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Messir Analysis Document  
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# 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 [1] 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 Cockburn template [2].

### 2.3.1 Use Cases

#### 2.3.1.1 summary-suGlobalManagementOfEvent

suGlobalManagementOfEvent is the summary level use-case that covers most of the operation that the system provides.

USE-CASE DESCRIPTION	
<i>Name</i>	suGlobalManagementOfEvent
<i>Scope</i>	system
<i>Level</i>	summary
<b>Primary actor(s)</b>	
1	actCentralCoordinator[active]
<b>Secondary actor(s)</b>	
1	actCommunicationCompany[active]
2	actFiremenCoordinator[active]
3	actTowServiceCoordinator[active]
<b>Goal(s) description</b>	
suGlobalManagementOfEvent is the summary level use-case that covers most of the operation that the system provides.	
<b>Protocol condition(s)</b>	
1	none.
<b>Pre-condition(s)</b>	
1	none.
<b>Main post-condition(s)</b>	
1	modifications have been made to the system and its environment concerning a crisis event.
<b>Main Steps</b>	
a	the actor actCentralCoordinator executes the <u>ugCreateNewCrisisEvent</u> use case
b	the actor actFiremenCoordinator executes the <u>ugGlobalDispatchManagement</u> use case
c	the actor actTowServiceCoordinator executes the <u>ugGlobalDispatchManagement</u> use case
<b>Steps Ordering Constraints</b>	

*continues in next page ...*

**... Use-Case Description table continuation**

1	step (a) must be executed before step (b) or step (c)
2	step (b) XOR step (c)
<b>Additional Information</b>	
none	

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

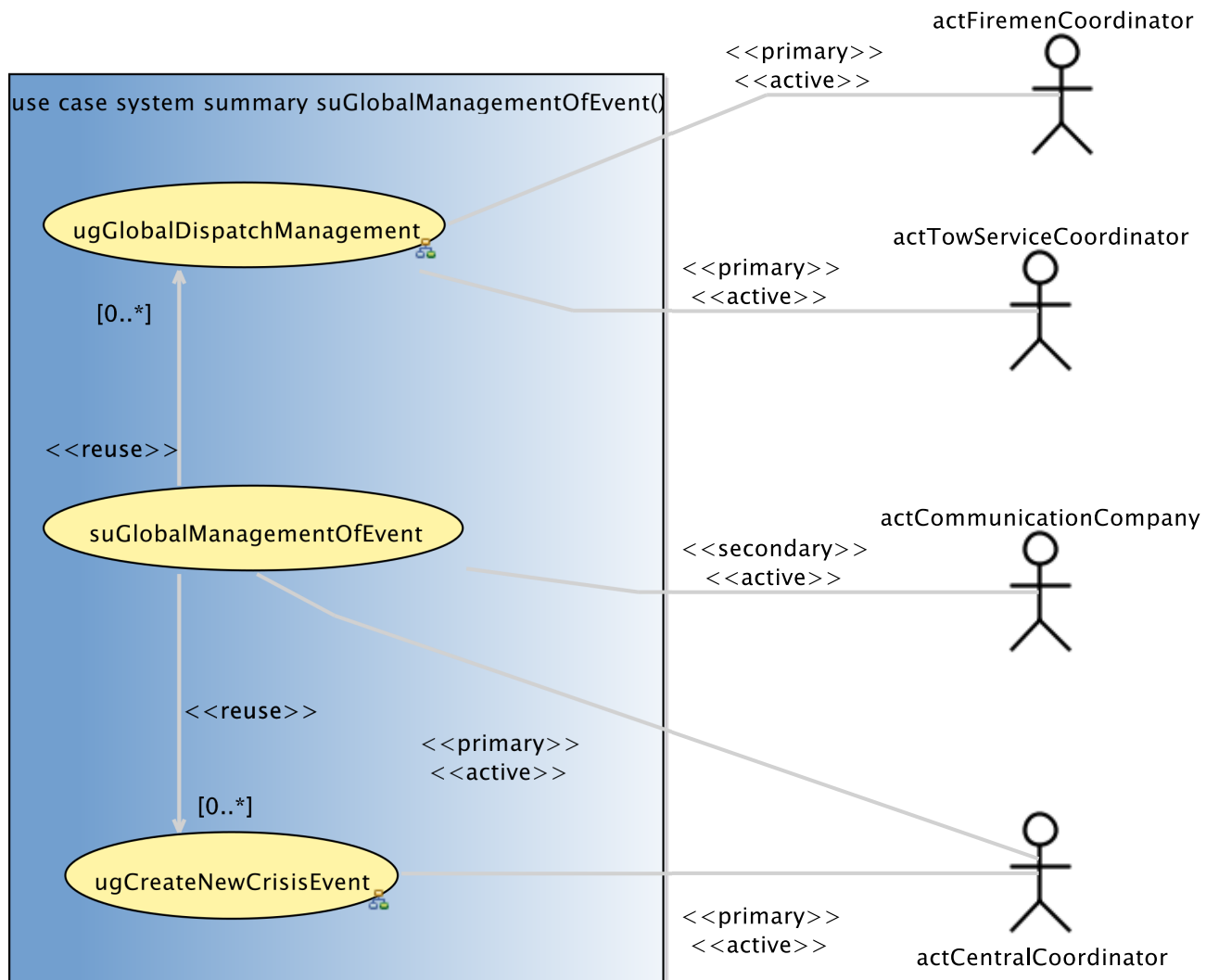


Figure 2.1:

### 2.3.1.2 usergoal-ugCreateNewCrisisEvent

Shows the ugCreateNewCrisisEvent use-case and its actors.

USE-CASE DESCRIPTION	
Name	ugCreateNewCrisisEvent

*continues in next page ...*

**... Use-Case Description table continuation**

<i>Scope</i>	system
<i>Level</i>	usergoal
<b>Primary actor(s)</b>	
1	actCentralCoordinator[active]
<b>Secondary actor(s)</b>	
1	actCommunicationCompany[active]
2	actFiremenCoordinator[passive]
3	actTowServiceCoordinator[passive]
<b>Goal(s) description</b>	
Shows the ugCreateNewCrisisEvent use-case and its actors.	
<b>Reuse</b>	
1	<u>oeInitialiseNewCrisisEvent [1..*]</u>
2	<u>oeRequestCrisisEventLocation [0..*]</u>
3	<u>oeReceiveCrisisEventLocation [0..*]</u>
4	<u>oeConfirmCrisisEventLocation [1..*]</u>
5	<u>oeCreateNewCrisisEvent [1..*]</u>
<b>Protocol condition(s)</b>	
1	none.
<b>Pre-condition(s)</b>	
1	none.
<b>Main post-condition(s)</b>	
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.
<b>Main Steps</b>	
a	the actor actCentralCoordinator executes the <u>oeInitialiseNewCrisisEvent</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>oeConfirmCrisisEventLocation</u> use case
e	the actor actCentralCoordinator executes the <u>oeCreateNewCrisisEvent</u> use case
<b>Steps Ordering Constraints</b>	
1	if (b) then previously (a)
2	step (c) must be executed before step (d)
<b>Additional Information</b>	
none	

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

### 2.3.1.3 usergoal-ugGlobalDispatchManagement

Shows the ugGlobalDispatchManagement use-case and its actors.

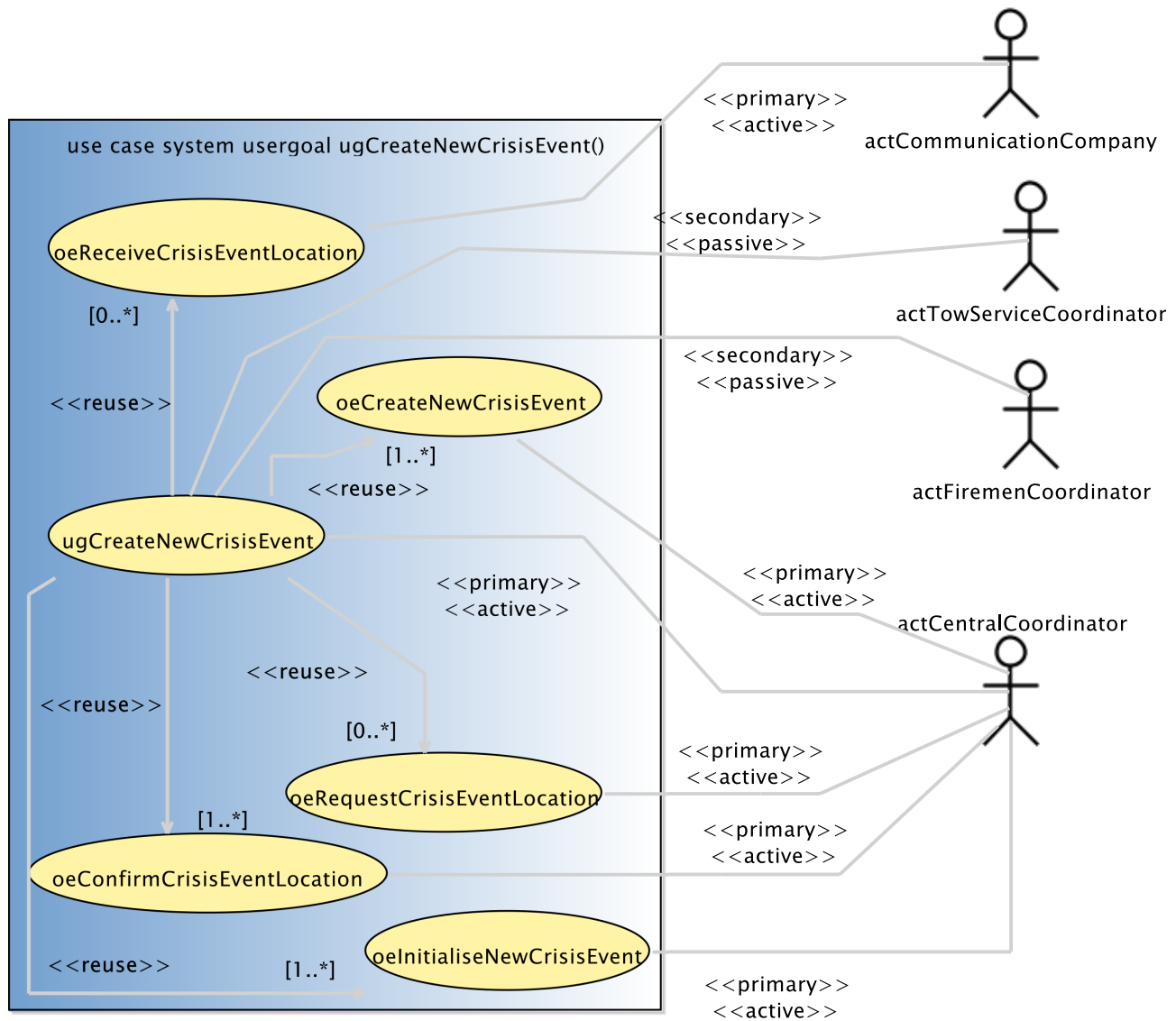


Figure 2.2: ugCreateNewCrisisEvent

USE-CASE DESCRIPTION	
<i>Name</i>	ugGlobalDispatchManagement
<i>Scope</i>	system
<i>Level</i>	usergoal
<b>Primary actor(s)</b>	
1	actFiremenCoordinator[active]
2	actTowServiceCoordinator[active]
<b>Secondary actor(s)</b>	
1	actCentralCoordinator[passive]
2	actPoliceCoordinator[active]
<b>Goal(s) description</b>	
Shows the ugGlobalDispatchManagement use-case and its actors.	
<b>Protocol condition(s)</b>	
1	none.
<b>Pre-condition(s)</b>	
1	the sender is associated to a crisis event.
<b>Main post-condition(s)</b>	
1	modifications have been made to the system and its environment concerning a crisis event.
<b>Main Steps</b>	
a	the actor actFiremenCoordinator executes the <u>oeUpdateDispatchStatus</u> use case
b	the actor actTowServiceCoordinator executes the <u>oeRefreshMap</u> use case
c	the actor actTowServiceCoordinator executes the <u>oeMessage</u> use case
d	the actor actTowServiceCoordinator executes the <u>oeUpdateDispatchStatus</u> use case
e	the actor actFiremenCoordinator executes the <u>oeRequestHelp</u> use case
f	the actor actPoliceCoordinator executes the <u>oeUpdateDispatchStatus</u> use case
<b>Steps Ordering Constraints</b>	
1	step (a) must be executed at least two times
2	step (d) must be executed at least two times
3	step (f) can only be executed if step (e) has at least been executed once previously
4	step (f) must be executed at least two times
<b>Additional Information</b>	
none	

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

#### 2.3.1.4 subfunction-oeConfirmCrisisEventLocation

sent to confirm the crisis event's location.

USE-CASE DESCRIPTION	
<i>Name</i>	oeConfirmCrisisEventLocation
<i>Scope</i>	system
<i>Level</i>	subfunction
<b>Primary actor(s)</b>	
1	actCentralCoordinator[active]
<b>Goal(s) description</b>	

*continues in next page ...*

**... Use-Case Description table continuation**

sent to confirm the crisis event's location.
<b>Protocol condition(s)</b>
1 none.
<b>Pre-condition(s)</b>
1 none.
<b>Main post-condition(s)</b>
1 the boolean <code>isLocationConfirmed</code> of this newly initialised crisis event is set to true.
<b>Additional Information</b>
none

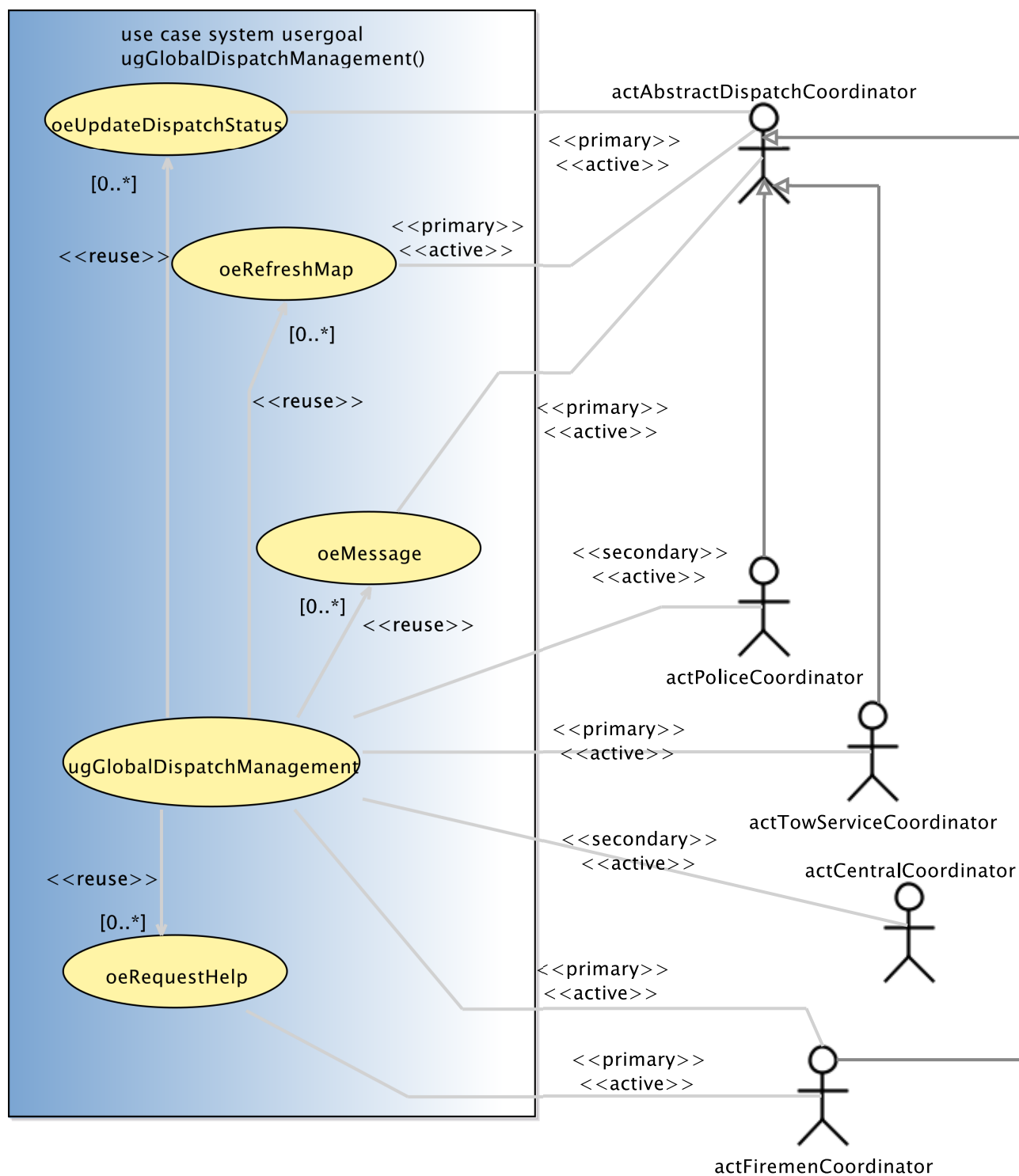
**2.3.1.5 subfunction-oeCreateNewCrisisEvent**

sent to create a new crisis event and to alert the corresponding coordinators.

USE-CASE DESCRIPTION	
<i>Name</i>	oeCreateNewCrisisEvent
<i>Scope</i>	system
<i>Level</i>	subfunction
<b>Parameters</b>	
	used to initialise the name field.
AdtName: ptString 1	
	used to initialise the type field.
AetHumanType: etHumanType 2	
	used to initialise the phone number field.
AdtPhoneNumber: dtPhoneNumber 3	
	used to initialise the map with pins field.
AdtMapWithPin: dtMapWithPin 4	
<b>Primary actor(s)</b>	
1	actCentralCoordinator[active]
<b>Secondary actor(s)</b>	
1	actAbstractDispatchCoordinator[passive]
<b>Goal(s) description</b>	
sent to create a new crisis event and to alert the corresponding coordinators.	
<b>Protocol condition(s)</b>	
1	none.
<b>Pre-condition(s)</b>	
1	the boolean <code>isLocationConfirmed</code> of this crisis event is set to true.
<b>Main post-condition(s)</b>	
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.
<b>Additional Information</b>	
none	

**2.3.1.6 subfunction-oeInitialiseNewCrisisEvent**

sent at the beginning of `ugCreateNewCrisisEvent` to initialise a new crisis event.

Figure 2.3: `ugGlobalDispatchManagement`



USE-CASE DESCRIPTION	
<i>Name</i>	oeInitialiseNewCrisisEvent
<i>Scope</i>	system
<i>Level</i>	subfunction
<b>Primary actor(s)</b>	
1	actCentralCoordinator[active]
<b>Goal(s) description</b>	
sent at the beginning of ugCreateNewCrisisEvent to initialise a new crisis event.	
<b>Protocol condition(s)</b>	
1	none.
<b>Pre-condition(s)</b>	
1	none.
<b>Main post-condition(s)</b>	
1	a new crisis event including an unique crisis id has been stored in the system's state.
<b>Additional Information</b>	
none	

### 2.3.1.7 subfunction-oeMessage

sent to transmit a message, comment.

USE-CASE DESCRIPTION	
<i>Name</i>	oeMessage
<i>Scope</i>	system
<i>Level</i>	subfunction
<b>Parameters</b>	
AdtComment: dtComment 1	
<b>Primary actor(s)</b>	
1	actAbstractDispatchCoordinator[active]
<b>Secondary actor(s)</b>	
1	actCentralCoordinator[passive]
2	actAbstractDispatchCoordinator[multiple]
<b>Goal(s) description</b>	
sent to transmit a message, comment.	
<b>Protocol condition(s)</b>	
1	none.
<b>Pre-condition(s)</b>	
1	the sender is associated to a crisis event.
<b>Main post-condition(s)</b>	
1	none.
<b>Additional Information</b>	
none	

### 2.3.1.8 subfunction-oeReceiveCrisisEventLocation

sent to return a map with pin.

USE-CASE DESCRIPTION	
<i>Name</i>	oeReceiveCrisisEventLocation
<i>Scope</i>	system
<i>Level</i>	subfunction
<b>Parameters</b>	
used to initialise the first generation of the map with pins. AdtGeoPos: dtGeoPos 1	
<b>Primary actor(s)</b>	
1	actCommunicationCompany[active]
<b>Secondary actor(s)</b>	
1	actCentralCoordinator[passive]
<b>Goal(s) description</b>	
sent to return a map with pin.	
<b>Protocol condition(s)</b>	
1	the geographical position must exist in google maps.
<b>Pre-condition(s)</b>	
1	none.
<b>Main post-condition(s)</b>	
1	an image that is the map including the pins must be returned correctly.
<b>Additional Information</b>	
none	

### 2.3.1.9 subfunction-oeRefreshMap

sent to refresh the map.

USE-CASE DESCRIPTION	
<i>Name</i>	oeRefreshMap
<i>Scope</i>	system
<i>Level</i>	subfunction
<b>Parameters</b>	
used to calculate the new pin location of the sender. AdtGeoPos: dtGeoPos 1	
<b>Primary actor(s)</b>	
1	actAbstractDispatchCoordinator[active]
<b>Goal(s) description</b>	
sent to refresh the map.	
<b>Protocol condition(s)</b>	
1	
<b>Pre-condition(s)</b>	
1	the sender is associated to a crisis event.
<b>Main post-condition(s)</b>	
1	an image that is the map including the pins must be returned correctly.
<b>Additional Information</b>	
none	

**2.3.1.10 subfunction-oeRequestCrisisEventLocation**

sent to request a crisis event's location.

USE-CASE DESCRIPTION	
<i>Name</i>	oeRequestCrisisEventLocation
<i>Scope</i>	system
<i>Level</i>	subfunction
<b>Parameters</b>	
sent to the respective communication company to use to get the geographical position of the AdtPhoneNumber and dtPhoneNumber 1	
<b>Primary actor(s)</b>	
1	actCentralCoordinator[active]
<b>Secondary actor(s)</b>	
1	actCommunicationCompany[passive]
<b>Goal(s) description</b>	
sent to request a crisis event's location.	
<b>Protocol condition(s)</b>	
1	the phone number is a valid phone number of Luxembourg.
<b>Pre-condition(s)</b>	
1	the communication company is the provider of the given phone number.
<b>Main post-condition(s)</b>	
1	none.
<b>Additional Information</b>	
none	

**2.3.1.11 subfunction-oeRequestHelp**

sent to request help from the corresponding team type.

USE-CASE DESCRIPTION	
<i>Name</i>	oeRequestHelp
<i>Scope</i>	system
<i>Level</i>	subfunction
<b>Parameters</b>	
AetTeamType: etTeamType 1	
RequestedNumber: ptInteger 2	
<b>Primary actor(s)</b>	
1	actFiremenCoordinator[active]
<b>Secondary actor(s)</b>	
1	actAbstractDispatchCoordinator[passive]
<b>Goal(s) description</b>	
sent to request help from the corresponding team type.	
<b>Protocol condition(s)</b>	
1	the requested number of at least one team type is greater than 0.
<b>Pre-condition(s)</b>	

*continues in next page ...*

**... Use-Case Description table continuation**

1	the sender is associated to a crisis event.
<b>Main post-condition(s)</b>	
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 requested team(s).
<b>Additional Information</b>	
none	

**2.3.1.12 subfunction-oeUpdateDispatchStatus**

sent to update the dispatch status.

USE-CASE DESCRIPTION	
<i>Name</i>	oeUpdateDispatchStatus
<i>Scope</i>	system
<i>Level</i>	subfunction
<b>Parameters</b>	
AetDispatchStatus: etDispatchStatus 1	
<b>Primary actor(s)</b>	
1	actAbstractDispatchCoordinator[active]
<b>Goal(s) description</b>	
sent to update the dispatch status.	
<b>Protocol condition(s)</b>	
1	The dispatch status has to be updated in exactly the following two steps : From 'In Station' to 'In Transit' then From 'In Transit' to 'Arrived'
<b>Pre-condition(s)</b>	
1	the sender is associated to a crisis event.
<b>Main post-condition(s)</b>	
1	Any other coordinator associated to the crisis event is informed of the updated status.
<b>Additional Information</b>	
none	

### 2.3.2 Use Case Instance(s)

#### 2.3.2.1 Use-Case Instance - ucisuGlobalManagementOfEvent:suGlobalManagementOfEvent

Shows the suGlobaManagementOfEvent instance.

SUMMARY USE-CASE INSTANCE
<i>Instantiated Use Case</i> suGlobalManagementOfEvent
<i>Instance ID</i> ucisuGlobalManagementOfEvent

#### 2.3.2.2 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.

#### 2.3.2.3 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.

Figure 2.4: `ugCreateNewCrisisEvent`

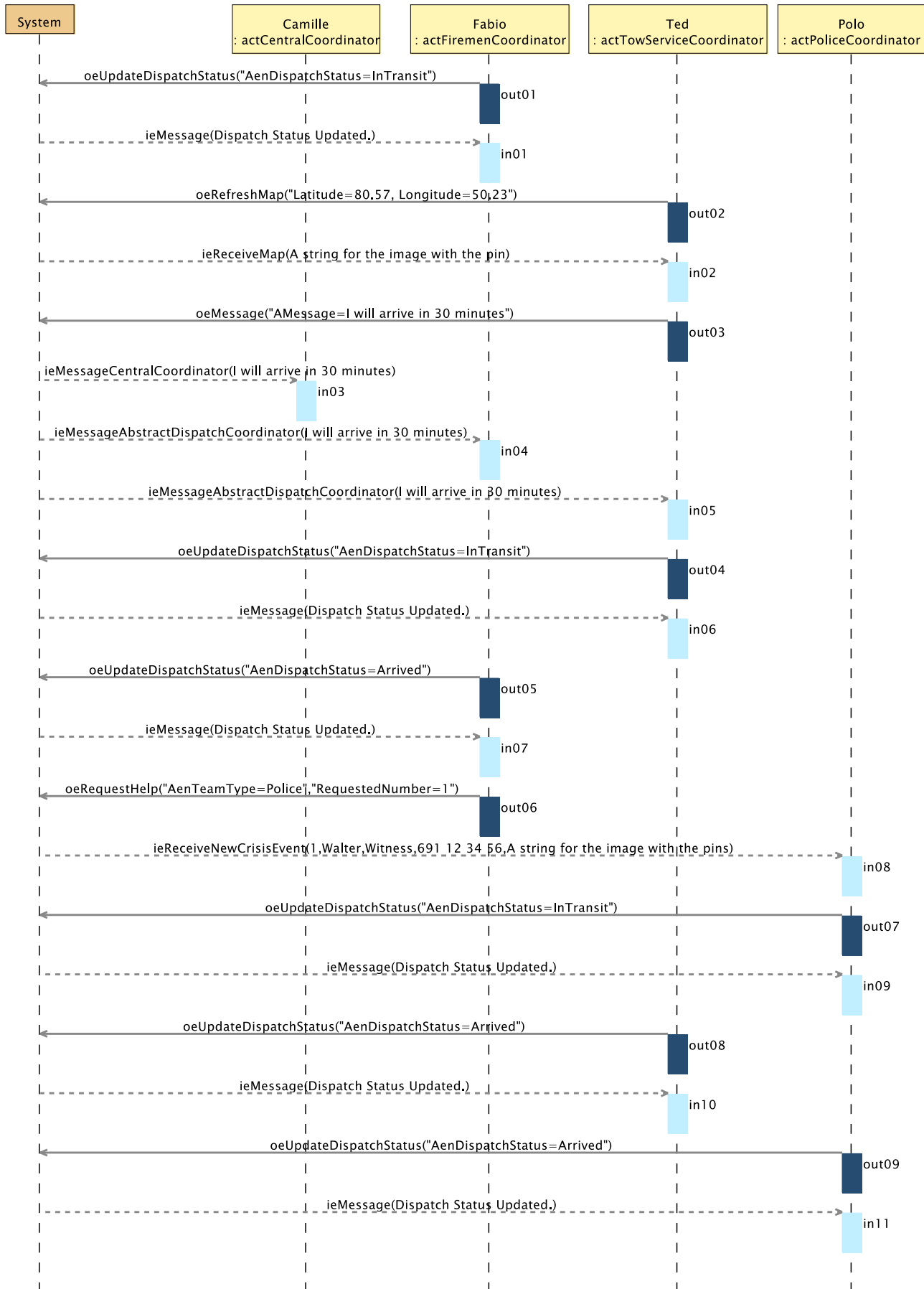


Figure 2.5: ugGlobalDispatchManagement





## Chapter 3

# Environment Model

### 3.1 Environment model view(s)

There are no view(s) for the **messip** 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	
<b><i>actAbstractDispatchCoordinator</i></b>	
An abstract Actor which brings together the common operations of the FiremanCoordinator, the PoliceCoordinator and the TowServiceCoordinator.	
<b><i>OutputInterfaces</i></b>	
OUT 1	<b>oeMessage (AdtComment : dtComment) : ptBoolean</b>
OUT 2	<b>oeUpdateDispatchStatus (AetDispatchStatus : etDispatchStatus) : ptBoolean</b>
<b><i>InputInterfaces</i></b>	
IN 1	<b>ieReceiveNewCrisisEvent (AdtCrisisID : dtCrisisID, AdtName : ptString, AetHumanType : etHumanType, AdtPhoneNumber : dtPhoneNumber, AdtMapWithPin : dtAddress, AdtComment : dtComment) : ptBoolean</b>
IN 2	<b>ieMessageAbstractDispatchCoordinator (AdtComment : dtComment) : ptBoolean</b>

#### 3.2.2 **actCentralCoordinator** Actor

ACTOR	
<b><i>actCentralCoordinator</i></b>	
Is representing the person that receives the victim's or witness' call in the emergency central.	
<b><i>OutputInterfaces</i></b>	

*continues in next page ...*

... **Actor table continuation**

OUT 1	<code>oeRequestCrisisEventLocation (AdtPhoneNumber:dtPhoneNumber) :ptBoolean</code>
OUT 2	<code>oeMessage (AdtComment:dtComment) :ptBoolean</code>
OUT 3	<code>oeCreateNewCrisisEvent (AdtName:ptString, AetHumanType:etHumanType, AdtPhoneNumber:dtPhoneNumber, AdtMapWithPin:dtAddress, AdtComment:dtComment) :ptBoolean</code>
OUT 4	<code>oeConfirmCrisisEventLocation () :ptBoolean</code>
<i>InputInterfaces</i>	
IN 1	<code>ieReceiveCrisisEventLocation (AdtMapWithPin:dtMapWithPin) :ptBoolean</code>
IN 2	<code>ieMessageCentralCoordinator (AdtComment:dtComment) :ptBoolean</code>

**3.2.3 actCommunicationCompany Actor**

<b>ACTOR</b>	
<i>actCommunicationCompany</i>	
Is representing any communication company in Luxembourg.	
<i>OutputInterfaces</i>	
OUT 1	<code>oeReceiveCrisisEventLocation (AdtGeoPos:dtGeoPos) :ptBoolean</code>
<i>InputInterfaces</i>	
IN 1	<code>ieRequestCrisisEventLocation (AdtPhoneNumber:dtPhoneNumber) :ptBoolean</code>

**3.2.4 actFiremenCoordinator Actor**

<b>ACTOR</b>	
<i>actFiremenCoordinator</i>	
Is representing any firemen team leader able to manage a two Ambulances.	
<i>Extends</i>	
lu.uni.lassy.excalibur.group09.spec.environment.actAbstractDispatchCoordinator	
<i>OutputInterfaces</i>	
OUT 1	<code>oeRequestHelp (AetTeamType:etTeamType, ARequestedNumber:ptInteger) :ptBoolean</code>

**3.2.5 actPoliceCoordinator Actor**

<b>ACTOR</b>	
<i>actPoliceCoordinator</i>	
Is representing a police team leader.	
<i>Extends</i>	

*continues in next page ...*

**... Actor table continuation**

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

**3.2.6 actTowServiceCoordinator Actor**

<b>ACTOR</b>
<b><i>actTowServiceCoordinator</i></b> Is representing a tow service driver.
<b><i>Extends</i></b>
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	
<b><i>ctComment</i></b> A class containing a comment.	
attribute	<b>comment: dtComment</b>
operation	<b>init (AComment:dtComment) :ptBoolean</b>
<b><i>ctCrisisEvent</i></b> A class containing the attributes identifying a crisis event.	
attribute	<b>id: dtCrisisID</b>
attribute	<b>isLocationConfirmed: ptBoolean</b>

*continues in next page ...*

... **Classes table continuation**

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

**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
<b>dtGeoPos</b> Two Real numbers used to identify a geographical position on earth.

*continues in next page ...*

**... Datatypes table continuation**

attribute	<b>latitude: dtLatitude</b>
attribute	<b>longitude: dtLongitude</b>
operation	<b>is():ptBoolean</b>
<b>dtInteger</b> A primary type Integer incuding some basic Integer operations.	
attribute	<b>value: ptInteger</b>
<b>dtReal</b> A primary type Real incuding some basic Real operations.	
attribute	<b>value: ptReal</b>
<b>dtString</b> A primary type String incuding some basic String operations.	
attribute	<b>value: ptString</b>
operation	<b>is():ptBoolean</b>
operation	<b>length():ptInteger</b>
operation	<b>myStringConcat (AdtString2IN:dtString):dtString</b>

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

<b>UNDIRECTED ASSOCIATIONS</b>
<b>assClassActorDispatchCoordinator</b> Association of a dispatched coordinator to an actor of the same type.
<b>assctCommentctCentralCoordinator</b> Association of a comment to a central coordinator actor.
<b>assctCommentctCrisisEvent</b> Association of a comment to a crisis event.
<b>assctCommentctDispatchedCoordinator</b> Association of a comment to a dispatched coordinator.

*continues in next page ...*

**... Undirected associations table continuation**

<b><i>assctCrisisEventtctHuman</i></b>
Association of a crisis event to an human.
<b><i>assctCrisisEventtctMapWithPin</i></b>
Association of a crisis event with a MapWithPin image.
<b><i>assctDispatchedCoordinatorctCrisisEvent</i></b>
Association of a dispatched coordinator to a crisis event.
<b><i>assDispatchedCoordinatorctctMapWithPin</i></b>
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.

<b>DATATYPES</b>	
<b><i>dtAddress</i></b>	
A String used to identify an address.	
<i>extends</i>	dtString
operation	<b>is () :ptBoolean</b>
<b><i>dtComment</i></b>	
A String used to identify a comment.	
<i>extends</i>	dtString
operation	<b>is () :ptBoolean</b>
<b><i>dtCrisisID</i></b>	
An Integer used to identify a crisis id.	
<i>extends</i>	dtInteger
operation	<b>is () :ptBoolean</b>
<b><i>dtImage</i></b>	
A String used to identify an image.	
<i>extends</i>	dtString
operation	<b>is () :ptBoolean</b>

*continues in next page ...*



**... Datatypes table continuation**

<b><i>dtLatitude</i></b> used to define a latitude value of a geographical positions on earth.	
<i>extends</i>	dtReal
operation	<b>is () :ptBoolean</b>
<b><i>dtLongitude</i></b> used to define a longitude value of a geographical positions on earth.	
<i>extends</i>	dtReal
operation	<b>is () :ptBoolean</b>
<b><i>dtMapWithPin</i></b> An image which is a map including pins.	
<i>extends</i>	dtImage
operation	<b>is () :ptBoolean</b>
<b><i>dtPhoneNumber</i></b> A String used to store a phone number.	
<i>extends</i>	dtString
operation	<b>is () :ptBoolean</b>

**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.

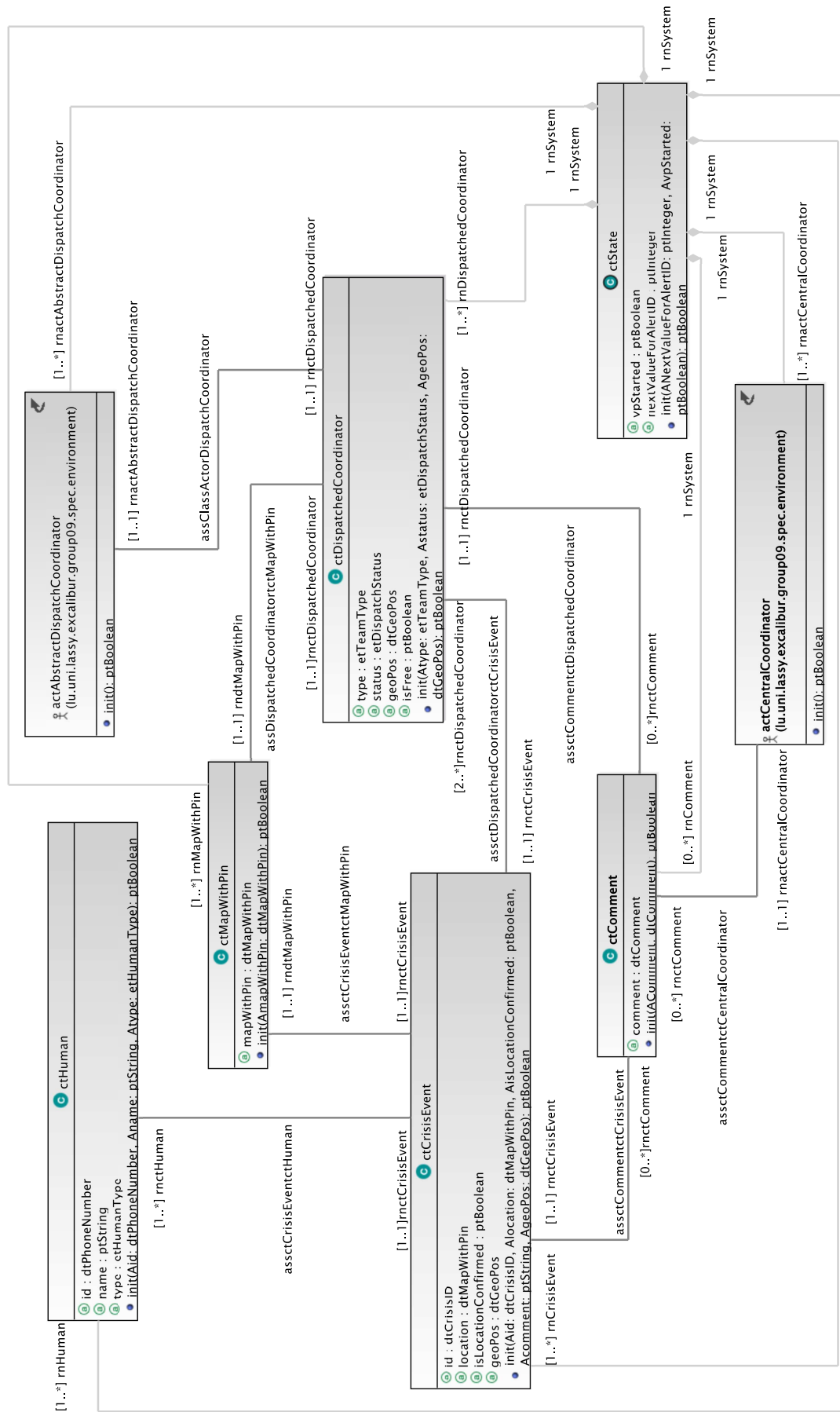


Figure 4.1: Concept Model - PrimaryTypes-Classes local view 12. .

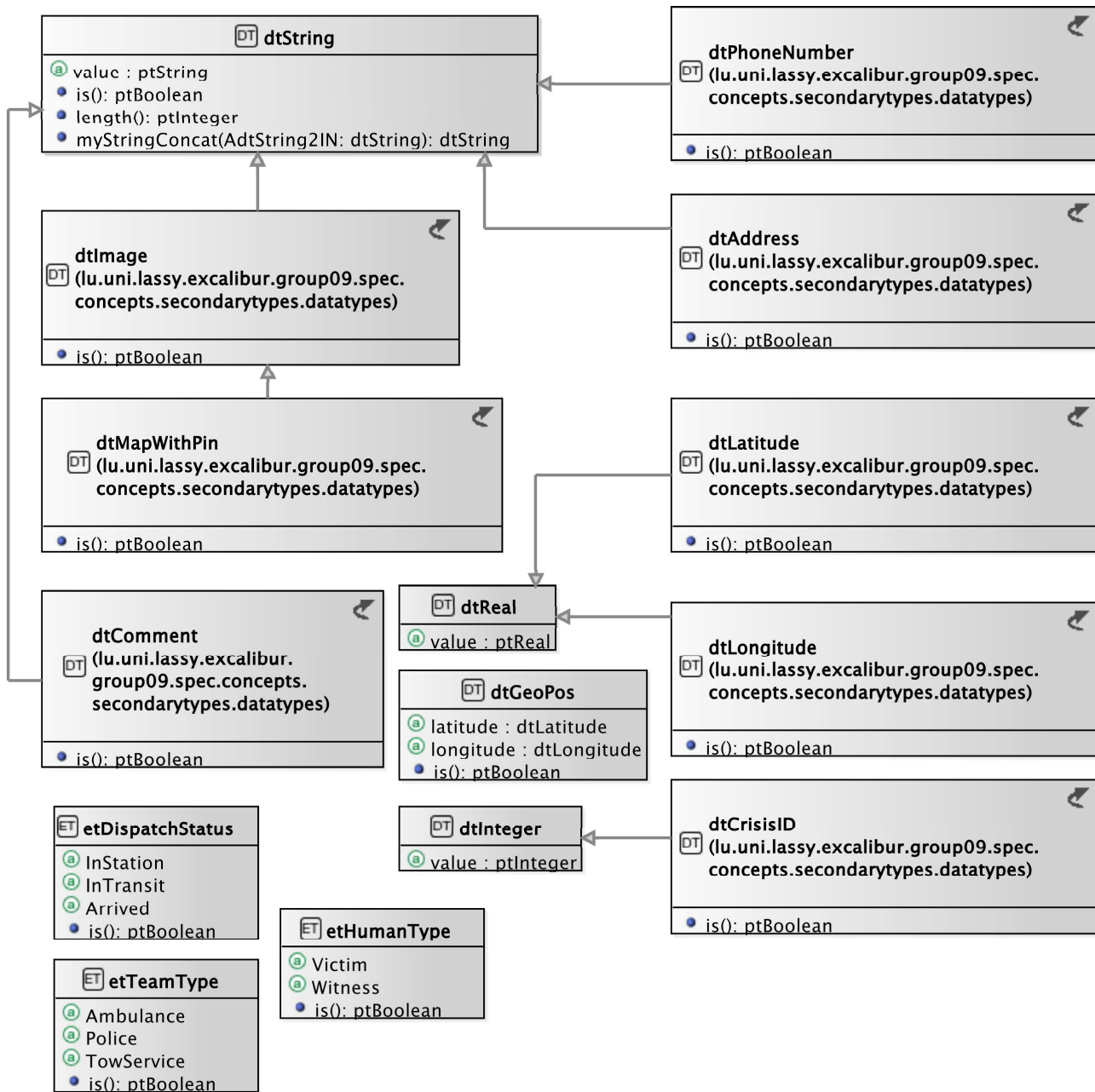


Figure 4.2: Concept Model - PrimaryTypes-Datatypes local view 15. .



## 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 **Messip** OCL code listing is joined to the comment table.

### 5.1 Environment - Out Interface Operation Scheme for actCentralCoordinator

#### 5.1.1 Operation Model for oeRequestCrisisEventLocation

The oeRequestCrisisEventLocation operation has the following properties:

OPERATION
<b><i>oeRequestCrisisEventLocation</i></b> sent to request a crisis event's location.
<b><i>Parameters</i></b>
1 <b>AdtPhoneNumber: dtPhoneNumber</b>
<b><i>Return type</i></b>
ptBoolean
<b><i>Pre-Condition (protocol)</i></b>
PreP 1
<b><i>Pre-Condition (functional)</i></b>
PreF 1
<b><i>Post-Condition (functional)</i></b>
PostF 1
<b><i>Post-Condition (protocol)</i></b>
PostP 1

### 5.2 Environment - Actor Operation Schemes

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

### **5.3 Primary Types - Operation Schemes for Classes**

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

### **5.4 Primary Types - Operation Schemes for Datatypes**

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

### **5.5 Primary Types - Operation Schemes for Enumerations**

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

### **5.6 Secondary Types - Operation Schemes for Classes**

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

### **5.7 Secondary Types - Operation Schemes for Datatypes**

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

### **5.8 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 Concept Model Views

- cm-view16



## 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 uuidff8a216549a64951bf055c8b5a9dde2a {
5   Concept Model {}
6 }
```

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

### B.2 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
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.
     outactCentralCoordinator.oeRequestCrisisEventLocation(AdtPhoneNumber:dtPhoneNumber):ptBoolean{
13   // include below the specification information (pre,post or ocl or prolog)
14   preP {
15     let AvpStarted: ptBoolean in
16     self.rnActor.rnSystem.vpStarted = AvpStarted
17     and AvpStarted = true
18   }
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.2: Messir Spec. file environment-actCentralCoordinator-oeRequestCrisisEventLocation.msr.

### B.3 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 operation init():ptBoolean
20
21 input interface inactCentralCoordinator {
22 operation ieReceiveCrisisEventLocation(AdtMapWithPin:dtMapWithPin) : ptBoolean
23 operation ieConfirmCrisisEventLocation(AdMessage:ptString) : ptBoolean
24 operation ieMessageCentralCoordinator(AdtComment:dtComment) : ptBoolean
25 }
26
27 output interface outactCentralCoordinator {
28 operation oeInitialiseNewCrisisEvent() : ptBoolean
29 operation oeRequestCrisisEventLocation(AdtPhoneNumber:dtPhoneNumber) : ptBoolean
30 operation oeMessage(AdtComment:dtComment) : ptBoolean
31 operation oeCreateNewCrisisEvent(AdtName:ptString, AetHumanType:etHumanType, AdtPhoneNumber:
    dtPhoneNumber, AdtMapWithPin:dtAddress, AdtComment:dtComment) : ptBoolean
32 operation oeConfirmCrisisEventLocation() : ptBoolean
33 }
34 }
35
36 actor actCommunicationCompany role rnactCommunicationCompany cardinality [1..*] {
37
38 operation init() : ptBoolean
39
40 input interface inactCommunicationCompany {
41 operation ieRequestCrisisEventLocation(AdtPhoneNumber:dtPhoneNumber) : ptBoolean
42 }
43
44 output interface outactCommunicationCompany {
45 operation oeReceiveCrisisEventLocation(AdtGeoPos:dtGeoPos) : ptBoolean
46 }
47 }
48
49 actor actAbstractDispatchCoordinator role rnactAbstractDispatchCoordinator cardinality [1..*] {
50
51 operation init() : ptBoolean
52
53 input interface inactAbstractDispatchCoordinator {
54 operation ieReceiveNewCrisisEvent(AdtCrisisID:dtCrisisID, AdtName:ptString, AetHumanType:
    etHumanType, AdtPhoneNumber:dtPhoneNumber, AdtMapWithPin:dtAddress, AdtComment:dtComment) :
    ptBoolean
55 operation ieMessageAbstractDispatchCoordinator(AdtComment: dtComment) : ptBoolean
56 operation ieReceiveMap(AdtMapWithPin: dtMapWithPin) : ptBoolean
57 }
58

```

```

59  output interface outactAbstractDispatchCoordinator {
60      operation oeMessage(AdtComment:dtComment) : ptBoolean
61      operation oeUpdateDispatchStatus(AetDispatchStatus:etDispatchStatus): ptBoolean
62      operation oeRefreshMap(AdtGeoPos:dtGeoPos) : ptBoolean
63  }
64  }
65
66  actor actFiremenCoordinator role rnactFiremenCoordinator cardinality [1..*] extends
    actAbstractDispatchCoordinator {
67
68      operation init() : ptBoolean
69
70      input interface inactFiremenCoordinator {
71      }
72
73      output interface outactFiremenCoordinator {
74          operation oeRequestHelp(AetTeamType: etTeamType, ARequestedNumber:ptInteger) : ptBoolean
75      }
76  }
77
78  actor actPoliceCoordinator role rnPoliceCoordinator cardinality [1..*] extends
    actAbstractDispatchCoordinator {
79
80      operation init() : ptBoolean
81
82      input interface inactPoliceCoordinator {
83      }
84
85      output interface outactPoliceCoordinator {
86      }
87  }
88
89  actor actTowServiceCoordinator role rnTowServiceCoordinator cardinality [1..*] extends
    actAbstractDispatchCoordinator {
90
91      operation init() : ptBoolean
92
93      input interface inactTowServiceCoordinator {
94      }
95
96      output interface outactTowServiceCoordinator {
97      }
98  }
99
100 }
101 }

```

Listing B.3: Messir Spec. file environment.msr.

## B.4 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 assctCommentctCentralCoordinator
48   ctComment(rnctComment) [0..*]
49   actCentralCoordinator(rnactCentralCoordinator) [1..1]
50
51 }
52 }
53 }

```

Listing B.4: Messir Spec. file primarytypes-associations.msr.

## B.5 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 location: dtMapWithPin
44     attribute isLocationConfirmed: ptBoolean
45     attribute geoPos: dtGeoPos
46
47     operation init( Aid:dtCrisisID,
48         Alocation:dtMapWithPin,
49         AisLocationConfirmed:ptBoolean,
50         Acomment:ptString,
51         AgeoPos:dtGeoPos
52     ): ptBoolean
53
54 }
55
56 class ctComment role rnComment cardinality [0..*] {
57     attribute comment: dtComment
58
59     operation init( Acomment: dtComment
60
61     ): ptBoolean
62 }
63
64 class ctDispatchedCoordinator role rnDispatchedCoordinator cardinality [1..*] {
65     attribute type: etTeamType
66     attribute status: etDispatchStatus
67     attribute geoPos: dtGeoPos
68     attribute isFree: ptBoolean
69
70     operation init( Atype:etTeamType,
71         Astatus:etDispatchStatus,
72         AgeoPos:dtGeoPos
73     ): ptBoolean
74 }
75
76 class ctMapWithPin role rnMapWithPin cardinality [1..*] {
77     attribute mapWithPin: dtMapWithPin
78
79     operation init( AmapWithPin:dtMapWithPin
80     ): ptBoolean
81 }
82
83 }
84 }
85 }

```

Listing B.5: Messir Spec. file primarytypes-classes.msr.

## B.6 File `./src-gen/messir-spec/concepts/primarytypes-datatypes/primarytypes-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.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 dtString {
19   attribute value : ptString
20   operation is() : ptBoolean
21   operation length(): ptInteger
22   operation myStringConcat (AdtString2IN:dtString): dtString
23 }
24
25 datatype dtInteger {
26   attribute value : ptInteger
27 }
28
29 datatype dtReal {
30   attribute value : ptReal
31 }
32
33 datatype dtGeoPos{
34   attribute latitude: dtLatitude
35   attribute longitude: dtLongitude
36   operation is() : ptBoolean
37 }
38
39 enum etDispatchStatus {
40   constants["InStation", "InTransit", "Arrived"]
41   operation is() : ptBoolean
42 }
43
44 enum etHumanType {
45   constants["Victim", "Witness"]
46   operation is() : ptBoolean
47 }
48
49 enum etTeamType {
50   constants["Ambulance", "Police", "TowService"]
51   operation is() : ptBoolean
52 }
53 }
54 }
55 }

```

Listing B.6: Messir Spec. file primarytypes-datatypes.msr.

## B.7 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.7: Messir Spec. file secondarytypes-associations.msr.

## B.8 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.8: Messir Spec. file secondarytypes-classes.msr.

## B.9 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 lu.uni.lassy.excalibur.group09.spec.concepts.primarytypes.datatypes.
19        dtString {
20        operation is() : ptBoolean
21      }
22
23      datatype dtAddress extends lu.uni.lassy.excalibur.group09.spec.concepts.primarytypes.datatypes.
24        dtString {
25      operation is() : ptBoolean
26    }
27  }
28 }

```

```

24 }
25
26 datatype dtCrisisID extends lu.uni.lassy.excalibur.group09.spec.concepts.primarytypes.datatypes.
    dtInteger {
27     operation is() : ptBoolean
28 }
29
30 datatype dtLongitude extends lu.uni.lassy.excalibur.group09.spec.concepts.primarytypes.datatypes.
    dtReal {
31     operation is() : ptBoolean
32 }
33
34 datatype dtLatitude extends lu.uni.lassy.excalibur.group09.spec.concepts.primarytypes.datatypes.
    dtReal {
35     operation is() : ptBoolean
36 }
37
38 datatype dtImage extends lu.uni.lassy.excalibur.group09.spec.concepts.primarytypes.datatypes.
    dtString {
39     operation is() : ptBoolean
40 }
41
42 datatype dtMapWithPin extends lu.uni.lassy.excalibur.group09.spec.concepts.secondarytypes.
    datatypes.dtImage {
43     operation is() : ptBoolean
44 }
45
46 datatype dtComment extends lu.uni.lassy.excalibur.group09.spec.concepts.primarytypes.datatypes.
    dtString {
47     operation is() : ptBoolean
48 }
49 }
50
51 }
52 }

```

Listing B.9: Messir Spec. file secondarytypes-datatypes.msr.

## B.10 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.10: Messir Spec. file tests.msr.

## B.11 File ./src-gen/messir-spec/usecases/usecaseinstance-suGlobalManagementOfEvent-ucisuGlobalManagementOfEvent.msr

```

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

```

```

5
6 Use Case Model {
7
8 use case instance ucisuGlobalManagementOfEvent : suGlobalManagementOfEvent{
9   actors {
10     Camille : actCentralCoordinator
11     Orange : actCommunicationCompany
12     Fabio : actFiremenCoordinator
13     Ted : actTowServiceCoordinator
14     Polo : actPoliceCoordinator
15   }
16
17 use case steps {
18
19   Camille executed instanceof ugCreateNewCrisisEvent() {
20     use case steps {
21       Camille executed instanceof subfunction oeRequestCrisisEventLocation("AdtPhoneNumber=691 12
22         34 56") {
23         ieRequestCrisisEventLocation("691 12 34 56") returned to Orange
24       }
25       Orange executed instanceof subfunction oeReceiveCrisisEventLocation("Latitude=75.08,
26         Longitude=23.03") {
27         ieReceiveCrisisEventLocation("environment.rndtMapWithPin.image.value") returned to Camille
28       }
29       Camille executed instanceof subfunction oeConfirmCrisisEventLocation() {
30         ieConfirmCrisisEventLocation("Done") returned to Camille
31       }
32
33       Camille executed instanceof subfunction oeCreateNewCrisisEvent("AdtCrisisID=1", "AdtName=
34         Walter", "AenHumanType=Witness", "AdtPhoneNumberX=691123456", "environment.rndtMapWithPin
35         .image.value", "No additional comments") {
36         ieReceiveNewCrisisEvent("1","Walter","Witness","691123456","environment.rndtMapWithPin.image
37         .value","No additional comments") returned to Fabio
38         ieReceiveNewCrisisEvent("1","Walter","Witness","691123456","environment.rndtMapWithPin.image
39         .value","No additional comments") returned to Ted
40       }
41     }
42   }
43
44   Fabio executed instanceof ugGlobalDispatchManagement() {
45     use case steps {
46       Fabio executed instanceof subfunction oeUpdateDispatchStatus(AenDispatchStatus="InTransit") {
47         ieMessage("Dispatch Status Updated.") returned to Fabio
48       }
49
50       Ted executed instanceof subfunction oeRefreshMap("AdtCrisisID=1") {
51         ieReceiveMap("environment.rndtMapWithPin.image.value") returned to Ted
52       }
53
54       Ted executed instanceof subfunction oeMessage("AMessage=I will arrive in 30 minutes") {
55         ieMessage("I will arrive in 30 minutes") returned to Camille
56         ieMessage("I will arrive in 30 minutes") returned to Fabio
57         ieMessage("I will arrive in 30 minutes") returned to Ted
58       }
59
60       Ted executed instanceof subfunction oeUpdateDispatchStatus(AenDispatchStatusX="InTransit") {
61         ieMessage("Dispatch Status Updated.") returned to Ted
62       }
63
64       Fabio executed instanceof subfunction oeUpdateDispatchStatus(AenDispatchStatusXX="Arrived") {
65         ieMessage("Dispatch Status Updated.") returned to Fabio
66       }
67
68       Fabio executed instanceof subfunction oeRequestHelp(AenTeamType="Police", RequestedNumber="1"
69         ) {
70         ieReceiveNewCrisisEvent("1","Walter","Witness","691123456","environment.rndtMapWithPin.image
71         .value") returned to Polo
72       }
73     }
74   }
75 }

```

```

67
68     Polo executed instance of subfunction oeUpdateDispatchStatus(AenDispatchStatusXXX="InTransit")
        {
69         ieMessage("Dispatch Status Updated.") returned to Polo
70     }
71
72     Ted executed instance of subfunction oeUpdateDispatchStatus(AenDispatchStatusXXXX="Arrived") {
73         ieMessage("Dispatch Status Updated.") returned to Ted
74     }
75
76     Polo executed instance of subfunction oeUpdateDispatchStatus(AenDispatchStatusXXXXX="Arrived")
        {
77         ieMessage("Dispatch Status Updated.") returned to Polo
78     }
79 }
80 }
81
82 }
83 }
84 }
85 }

```

Listing                      B.11:                      Messir                      Spec.                      file  
usecaseinstance-suGlobalManagementOfEvent-ucisuGlobalManagementOfEvent.msr.

## B.12 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 uciugCreateNewCrisiEvent : ugCreateNewCrisisEvent {
9         actors {
10             Camille : actCentralCoordinator
11             Orange : actCommunicationCompany
12             Fabio : actFiremenCoordinator
13             Ted : actTowServiceCoordinator
14         }
15
16         use case steps {
17             Camille executed instance of subfunction oeInitialiseNewCrisisEvent() {
18
19             }
20
21             Camille executed instance of subfunction oeRequestCrisisEventLocation("AdtPhoneNumber=691 12 34
                56") {
22                 ieRequestCrisisEventLocation("691 12 34 56") returned to Orange
23             }
24
25             Orange executed instance of subfunction oeReceiveCrisisEventLocation("Latitude=75.08, Longitude
                =23.03") {
26                 ieReceiveCrisisEventLocation("A string for the image with the pins") returned to Camille
27             }
28
29             Camille executed instance of subfunction oeConfirmCrisisEventLocation() {
30                 ieConfirmCrisisEventLocation("Done") returned to Camille
31             }
32
33             Camille executed instance of subfunction oeCreateNewCrisisEvent("AdtName=Walter", "AenHumanType=
                Witness", "AdtPhoneNumber=691123456", "A string for the image with the pins", "The Witness
                can't stay at the accident's location for long.") {
34                 ieReceiveNewCrisisEvent("1", "Walter", "Witness", "691123456", "A string for the image with the
                    pins", "The Witness can't stay at the accident's location for long.") returned to Fabio

```

```

35     ieReceiveNewCrisisEvent("1","Walter","Witness","691123456","A string for the image with the
        pins","The Witness can't stay at the accident's location for long.") returned to Ted
36 }
37
38 }
39
40 }
41 }
42 }

```

Listing B.12: Messir Spec. file  
 usecaseinstance-ugCreateNewCrisisEvent-uciugCreateNewCrisisEvent.msr.

## B.13 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 instance of subfunction oeUpdateDispatchStatus("AenDispatchStatus=InTransit") {
17           ieMessage("Dispatch Status Updated.") returned to Fabio
18         }
19
20         Ted executed instance of subfunction oeRefreshMap("Latitude=80.57, Longitude=50.23") {
21           ieReceiveMap("A string for the image with the pin") returned to Ted
22         }
23
24         Ted executed instance of subfunction oeMessage("AdtComment=I will arrive in 30 minutes") {
25           ieMessageCentralCoordinator("I will arrive in 30 minutes") returned to Camille
26           ieMessageAbstractDispatchCoordinator("I will arrive in 30 minutes") returned to Fabio
27           ieMessageAbstractDispatchCoordinator("I will arrive in 30 minutes") returned to Ted
28         }
29
30         Ted executed instance of subfunction oeUpdateDispatchStatus("AenDispatchStatus=InTransit") {
31           ieMessageAbstractDispatchCoordinator("Dispatch Status Updated.") returned to Ted
32         }
33
34         Fabio executed instance of subfunction oeUpdateDispatchStatus("AenDispatchStatus=Arrived") {
35           ieMessageAbstractDispatchCoordinator("Dispatch Status Updated.") returned to Fabio
36         }
37
38         Fabio executed instance of subfunction oeRequestHelp("AenTeamType=Police", "RequestedNumber=1")
39           {
40           ieReceiveNewCrisisEvent("1","Walter","Witness","691 12 34 56","A string for the image with the
              pins") returned to Polo
41         }
42
43         Polo executed instance of subfunction oeUpdateDispatchStatus("AenDispatchStatus=InTransit") {
44           ieMessageAbstractDispatchCoordinator("Dispatch Status Updated.") returned to Polo
45         }
46
47         Ted executed instance of subfunction oeUpdateDispatchStatus("AenDispatchStatus=Arrived") {
48           ieMessageAbstractDispatchCoordinator("Dispatch Status Updated.") returned to Ted
49         }
50
51         Polo executed instance of subfunction oeUpdateDispatchStatus("AenDispatchStatus=Arrived") {

```

```

51         ieMessageAbstractDispatchCoordinator("Dispatch Status Updated.") returned to Polo
52     }
53
54 }
55 }
56 }
57 }

```

Listing B.13: Messir Spec. file  
 usecaseinstance-ugGlobalDispatchManagement-uciugGlobalDispatchManagement.msr.

## B.14 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     step a: actCentralCoordinator executes ugCreateNewCrisisEvent
25     step b: actFiremenCoordinator executes ugGlobalDispatchManagement
26     step c: actTowServiceCoordinator executes ugGlobalDispatchManagement
27
28     ordering constraint "step (a) must be executed before step (b) or step (c)"
29     ordering constraint "step (b) XOR step (c)"
30   }
31 }
32
33 use case system usergoal ugCreateNewCrisisEvent() {
34   actor actCentralCoordinator[primary, active]
35   actor actCommunicationCompany[secondary, active]
36   actor actFiremenCoordinator[secondary, passive]
37   actor actTowServiceCoordinator[secondary, passive]
38
39   reuse oeInitialiseNewCrisisEvent[1..*]
40   reuse oeRequestCrisisEventLocation[0..*]
41   reuse oeReceiveCrisisEventLocation[0..*]
42   reuse oeConfirmCrisisEventLocation[1..*]
43   reuse oeCreateNewCrisisEvent[1..*]
44
45   step a: actCentralCoordinator executes oeInitialiseNewCrisisEvent
46   step b: actCentralCoordinator executes oeRequestCrisisEventLocation
47   step c: actCommunicationCompany executes oeReceiveCrisisEventLocation
48   step d: actCentralCoordinator executes oeConfirmCrisisEventLocation
49   step e: actCentralCoordinator executes oeCreateNewCrisisEvent
50
51   ordering constraint "if (b) then previously (a)"
52   ordering constraint "step (c) must be executed before step (d)"
53
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  step a: actFiremenCoordinator executes oeUpdateDispatchStatus
63  step b: actTowServiceCoordinator executes oeRefreshMap
64  step c: actTowServiceCoordinator executes oeMessage
65  step d: actTowServiceCoordinator executes oeUpdateDispatchStatus
66  step e: actFiremenCoordinator executes oeRequestHelp
67  step f: actPoliceCoordinator executes oeUpdateDispatchStatus
68
69  ordering constraint "step (a) must be executed at least two times"
70  ordering constraint "step (d) must be executed at least two times"
71  ordering constraint "step (f) can only be executed if step (e) has at least been executed once
    previously"
72  ordering constraint "step (f) must be executed at least two times"
73 }
74
75 use case system subfunction oeInitialiseNewCrisisEvent() {
76   actor actCentralCoordinator[primary, active]
77   //RETURN ADD EVENT NEW WINDOW ??
78 }
79
80 use case system subfunction oeRequestCrisisEventLocation(AdtPhoneNumber:dtPhoneNumber) {
81   actor actCentralCoordinator[primary, active]
82   actor actCommunicationCompany[secondary, passive]
83   returned messages{
84     ieRequestCrisisEventLocation(AdtPhoneNumber) returned to actCommunicationCompany //Slide 208..
85   }
86 }
87
88 use case system subfunction oeReceiveCrisisEventLocation(AdtGeoPos:dtGeoPos) {
89   actor actCommunicationCompany[primary, active]
90   actor actCentralCoordinator[secondary, passive]
91   returned messages{
92     ieReceiveCrisisEventLocation(AdtMapWithPin) returned to actCentralCoordinator
93   }
94 }
95
96 use case system subfunction oeConfirmCrisisEventLocation() {
97   actor actCentralCoordinator[primary, active]
98   returned messages{
99     ieConfirmCrisisEventLocation() returned to actCentralCoordinator
100 }
101 }
102
103 use case system subfunction oeCreateNewCrisisEvent(AdtName:ptString, AetHumanType:etHumanType,
    AdtPhoneNumber:dtPhoneNumber, AdtMapWithPin:dtMapWithPin, AdtComment:dtComment) {
104   actor actCentralCoordinator[primary, active]
105   actor actAbstractDispatchCoordinator[secondary, passive]
106   returned messages{
107     ieReceiveNewCrisisEvent(AdtCrisisID, AdtName, AetHumanType, AdtPhoneNumber, AdtMapWithPin,
        AdtComment) returned to actAbstractDispatchCoordinator
108 }
109 }
110
111 use case system subfunction oeMessage(AdtComment:dtComment) {
112   actor actAbstractDispatchCoordinator[primary, active]
113   actor actCentralCoordinator[secondary, passive]
114   actor actAbstractDispatchCoordinator[secondary, multiple]
115   returned messages{
116     ieMessageAbstractDispatchCoordinator(AdtComment) returned to actAbstractDispatchCoordinator
117     ieMessageCentralCoordinator(AdtComment) returned to actCentralCoordinator
118 }
119 }
120
121 use case system subfunction oeUpdateDispatchStatus(AetDispatchStatus:etDispatchStatus) {
122   actor actAbstractDispatchCoordinator[primary, active]
123   returned messages{

```

```

124     ieMessageAbstractDispatchCoordinator(AdtComment) returned to actAbstractDispatchCoordinator
125 }
126 }
127
128 use case system subfunction oeRefreshMap(AdtGeoPos:dtGeoPos) {
129     actor actAbstractDispatchCoordinator[primary, active]
130     returned messages{
131         ieReceiveMap(AdtMapWithPin) returned to actAbstractDispatchCoordinator
132     }
133 }
134
135 use case system subfunction oeRequestHelp(AetTeamType: etTeamType, RequestedNumber:ptInteger) {
136     actor actFiremenCoordinator[primary, active]
137     actor actAbstractDispatchCoordinator[secondary, passive]
138     returned messages{
139         ieReceiveNewCrisisEvent(AdtCrisisID, AdtName, AetHumanType, AdtPhoneNumber, AdtMapWithPin,
140             AdtComment) returned to actAbstractDispatchCoordinator
141     }
142 }
143 }
144
145 }

```

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





# Bibliography

- [1] Guelfi, N.: Messir: A Scientific Method for the Software Engineer. to be published (2017)
- [2] Armour, F., Miller, G.: Advanced Use Case Modeling: Software Systems. Addison-Wesley (2001)