisEventLocation {
2 //
3 //import lu.uni.lassy.messir.libraries.primitives
4 //import lu.uni.lassy.messir.libraries.math
5 //import lu.uni.lassy.messir.libraries.string
6 //import lu.uni.lassy.messir.libraries.calendar
7 //
8 // Operation Model {
9 //
10 //     operation: lu.uni.lassy.excalibur.group09.spec.environment.actCentralCoordinator.
        outactCentralCoordinator.oeConfirmCrisisEventLocation():ptBoolean{
```

```

11 //  // include below the specification information (pre,post or ocl or prolog)
12 //
13 //
14 //
15 //

```

Listing B.8: Messir Spec. file environment-actCentralCoordinator-oeConfirmCrisisEventLocation.msr.

B.9 File ./src-gen/messir-spec/operations/environment/environment-actCentralCoordinator-oeCreateNewCrisisEvent.msr

```

1 package lu.uni.lassy.excalibur.group09.spec.environment.operations.actCentralCoordinator.
    outactCentralCoordinator.oeCreateNewCrisisEvent {
2
3 import lu.uni.lassy.messir.libraries.primitives
4 import lu.uni.lassy.messir.libraries.math
5 import lu.uni.lassy.messir.libraries.string
6 import lu.uni.lassy.messir.libraries.calendar
7 import lu.uni.lassy.excalibur.group09.spec.concepts.secondarytypes.datatypes
8 import lu.uni.lassy.excalibur.group09.spec.concepts.primarytypes.datatypes
9
10 Operation Model {
11
12     operation: lu.uni.lassy.excalibur.group09.spec.environment.actCentralCoordinator.
            outactCentralCoordinator.oeCreateNewCrisisEvent(AdtName:ptString, AetHumanType:etHumanType,
            AdtPhoneNumber:dtPhoneNumber, AdtMapWithPin:dtMapWithPin, AdtComment:dtComment) :ptBoolean{
13     // include below the specification information (pre,post or ocl or prolog)
14
15 }
16
17 }

```

Listing B.9: Messir Spec. file environment-actCentralCoordinator-oeCreateNewCrisisEvent.msr.

B.10 File ./src-gen/messir-spec/operations/environment/environment-actCentralCoordinator-oeInitialiseNewCrisisEvent.msr

```

1 //package lu.uni.lassy.excalibur.group09.spec.environment.operations.actCentralCoordinator.
    outactCentralCoordinator.oeInitialiseNewCrisisEvent {
2 //
3 //import lu.uni.lassy.messir.libraries.primitives
4 //import lu.uni.lassy.messir.libraries.math
5 //import lu.uni.lassy.messir.libraries.string
6 //import lu.uni.lassy.messir.libraries.calendar
7 //
8 // Operation Model {
9 //
10 //   operation: lu.uni.lassy.excalibur.group09.spec.environment.actCentralCoordinator.
        outactCentralCoordinator.oeInitialiseNewCrisisEvent() :ptBoolean(
11 //   // include below the specification information (pre,post or ocl or prolog)
12 //
13 //
14 //
15 //

```

Listing B.10: Messir Spec. file environment-actCentralCoordinator-oeInitialiseNewCrisisEvent.msr.

B.11 File ./src-gen/messir-spec/operations/environment/environment-actCentralCoordinator-oeRequestCrisisEventLocation.msr

```

1 package lu.uni.lassy.excalibur.group09.spec.environment.operations.actCentralCoordinator.
    outactCentralCoordinator.oeRequestCrisisEventLocation {
2
3 import lu.uni.lassy.messir.libraries.primitives

```

B.12. FILE /.../ENVIRONMENT-ACTCOMMUNICATIONCOMPANY-OERECEIVECRISISEVENTLOCATION.MSR

```
4 import lu.uni.lassy.messir.libraries.math
5 import lu.uni.lassy.messir.libraries.string
6 import lu.uni.lassy.messir.libraries.calendar
7 import lu.uni.lassy.excalibur.group09.spec.concepts.primarytypes.datatypes
8 import lu.uni.lassy.excalibur.group09.spec.concepts.secondarytypes.datatypes
9
10 Operation Model {
11
12   operation: lu.uni.lassy.excalibur.group09.spec.environment.actCentralCoordinator.
13     outactCentralCoordinator.oeRequestCrisisEventLocation(AdtPhoneNumber:dtPhoneNumber):ptBoolean{
14   // include below the specification information (pre,post or ocl or prolog)
15   preP {
16     let AvpStarted: ptBoolean in
17     self.rnActor.rnSystem.vpStarted = AvpStarted
18     and AvpStarted = true
19   }
20   preF { true }
21
22 postF {
23   let TheactYou:lu.uni.lassy.excalibur.group09.spec.environment.actCentralCoordinator in
24   let AptString:ptString in
25   /* Post Functional:*/
26   /* PostF01 */
27   AptString = 'Hello World !'
28   and TheactYou.InterfaceIN = self.rnActor.InterfaceIN
29   and TheactYou.InterfaceIN^ieHelloWorld(AptString)
30 }
31
32 postP { true }
33 }
34 }
35 }
```

Listing B.11: Messir Spec. file
environment-actCentralCoordinator-oeRequestCrisisEventLocation.msr.

B.12 File ./src-gen/messir-spec/operations/environment/environment-actCommunicationCompany-oeReceiveCrisisEventLocation.msr

```
1 package lu.uni.lassy.excalibur.group09.spec.environment.operations.actCommunicationCompany.
2   outactCommunicationCompany.oeReceiveCrisisEventLocation {
3
4   import lu.uni.lassy.messir.libraries.primitives
5   import lu.uni.lassy.messir.libraries.math
6   import lu.uni.lassy.messir.libraries.string
7   import lu.uni.lassy.messir.libraries.calendar
8   import lu.uni.lassy.excalibur.group09.spec.concepts.secondarytypes.datatypes
9   import lu.uni.lassy.excalibur.group09.spec.concepts.primarytypes.datatypes
10
11 Operation Model {
12
13   operation: lu.uni.lassy.excalibur.group09.spec.environment.actCommunicationCompany.
14     outactCommunicationCompany.oeReceiveCrisisEventLocation(AdtGeoPos:dtGeoPos):ptBoolean{
15   // include below the specification information (pre,post or ocl or prolog)
16
17 }
```

Listing B.12: Messir Spec. file
environment-actCommunicationCompany-oeReceiveCrisisEventLocation.msr.

B.13 File ./src-gen/messir-spec/operations/environment/environment-actFiremenCoordinator-oeRequestHelp.msr

```

1 package lu.uni.lassy.excalibur.group09.spec.environment.operations.actFiremenCoordinator.
  outactFiremenCoordinator.oeRequestHelp {
2
3   import lu.uni.lassy.messir.libraries.primitives
4   import lu.uni.lassy.messir.libraries.math
5   import lu.uni.lassy.messir.libraries.string
6   import lu.uni.lassy.messir.libraries.calendar
7   import lu.uni.lassy.excalibur.group09.spec.concepts.secondarytypes.datatypes
8   import lu.uni.lassy.excalibur.group09.spec.concepts.primarytypes.datatypes
9
10 Operation Model {
11
12   operation: lu.uni.lassy.excalibur.group09.spec.environment.actFiremenCoordinator.
      outactFiremenCoordinator.oeRequestHelp(AetTeamType:etTeamType, ARequestedNumber:ptInteger):
        ptBoolean{
13     // include below the specification information (pre,post or ocl or prolog)
14
15   }
16 }
17 }
```

Listing B.13: Messir Spec. file environment-actFiremenCoordinator-oeRequestHelp.msr.

B.14 File ./src-gen/messir-spec/environment/environment.msr

```

1 /*
2 * @author Kira
3 * @date Tue Oct 25 23:54:03 CEST 2016
4 */
5
6 package lu.uni.lassy.excalibur.group09.spec.environment {
7
8   import lu.uni.lassy.messir.libraries.calendar
9   import lu.uni.lassy.messir.libraries.math
10  import lu.uni.lassy.messir.libraries.primitives
11  import lu.uni.lassy.messir.libraries.string
12  import lu.uni.lassy.excalibur.group09.spec.concepts.primarytypes.datatypes
13  import lu.uni.lassy.excalibur.group09.spec.concepts.secondarytypes.datatypes
14
15 Environment Model {
16
17   actor actCentralCoordinator role rnactCentralCoordinator cardinality [1..*] {
18
19     attribute mode: etCentralCoordinatorMode
20     operation init():ptBoolean
21
22     input interface inactCentralCoordinator {
23       operation ieReceiveCrisisEventLocation(AdtMapWithPin:dtMapWithPin) : ptBoolean
24       operation ieMessageCentralCoordinator(AdtComment:dtComment) : ptBoolean
25     }
26
27     output interface outactCentralCoordinator {
28       operation oeAddNewCrisisEvent() : ptBoolean
29       operation oeRequestCrisisEventLocation(AdtPhoneNumber:dtPhoneNumber) : ptBoolean
30       operation oeCreateNewCrisisEvent(AdtName:ptString, AetHumanType:etHumanType, AdtPhoneNumber:
          dtPhoneNumber, AdtMapWithPin:dtMapWithPin, AdtComment:dtComment) : ptBoolean
31     }
32   }
33
34   actor actCommunicationCompany role rnactCommunicationCompany cardinality [1..*] {
35
36     attribute mode: etComCompanyMode
37     operation init() : ptBoolean
38
39     input interface inactCommunicationCompany {
40       operation ieRequestCrisisEventLocation(AdtPhoneNumber:dtPhoneNumber) : ptBoolean
41     }
42
43     output interface outactCommunicationCompany {
```

```

44     operation oeReceiveCrisisEventLocation(AdtGeoPos:dtGeoPos) : ptBoolean
45   }
46 }
47
48 actor actAbstractDispatchCoordinator role rnactAbstractDispatchCoordinator cardinality [1...*] {
49
50   operation init() : ptBoolean
51
52   input interface inactAbstractDispatchCoordinator {
53     operation ieReceiveNewCrisisEvent(AdtCrisisID:dtCrisisID, AdtComment:dtComment) : ptBoolean
54     operation ieReceiveCrisisEventInformation(AdtName:ptString, AetHumanType:etHumanType,
55       AdtPhoneNumber:dtPhoneNumber, AdtMapWithPin:dtMapWithPin, AdtComment:dtComment) : ptBoolean
56     operation ieMessageAbstractDispatchCoordinator(AdtComment: dtComment) : ptBoolean
57     operation ieReceiveMap(AdtMapWithPin: dtMapWithPin) : ptBoolean
58   }
59
60   output interface outactAbstractDispatchCoordinator {
61     operation oeGetCrisisEventInformation(AdtGeoPos:dtGeoPos) : ptBoolean
62     operation oeMessage(AdtComment:dtComment) : ptBoolean
63     operation oeUpdateDispatchStatus(AetDispatchStatus:etDispatchStatus): ptBoolean
64     operation oeRefreshMap(AdtGeoPos:dtGeoPos) : ptBoolean
65     operation oeCloseCrisisEvent(): ptBoolean
66   }
67
68 actor actFiremenCoordinator role rnactFiremenCoordinator cardinality [1...*] extends
69   actAbstractDispatchCoordinator {
70
71   operation init() : ptBoolean
72
73   input interface inactFiremenCoordinator {
74   }
75
76   output interface outactFiremenCoordinator {
77     operation oeRequestHelp(AetTeamType: etTeamType, ARRequestedNumber:ptInteger) : ptBoolean
78   }
79
80 actor actPoliceCoordinator role rnPoliceCoordinator cardinality [1...*] extends
81   actAbstractDispatchCoordinator {
82
83   operation init() : ptBoolean
84
85   input interface inactPoliceCoordinator {
86   }
87
88   output interface outactPoliceCoordinator {
89   }
90
91 actor actTowServiceCoordinator role rnTowServiceCoordinator cardinality [1...*] extends
92   actAbstractDispatchCoordinator {
93
94   operation init() : ptBoolean
95
96   input interface inactTowServiceCoordinator {
97   }
98
99   output interface outactTowServiceCoordinator {
100  }
101
102 }
103 }
```

Listing B.14: Messir Spec. file environment.msr.

B.15 File ./src-gen/messir-spec/concepts/primarytypes-
associations/primarytypes-associations.msr

```

1 /*
2 * @author Kira
3 * @date Tue Oct 25 23:54:03 CEST 2016
4 */
5
6 package lu.uni.lassy.excalibur.group09.spec.concepts.primarytypes.associations {
7
8 import lu.uni.lassy.messir.libraries.calendar
9 import lu.uni.lassy.messir.libraries.math
10 import lu.uni.lassy.messir.libraries.primitives
11 import lu.uni.lassy.messir.libraries.string
12 import lu.uni.lassy.excalibur.group09.spec.concepts.primarytypes.classes
13 import lu.uni.lassy.excalibur.group09.spec.environment
14
15 Concept Model {
16
17 Primary Types {
18
19 association assctCrisisEventctHuman
20 ctCrisisEvent(rnctCrisisEvent) [1..1]
21 ctHuman(rnctHuman) [1..*]
22
23 association assctCrisisEventctMapWithPin
24 ctCrisisEvent(rnctCrisisEvent) [1..1]
25 ctMapWithPin(rndtMapWithPin) [1..1]
26
27 association assDispatchedCoordinatorctMapWithPin
28 ctDispatchedCoordinator(rnctDispatchedCoordinator) [1..1]
29 ctMapWithPin(rndtMapWithPin) [1..1]
30
31 association assClassActorDispatchCoordinator
32 ctDispatchedCoordinator(rnctDispatchedCoordinator) [1..1]
33 actAbstractDispatchCoordinator(rnactAbstractDispatchCoordinator) [1..1]
34
35 association assctDispatchedCoordinatorctCrisisEvent
36 ctDispatchedCoordinator(rnctDispatchedCoordinator) [2..*]
37 ctCrisisEvent(rnctCrisisEvent) [1..1]
38
39 association assctCommentctCrisisEvent
40 ctComment(rnctComment) [0..*]
41 ctCrisisEvent(rnctCrisisEvent) [1..1]
42
43 association assctCommentctDispatchedCoordinator
44 ctComment(rnctComment) [0..*]
45 ctDispatchedCoordinator(rnctDispatchedCoordinator) [1..1]
46
47 association assctCommentactCentralCoordinator
48 ctComment(rnctComment) [0..*]
49 actCentralCoordinator(rnactCentralCoordinator) [1..1]
50
51 association assctCrisisEventactCentralCoordinator
52 ctCrisisEvent(ctCrisisEvent) [0..*]
53 actCentralCoordinator(rnactCentralCoordinator) [1..1]
54 }
55 }
56 }
```

Listing B.15: Messir Spec. file primarytypes-associations.msr.

B.16 File ./src-gen/messir-spec/concepts/primarytypes-
classes/primarytypes-classes.msr

```
1 /*
```

```

2 * @author Kira
3 * @date Tue Oct 25 23:54:03 CEST 2016
4 */
5
6 package lu.uni.lassy.excalibur.group09.spec.concepts.primarytypes.classes {
7
8 import lu.uni.lassy.messir.libraries.calendar
9 import lu.uni.lassy.messir.libraries.math
10 import lu.uni.lassy.messir.libraries.primitives
11 import lu.uni.lassy.messir.libraries.string
12 import lu.uni.lassy.excalibur.group09.spec.concepts.primarytypes.datatypes
13 import lu.uni.lassy.excalibur.group09.spec.concepts.secondarytypes.datatypes
14
15 import lu.uni.lassy.messir.libraries.primitives
16
17 Concept Model {
18
19 Primary Types {
20
21   state class ctState {
22     attribute vpStarted: ptBoolean
23     attribute nextValueForAlertID:ptInteger
24     operation init( ANextValueForAlertID:ptInteger,
25                   AvpStarted:ptBoolean
26     ) : ptBoolean
27   }
28
29   class ctHuman role rnHuman cardinality [1..*] {
30     attribute id: dtPhoneNumber
31     attribute name: ptString
32     attribute type: etHumanType
33
34     operation init( Aid:dtPhoneNumber,
35                   Aname:ptString,
36                   Atype:etHumanType
37     ) : ptBoolean
38
39   }
40
41   class ctCrisisEvent role rnCrisisEvent cardinality [1..*] {
42     attribute id: dtCrisisID
43     attribute geoPos: dtGeoPos
44
45     operation init( Aid:dtCrisisID,
46                   AgeoPos:dtGeoPos
47     ) : ptBoolean
48
49   }
50
51   class ctComment role rnComment cardinality [0..*] {
52     attribute comment: dtComment
53
54     operation init( AComment: dtComment
55
56     ) : ptBoolean
57   }
58
59   class ctDispatchedCoordinator role rnDispatchedCoordinator cardinality [1..*] {
60     attribute type: etTeamType
61     attribute status: etDispatchStatus
62     attribute geoPos: dtGeoPos
63     attribute isFree: ptBoolean
64     attribute mode: etDispatchCoordinatorMode
65
66     operation init( Atype:etTeamType,
67                   Astatus:etDispatchStatus,
68                   AgeoPos:dtGeoPos,
69                   AisFree:ptBoolean,
70                   Amode:etDispatchCoordinatorMode
71     ) : ptBoolean

```

```

72  }
73
74 class ctMapWithPin role rnMapWithPin cardinality [1..*] {
75   attribute mapWithPin: dtMapWithPin
76
77   operation init( AmapWithPin:dtMapWithPin
78   ) : ptBoolean
79
80   operation removePinFromMap(AGeoPos:dtGeoPos, AdtMapWithPin:dtMapWithPin) : ptBoolean
81   operation addPinToMap(AGeoPos:dtGeoPos, AdtMapWithPin:dtMapWithPin) : ptBoolean
82 }
83
84 }
85 }
86 }
```

Listing B.16: Messir Spec. file primarytypes-classes.msr.

B.17 File [./src-gen/messir-spec/concepts/primarytypes-datatatypes/primarytypes-datatatypes.msr](#)

```

1 /*
2 * @author Kira
3 * @date Tue Oct 25 23:54:03 CEST 2016
4 */
5
6 package lu.uni.lassy.excalibur.group09.spec.concepts.primarytypes.datatypes {
7
8   import lu.uni.lassy.messir.libraries.calendar
9   import lu.uni.lassy.messir.libraries.math
10  import lu.uni.lassy.messir.libraries.primitives
11  import lu.uni.lassy.messir.libraries.string
12  import lu.uni.lassy.excalibur.group09.spec.concepts.secondarytypes.datatypes
13
14 Concept Model {
15
16   Primary Types {
17
18     datatype dtGeoPos {
19       attribute latitude:dtLatitude
20       attribute longitude:dtLongitude
21       operation is():ptBoolean
22     }
23
24     enum etDispatchStatus {
25       constants["InStation", "InTransit", "Arrived"]
26       operation is():ptBoolean
27     }
28
29     enum etHumanType {
30       constants["Victim", "Witness"]
31       operation is():ptBoolean
32     }
33
34     enum etTeamType {
35       constants["Ambulance", "Police", "TowService"]
36       operation is():ptBoolean
37     }
38
39     enum etCentralCoordinatorMode {
40       constants["isInMain", "isInAddEvent"]
41       operation is():ptBoolean
42     }
43
44     enum etDispatchCoordinatorMode {
45       constants["isAssociatedToACrisisEvent", "isInStandBy"]
46       operation is():ptBoolean
47     }
}
```

```

48
49     enum etComCompanyMode {
50         constants["isInRequest", "isInStandBy"]
51         operation is():ptBoolean
52     }
53 }
54 }
55 }
```

Listing B.17: Messir Spec. file primarytypes-datatypes.msr.

B.18 File [./src-gen/messir-spec/concepts/secondarytypes-associations/secondarytypes-associations.msr](#)

```

1 /*
2 * @author Kira
3 * @date Tue Oct 25 23:54:03 CEST 2016
4 */
5
6 package lu.uni.lassy.excalibur.group09.spec.concepts.secondarytypes.associations {
7
8 import lu.uni.lassy.messir.libraries.calendar
9 import lu.uni.lassy.messir.libraries.math
10 import lu.uni.lassy.messir.libraries.primitives
11 import lu.uni.lassy.messir.libraries.string
12
13 Concept Model {
14
15 Secondary Types {
16
17 }
18 }
19 }
```

Listing B.18: Messir Spec. file secondarytypes-associations.msr.

B.19 File [./src-gen/messir-spec/concepts/secondarytypes-classes/secondarytypes-classes.msr](#)

```

1 /*
2 * @author Kira
3 * @date Tue Oct 25 23:54:03 CEST 2016
4 */
5
6 package lu.uni.lassy.excalibur.group09.spec.concepts.secondarytypes.classes {
7
8 import lu.uni.lassy.messir.libraries.calendar
9 import lu.uni.lassy.messir.libraries.math
10 import lu.uni.lassy.messir.libraries.primitives
11 import lu.uni.lassy.messir.libraries.string
12
13 Concept Model {
14
15 Secondary Types {
16
17 }
18 }
19 }
```

Listing B.19: Messir Spec. file secondarytypes-classes.msr.

B.20 File [./src-gen/messir-spec/concepts/secondarytypes-datatypes/secondarytypes-datatypes.msr](#)

```

1 /*
2 * @author Kira
3 * @date Tue Oct 25 23:54:03 CEST 2016
4 */
5
6 package lu.uni.lassy.excalibur.group09.spec.concepts.secondarytypes.datatypes {
7
8 import lu.uni.lassy.messir.libraries.calendar
9 import lu.uni.lassy.messir.libraries.math
10 import lu.uni.lassy.messir.libraries.primitives
11 import lu.uni.lassy.messir.libraries.string
12 import lu.uni.lassy.excalibur.group09.spec.concepts.primarytypes.datatypes
13
14 Concept Model {
15
16 Secondary Types {
17
18 datatype dtPhoneNumber extends dtString {
19     operation is() : ptBoolean
20 }
21
22 datatype dtAddress extends dtString {
23     operation is() : ptBoolean
24 }
25
26 datatype dtCrisisID extends dtInteger {
27     operation is() : ptBoolean
28 }
29
30 datatype dtLongitude extends dtReal {
31     operation is() : ptBoolean
32 }
33
34 datatype dtLatitude extends dtReal {
35     operation is() : ptBoolean
36 }
37
38 datatype dtImage extends dtString {
39     operation is() : ptBoolean
40 }
41
42 datatype dtMapWithPin extends dtImage {
43     operation is() : ptBoolean
44 }
45
46 datatype dtComment extends dtString {
47     operation is() : ptBoolean
48 }
49 }
50
51 }
52 }
```

Listing B.20: Messir Spec. file secondarytypes-datatatypes.msr.

B.21 File ./src-gen/messir-spec/tests/tests.msr

```

1 /*
2 * @author Kira
3 * @date Tue Oct 25 23:54:03 CEST 2016
4 */
5
6 package lu.uni.lassy.excalibur.group09.spec.tests {
7
8 import lu.uni.lassy.messir.libraries.calendar
9 import lu.uni.lassy.messir.libraries.math
10 import lu.uni.lassy.messir.libraries.primitives
11 import lu.uni.lassy.messir.libraries.string
12
```

```

13 Test Model {
14
15 }
16
17 }
```

Listing B.21: Messir Spec. file tests.msr.

B.22 File ../src-gen/messir-spec/usecases/usecaseinstance-ugCreateNewCrisisEvent-uciugCreateNewCrisisEvent.msr

```

1 package usecases.uciugCreateNewCrisisEvent {
2   import lu.uni.lassy.excalibur.group09.spec.usecases
3   import lu.uni.lassy.excalibur.group09.spec.usecases
4   import lu.uni.lassy.excalibur.group09.spec.environment
5   import lu.uni.lassy.excalibur.group09.spec.concepts.primarytypes.datatypes
6
7   Use Case Model {
8     use case instance uciugCreateNewCrisisEvent : ugCreateNewCrisisEvent {
9       actors {
10         Camille : actCentralCoordinator
11         Orange : actCommunicationCompany
12         Fabio : actFiremenCoordinator
13         Ted : actTowServiceCoordinator
14     }
15
16     use case steps {
17       Camille executed instanceof subfunction oeAddNewCrisisEvent() {
18     }
19
20       Camille executed instanceof subfunction oeRequestCrisisEventLocation("AdtPhoneNumber=691 12 34
21           56") {
22         ieRequestCrisisEventLocation("691 12 34 56") returned to Orange
23     }
24
25       Orange executed instanceof subfunction oeReceiveCrisisEventLocation("Latitude=75.08, Longitude
26           =23.03") {
27         ieReceiveCrisisEventLocation("A string for the image with the pins") returned to Camille
28     }
29
30       Camille executed instanceof subfunction oeCreateNewCrisisEvent("AdtName=Walter", "AenHumanType=
31           Witness", "AdtPhoneNumber=691123456", "A string for the image with the pins", "The Witness
32           can't stay at the accident's location for long.") {
33         ieReceiveNewCrisisEvent("1", "You have received a new Crisis Event Dispatch Order!") returned to
34             Fabio
35         ieReceiveNewCrisisEvent("1", "You have received a new Crisis Event Dispatch Order!") returned to
36             Ted
37     }
38   }
39 }
```

Listing B.22: Messir Spec. file usecaseinstance-ugCreateNewCrisisEvent-uciugCreateNewCrisisEvent.msr.

B.23 File ../src-gen/messir-spec/usecases/usecaseinstance-ugGlobalDispatchManagement-uciugGlobalDispatchManagement.msr

```

1 package usecases.uciugGlobalDispatchManagement {
2   import lu.uni.lassy.excalibur.group09.spec.usecases
3   import lu.uni.lassy.excalibur.group09.spec.usecases
4   import lu.uni.lassy.excalibur.group09.spec.environment
5   import lu.uni.lassy.excalibur.group09.spec.concepts.primarytypes.datatypes
```

```

6
7  Use Case Model {
8    use case instance uciugGlobalDispatchManagement : ugGlobalDispatchManagement {
9      actors {
10        Camille : actCentralCoordinator
11        Fabio : actFiremenCoordinator
12        Ted : actTowServiceCoordinator
13        Polo : actPoliceCoordinator
14      }
15      use case steps {
16        Fabio executed instanceof subfunction oeGetCrisisEventInformation() {
17          ieReceiveCrisisEventInformation("1","Walter","Witness","691123456","A string for the image
18            with the pins","The Witness can't stay at the accident's location for long.") returned to
19            Fabio
20        }
21
22        Fabio executed instanceof subfunction oeUpdateDispatchStatus("AenDispatchStatus=InTransit") {
23          ieMessageAbstractDispatchCoordinator("Dispatch Status Updated.") returned to Fabio
24        }
25
26        Ted executed instanceof subfunction oeGetCrisisEventInformation() {
27          ieReceiveCrisisEventInformation("1","Walter","Witness","691123456","A string for the image
28            with the pins","The Witness can't stay at the accident's location for long.") returned to
29            Ted
30        }
31
32        Ted executed instanceof subfunction oeRefreshMap("Latitude=80.57, Longitude=50.23") {
33          ieReceiveMap("A string for the image with the pins") returned to Ted
34        }
35
36        Ted executed instanceof subfunction oeMessage("AdtComment=I will arrive in 30 minutes") {
37          ieMessageCentralCoordinator("I will arrive in 30 minutes") returned to Camille
38          ieMessageAbstractDispatchCoordinator("I will arrive in 30 minutes") returned to Fabio
39          ieMessageAbstractDispatchCoordinator("I will arrive in 30 minutes") returned to Ted
40        }
41
42        Ted executed instanceof subfunction oeUpdateDispatchStatus("AenDispatchStatus=InTransit") {
43          ieMessageAbstractDispatchCoordinator("Dispatch Status Updated.") returned to Ted
44        }
45
46        Fabio executed instanceof subfunction oeUpdateDispatchStatus("AenDispatchStatus=Arrived") {
47          ieMessageAbstractDispatchCoordinator("Dispatch Status Updated.") returned to Fabio
48        }
49
50        Fabio executed instanceof subfunction oeRequestHelp("AenTeamType=Police", "RequestedNumber=1")
51          {
52            ieReceiveNewCrisisEvent("1","You have received a new Crisis Event Dispatch Order!") returned
53              to Polo
54        }
55
56        Polo executed instanceof subfunction oeGetCrisisEventInformation() {
57          ieReceiveCrisisEventInformation("1","Walter","Witness","691123456","A string for the image
58            with the pins","The Witness can't stay at the accident's location for long.") returned to
59            Polo
60        }
61
62        Polo executed instanceof subfunction oeUpdateDispatchStatus("AenDispatchStatus=InTransit") {
63          ieMessageAbstractDispatchCoordinator("Dispatch Status Updated.") returned to Polo
64        }
65
66        Ted executed instanceof subfunction oeUpdateDispatchStatus("AenDispatchStatus=Arrived") {
67          ieMessageAbstractDispatchCoordinator("Dispatch Status Updated.") returned to Ted
68        }
69
70        Polo executed instanceof subfunction oeUpdateDispatchStatus("AenDispatchStatus=Arrived") {
71          ieMessageAbstractDispatchCoordinator("Dispatch Status Updated.") returned to Polo
72        }
73
74        Fabio executed instanceof subfunction oeCloseCrisisEvent() {
75      }

```

```

68
69     Ted executed instanceof subfunction oeCloseCrisisEvent() {
70 }
71
72     Polo executed instanceof subfunction oeCloseCrisisEvent() {
73 }
74
75 }
76 }
77 }
78 }
```

Listing B.23: Messir Spec. file
usecaseinstance-ugGlobalDispatchManagement-uciugGlobalDispatchManagement.msr.

B.24 File ./src-gen/messir-spec/usecases/usecases.msr

```

1 /*
2 * @author Kira
3 * @date Tue Oct 25 23:54:03 CEST 2016
4 */
5
6 package lu.uni.lassy.excalibur.group09.spec.usecases {
7
8 import lu.uni.lassy.messir.libraries.calendar
9 import lu.uni.lassy.messir.libraries.math
10 import lu.uni.lassy.messir.libraries.primitives
11 import lu.uni.lassy.messir.libraries.string
12 import lu.uni.lassy.excalibur.group09.spec.environment
13 import lu.uni.lassy.excalibur.group09.spec.concepts.primarytypes.datatypes
14 import lu.uni.lassy.excalibur.group09.spec.concepts.secondarytypes.datatypes
15
16 Use Case Model {
17
18     use case system summary suGlobalManagementOfEvent() {
19         actor actCentralCoordinator[primary, active]
20         actor actCommunicationCompany[secondary, active]
21         actor actFiremenCoordinator[secondary,active]
22         actor actTowServiceCoordinator[secondary,active]
23
24         reuse ugCreateNewCrisisEvent[1...*]
25         reuse ugGlobalDispatchManagement[1...*]
26
27         step a: actCentralCoordinator executes ugCreateNewCrisisEvent
28         step b: actFiremenCoordinator executes ugGlobalDispatchManagement
29         step c: actTowServiceCoordinator executes ugGlobalDispatchManagement
30
31         ordering constraint "step (a) must be executed before step (b) or step (c)"
32         ordering constraint "step (b) XOR step (c)"
33
34     }
35
36     use case system usergoal ugCreateNewCrisisEvent() {
37         actor actCentralCoordinator[primary, active]
38         actor actCommunicationCompany[secondary, active]
39         actor actFiremenCoordinator[secondary, passive]
40         actor actTowServiceCoordinator[secondary, passive]
41
42         reuse oeAddNewCrisisEvent[1...*]
43         reuse oeRequestCrisisEventLocation[0...*]
44         reuse oeReceiveCrisisEventLocation[0...*]
45         reuse oeCreateNewCrisisEvent[1...*]
46
47         step a: actCentralCoordinator executes oeAddNewCrisisEvent
48         step b: actCentralCoordinator executes oeRequestCrisisEventLocation
49         step c: actCommunicationCompany executes oeReceiveCrisisEventLocation
50         step d: actCentralCoordinator executes oeCreateNewCrisisEvent
51
52         ordering constraint "step (a) must be executed first"
```

```

53     ordering constraint "if step (c) then previously step (b)"
54 }
55
56 use case system usergoal ugGlobalDispatchManagement() {
57     actor actFiremenCoordinator[primary, active]
58     actor actTowServiceCoordinator[primary, active]
59     actor actCentralCoordinator[secondary, passive]
60     actor actPoliceCoordinator[secondary, active]
61
62     reuse oeGetCrisisEventInformation[2...*]
63     reuse oeUpdateDispatchStatus[4...*]
64     reuse oeRefreshMap[0...*]
65     reuse oeMessage[0...*]
66     reuse oeRequestHelp[0...*]
67     reuse oeCloseCrisisEvent[2...*]
68
69     step a: actFiremenCoordinator executes oeGetCrisisEventInformation
70     step b: actFiremenCoordinator executes oeUpdateDispatchStatus
71     step c: actTowServiceCoordinator executes oeGetCrisisEventInformation
72     step d: actTowServiceCoordinator executes oeUpdateDispatchStatus
73     step e: actTowServiceCoordinator executes oeRefreshMap
74     step f: actTowServiceCoordinator executes oeMessage
75     step g: actFiremenCoordinator executes oeRequestHelp
76     step h: actPoliceCoordinator executes oeGetCrisisEventInformation
77     step i: actPoliceCoordinator executes oeUpdateDispatchStatus
78     step j: actFiremenCoordinator executes oeCloseCrisisEvent
79     step k: actTowServiceCoordinator executes oeCloseCrisisEvent
80     step l: actPoliceCoordinator executes oeCloseCrisisEvent
81
82     ordering constraint "if step (b) then previously step (a)"
83     ordering constraint "if step (d) then previously step (c)"
84     ordering constraint "step (h) can only be executed if step (g) has at least been executed once
85     previously"
86     ordering constraint "if step (i) then previously step (h)"
87     ordering constraint "if step (j) then previously step (b) at least two times"
88     ordering constraint "if step (k) then previously step (d) at least two times"
89     ordering constraint "if step (l) then previously step (i) at least two times"
90 }
91
92 use case system subfunction oeAddNewCrisisEvent() {
93     actor actCentralCoordinator[primary, active]
94 }
95
96 use case system subfunction oeRequestCrisisEventLocation(AdtPhoneNumber:dtPhoneNumber) {
97     actor actCentralCoordinator[primary, active]
98     actor actCommunicationCompany[secondary, passive]
99     returned messages{
100         ieRequestCrisisEventLocation(AdtPhoneNumber) returned to actCommunicationCompany //Slide 208..
101     }
102 }
103
104 use case system subfunction oeReceiveCrisisEventLocation(AdtGeoPos:dtGeoPos) {
105     actor actCommunicationCompany[primary, active]
106     actor actCentralCoordinator[secondary, passive]
107     returned messages{
108         ieReceiveCrisisEventLocation(AdtMapWithPin) returned to actCentralCoordinator
109     }
110 }
111
112 use case system subfunction oeCreateNewCrisisEvent(AdtName:ptString, AetHumanType:etHumanType,
113     AdtPhoneNumber:dtPhoneNumber, AdtMapWithPin:dtMapWithPin, AdtComment:dtComment) {
114     actor actCentralCoordinator[primary, active]
115     actor actAbstractDispatchCoordinator[secondary, passive]
116     returned messages{
117         ieReceiveNewCrisisEvent(AdtCrisisID, AdtMessage) returned to actAbstractDispatchCoordinator
118     }
119 }
120
121 use case system subfunction oeGetCrisisEventInformation(AdtGeoPos:dtGeoPos) {
122     actor actAbstractDispatchCoordinator[primary, active]

```

```

121  returned messages{
122    ieReceiveCrisisEventInformation (AdtCrisisID, AdtName, AetHumanType, AdtPhoneNumber,
123      AdtMapWithPin, AdtComment) returned to actAbstractDispatchCoordinator
124  }
125
126 use case system subfunction oeMessage(AdtComment:dtComment) {
127   actor actAbstractDispatchCoordinator[primary, active]
128   actor actCentralCoordinator[secondary, passive]
129   actor actAbstractDispatchCoordinator[secondary, multiple]
130   returned messages{
131     ieMessageAbstractDispatchCoordinator(AdtComment) returned to actAbstractDispatchCoordinator
132     ieMessageCentralCoordinator(AdtComment) returned to actCentralCoordinator
133   }
134 }
135
136 use case system subfunction oeUpdateDispatchStatus(AetDispatchStatus:etDispatchStatus) {
137   actor actAbstractDispatchCoordinator[primary, active]
138   returned messages{
139     ieMessageAbstractDispatchCoordinator(AdtComment) returned to actAbstractDispatchCoordinator
140   }
141 }
142
143 use case system subfunction oeRefreshMap(AdtGeoPos:dtGeoPos) {
144   actor actAbstractDispatchCoordinator[primary, active]
145   returned messages{
146     ieReceiveMap(AdtMapWithPin) returned to actAbstractDispatchCoordinator
147   }
148 }
149
150 use case system subfunction oeRequestHelp(AetTeamType: etTeamType, RequestedNumber:ptInteger) {
151   actor actFiremenCoordinator[primary, active]
152   actor actAbstractDispatchCoordinator[secondary, passive]
153   returned messages{
154     ieReceiveNewCrisisEvent(AdtCrisisID, AdtMessage) returned to actAbstractDispatchCoordinator
155   }
156 }
157
158 use case system subfunction oeCloseCrisisEvent() {
159   actor actAbstractDispatchCoordinator[primary, active]
160 }
161
162 }
163
164 }

```

Listing B.24: Messir Spec. file usecases.msr.

