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Messir Analysis Document
- v 0.0 -

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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 Messir 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 Messir 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 Messir 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
Primary actor(s)	
1	`actCentralCoordinator[active]`
Secondary actor(s)	
1	`actCommunicationCompany[active]`
2	`actFiremenCoordinator[active]`
3	`actTowServiceCoordinator[active]`
Goal(s) description	
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.	
Reuse	
1	`ugCreateNewCrisisEvent [1..*]`
2	`ugGlobalDispatchManagement [1..*]`
Protocol condition(s)	
1	none.
Pre-condition(s)	
1	none.
Main post-condition(s)	
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.
Main Steps	
a	the actor `actCentralCoordinator` executes the `ugCreateNewCrisisEvent` use case

continues in next page . . .

... Use-Case Description table continuation

b	the actor `actFiremenCoordinator` executes the `ugGlobalDispatchManagement` use case
c	the actor `actTowServiceCoordinator` executes the `ugGlobalDispatchManagement` 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 suGlobaManagementOfEvent use-case and its actors.

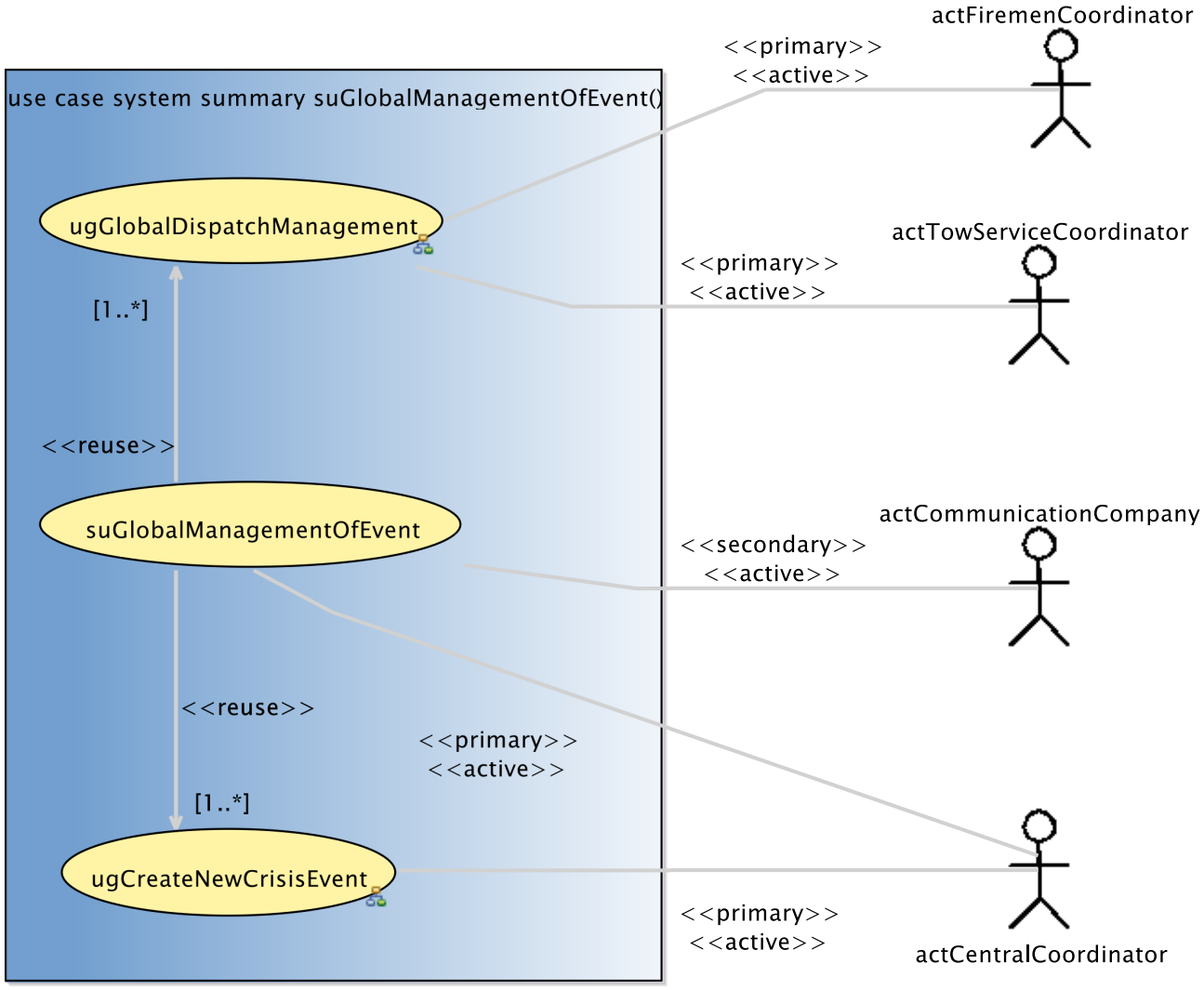


Figure 2.1:

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	`oeInitialiseNewCrisisEvent [1..*]`
2	`oeRequestCrisisEventLocation [0..*]`
3	`oeReceiveCrisisEventLocation [0..*]`
4	`oeConfirmCrisisEventLocation [1..*]`
5	`oeCreateNewCrisisEvent [1..*]`
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 `oeInitialiseNewCrisisEvent` use case
b	the actor `actCentralCoordinator` executes the `oeRequestCrisisEventLocation` use case
c	the actor `actCommunicationCompany` executes the `oeReceiveCrisisEventLocation` use case
d	the actor `actCentralCoordinator` executes the `oeConfirmCrisisEventLocation` use case
e	the actor `actCentralCoordinator` executes the `oeCreateNewCrisisEvent` use case
Steps Ordering Constraints	
1	step (a) must be executed first
2	if step (c) then previously step (b)
3	step (d) must be executed before step (e)
Additional Information	
none	

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

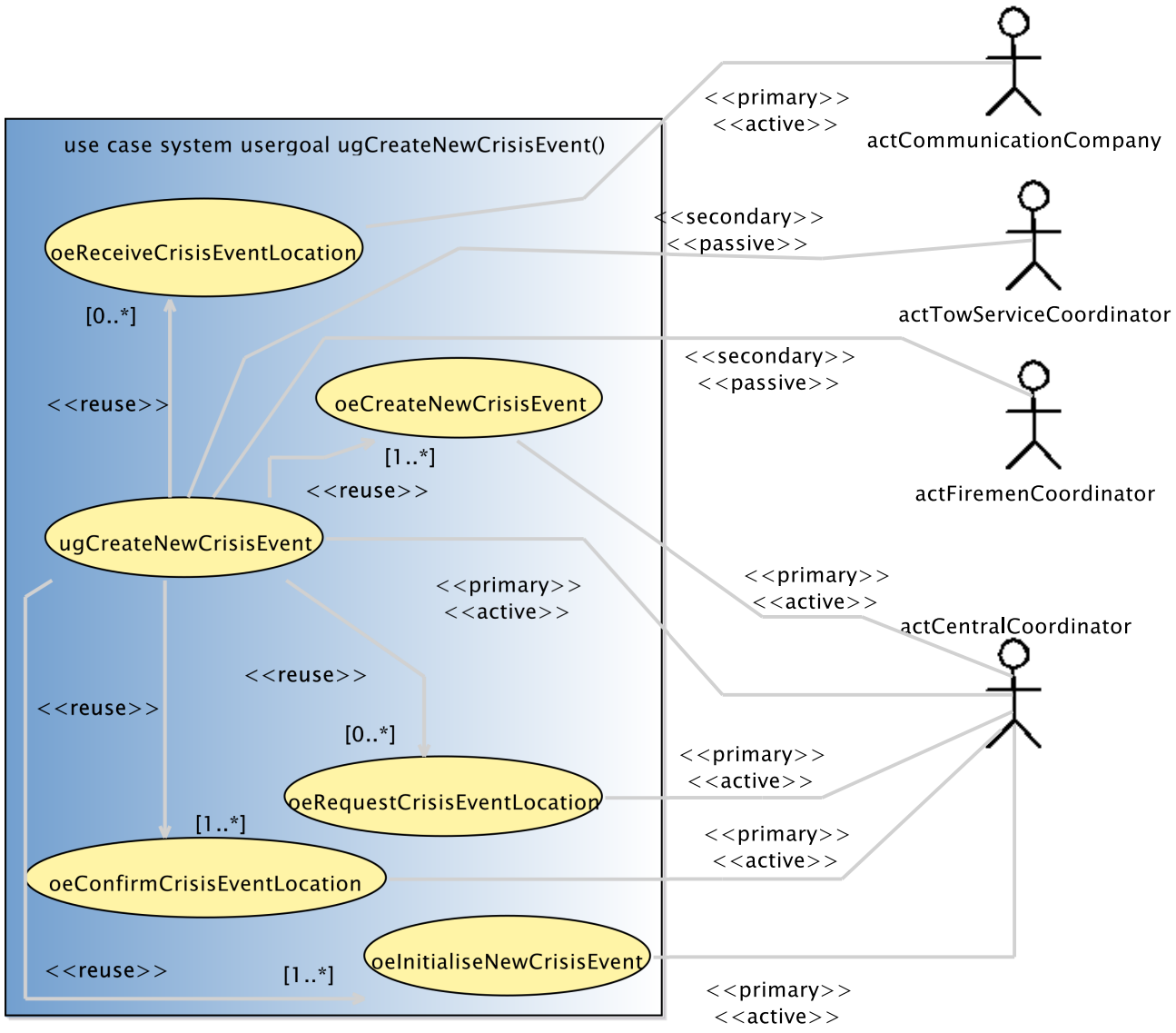


Figure 2.2: ugCreateNewCrisisEvent

2.3.1.3 usergoal-ugGlobalDispatchManagement

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

USE-CASE DESCRIPTION	
Name	ugGlobalDispatchManagement
Scope	system
Level	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	oeGetCrisisEventInformation [2..*]
2	oeUpdateDispatchStatus [4..*]
3	oeRefreshMap [0..*]
4	oeMessage [0..*]
5	oeRequestHelp [0..*]
6	oeCloseCrisisEvent [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 oeGetCrisisEventInformation use case
b	the actor actFiremenCoordinator executes the oeUpdateDispatchStatus use case
c	the actor actTowServiceCoordinator executes the oeGetCrisisEventInformation use case
d	the actor actTowServiceCoordinator executes the oeUpdateDispatchStatus use case
e	the actor actTowServiceCoordinator executes the oeRefreshMap use case
f	the actor actTowServiceCoordinator executes the oeMessage use case
g	the actor actFiremenCoordinator executes the oeRequestHelp use case
h	the actor actPoliceCoordinator executes the oeGetCrisisEventInformation use case
i	the actor actPoliceCoordinator executes the oeUpdateDispatchStatus use case
j	the actor actFiremenCoordinator executes the oeCloseCrisisEvent use case
k	the actor actTowServiceCoordinator executes the oeCloseCrisisEvent use case
l	the actor actPoliceCoordinator executes the oeCloseCrisisEvent use case
Steps Ordering Constraints	
1	if step (b) then previously step (a)

continues in next page . . .

... Use-Case Description table continuation

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)
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.

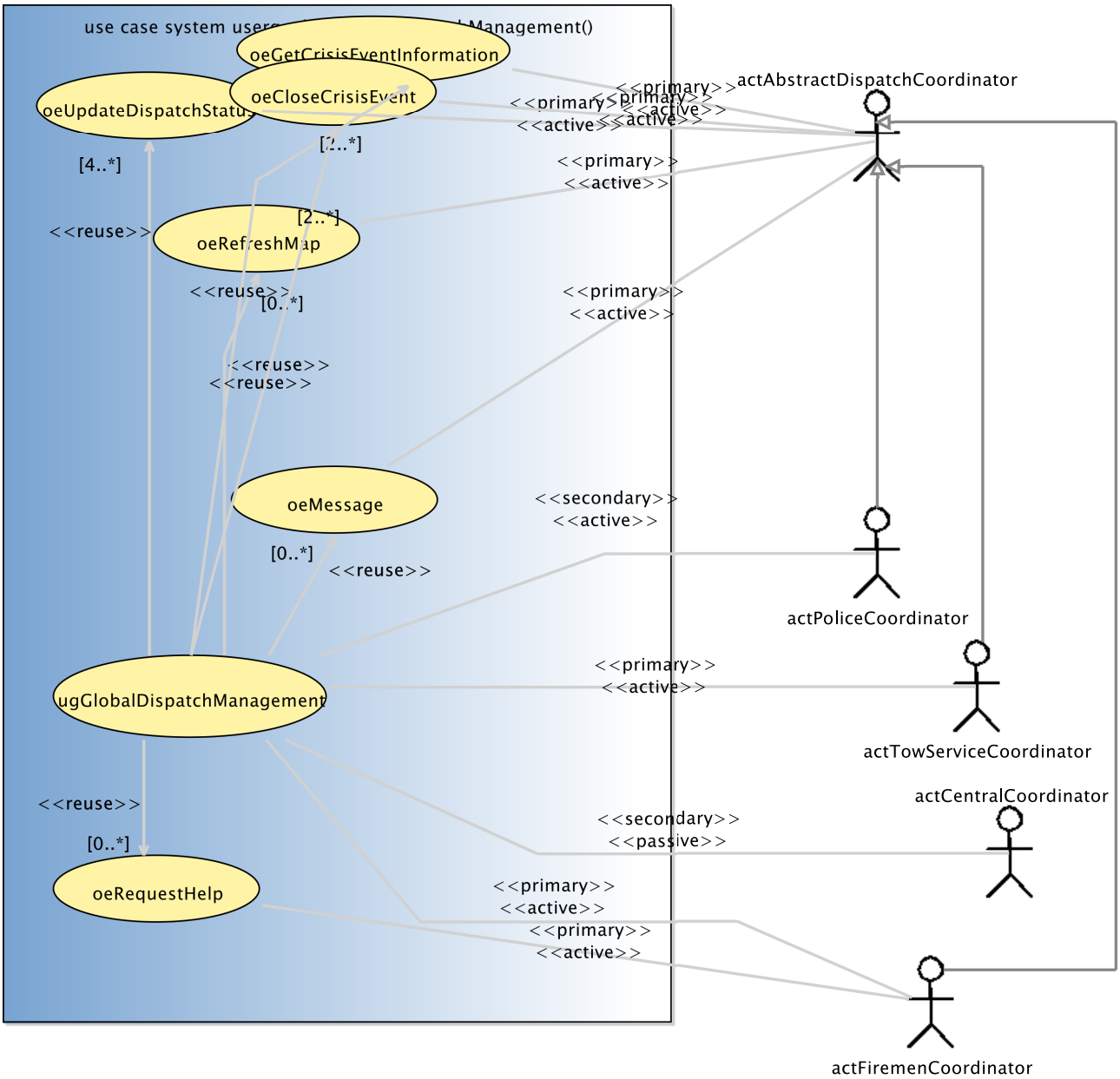


Figure 2.3: ugGlobalDispatchManagement

2.3.2 Use Case Instance(s)

2.3.2.1 Use-Case Instance - ucisuGlobalManagementOfEvent:suGlobalManagementOfEvent

Shows the suGlobaManagementOfEvent instance.

SUMMARY USE-CASE INSTANCE
Instantiated Use Case suGlobalManagementOfEvent
Instance ID ucisuGlobalManagementOfEvent

2.3.2.2 Use-Case Instance - uciugCreateNewCrisiEvent:ugCreateNewCrisisEvent

Shows the ugCreateNewCrisisEvent instance.

USERGOAL USE-CASE INSTANCE
Instantiated Use Case ugCreateNewCrisisEvent
Instance ID 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
Instantiated Use Case ugGlobalDispatchManagement
Instance ID uciugGlobalDispatchManagement

Figure 2.5 Shows the ugGlobalDispatchManagement instance.

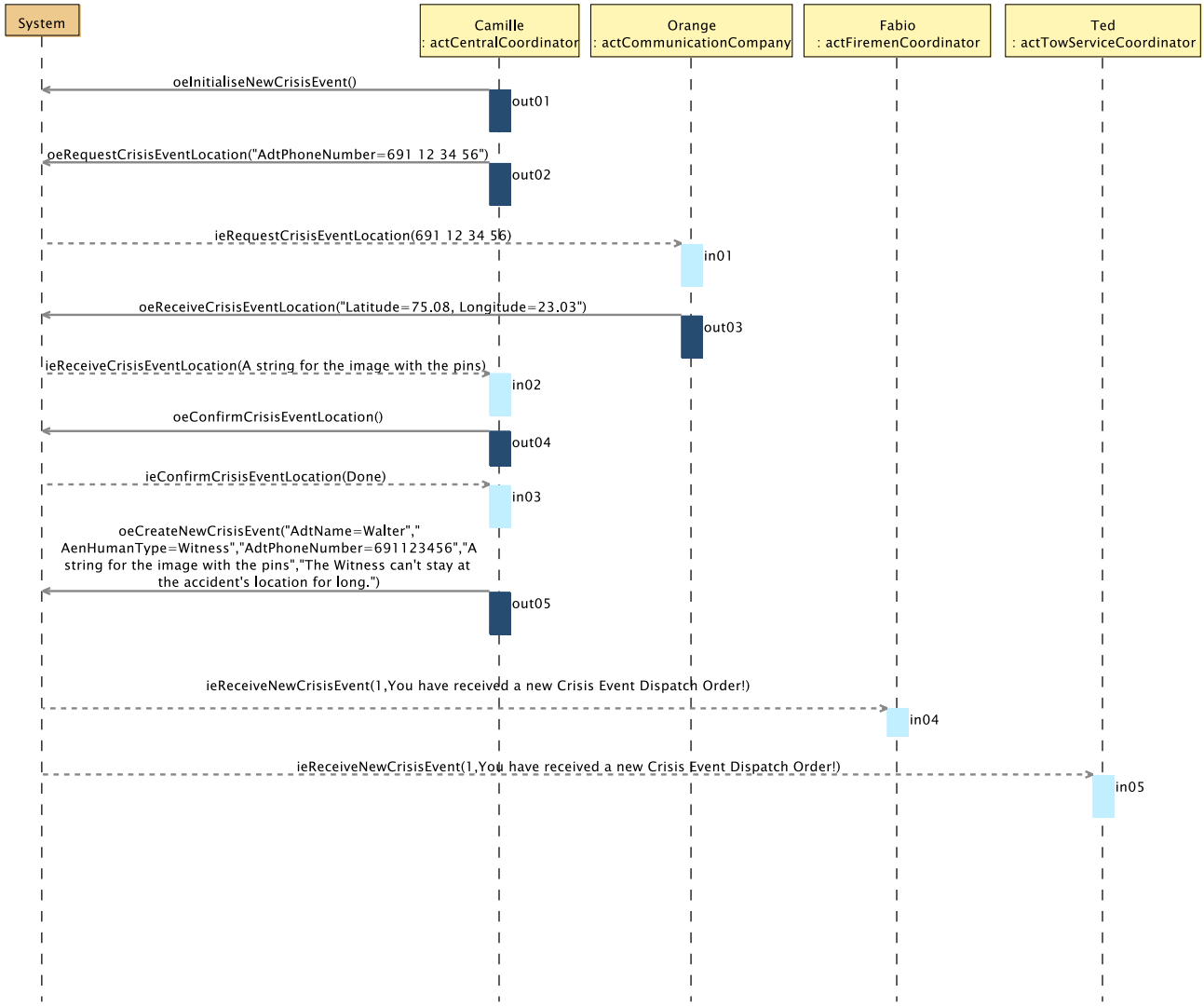
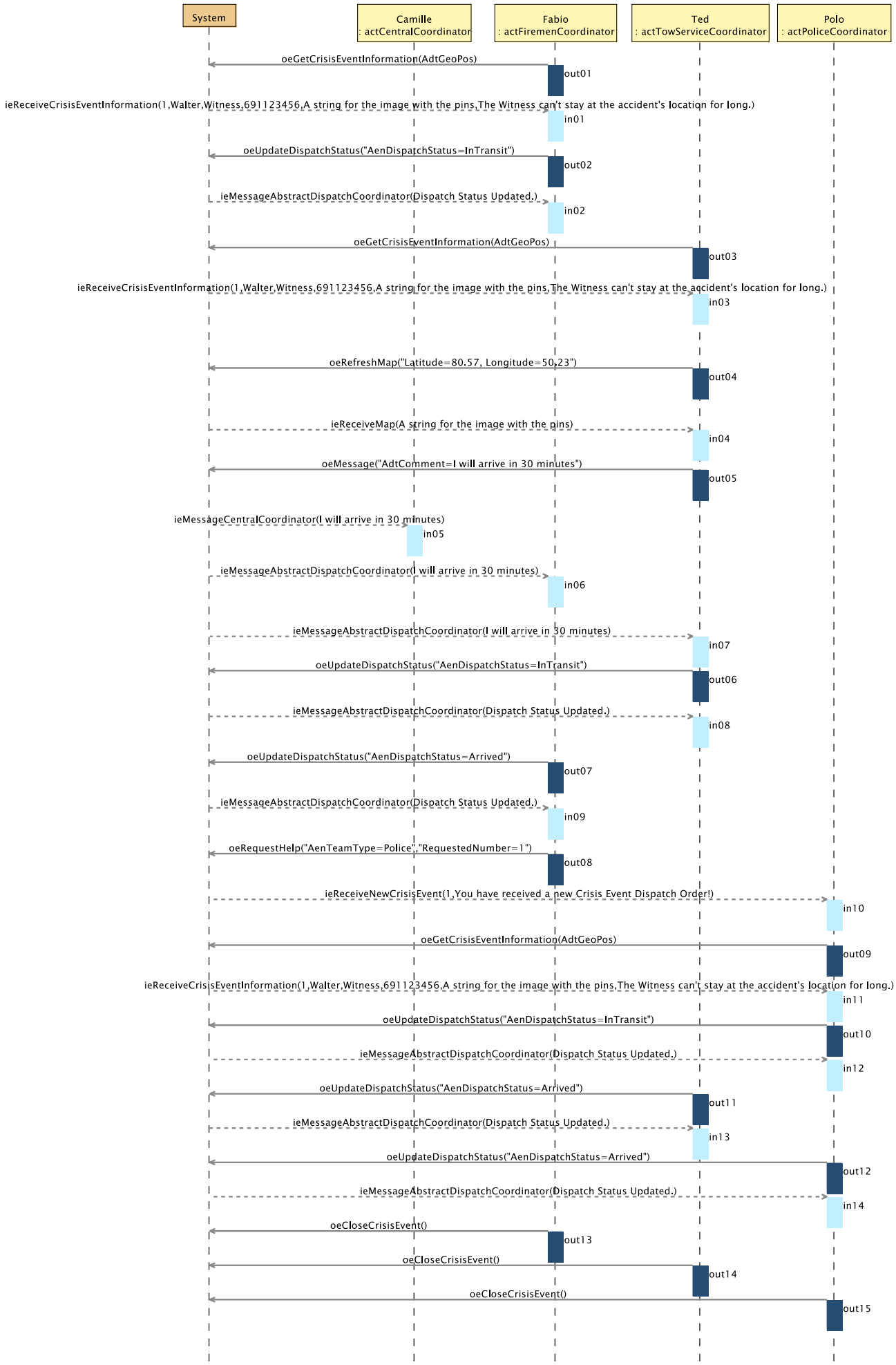


Figure 2.4: ugCreateNewCrisisEvent


System
Camille
: actCentralCoordinator
Fabio
: actFiremenCoordinator
Ted
: actTowServiceCoordinator
Polo
: actPoliceCoordinator
oeGetCrisisEventInformation(AdtGeoPos)
out01
ieReceiveCrisisEventInformation(1,Walter,Witness,691123456,A string for the image with the pins,The Witness can't stay at the accident's location for long.)
in01
oeUpdateDispatchStatus("AenDispatchStatus=InTransit")
out02
ieMessageAbstractDispatchCoordinator(Dispatch Status Updated.)
in02
oeGetCrisisEventInformation(AdtGeoPos)
out03
ieReceiveCrisisEventInformation(1,Walter,Witness,691123456,A string for the image with the pins,The Witness can't stay at the accident's location for long.)
in03
oeRefreshMap("Latitude=80.57, Longitude=50.23")
out04
ieReceiveMap(A string for the image with the pins)
in04
oeMessage("AdtComment=I will arrive in 30 minutes")
out05
ieMessageCentralCoordinator(I will arrive in 30 minutes)
in05
ieMessageAbstractDispatchCoordinator(I will arrive in 30 minutes)
in06
ieMessageAbstractDispatchCoordinator(I will arrive in 30 minutes)
in07
oeUpdateDispatchStatus("AenDispatchStatus=InTransit")
out06
ieMessageAbstractDispatchCoordinator(Dispatch Status Updated.)
in08
oeUpdateDispatchStatus("AenDispatchStatus=Arrived")
out07
ieMessageAbstractDispatchCoordinator(Dispatch Status Updated.)
in09
oeRequestHelp("AenTeamType=Police","RequestedNumber=1")
out08
ieReceiveNewCrisisEvent(1,You have received a new Crisis Event Dispatch Order!)
in10
oeGetCrisisEventInformation(AdtGeoPos)
out09
ieReceiveCrisisEventInformation(1,Walter,Witness,691123456,A string for the image with the pins,The Witness can't stay at the accident's location for long.)
in11
oeUpdateDispatchStatus("AenDispatchStatus=InTransit")
out10
ieMessageAbstractDispatchCoordinator(Dispatch Status Updated.)
in12
oeUpdateDispatchStatus("AenDispatchStatus=Arrived")
out11
ieMessageAbstractDispatchCoordinator(Dispatch Status Updated.)
in13
oeUpdateDispatchStatus("AenDispatchStatus=Arrived")
out12
ieMessageAbstractDispatchCoordinator(Dispatch Status Updated.)
in14
oeCloseCrisisEvent()
out13
oeCloseCrisisEvent()
out14
oeCloseCrisisEvent()
out15

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

3.2.2 `actCentralCoordinator` Actor

Actor	
actCentralCoordinator Is representing the person that receives the victim's or witness' call in the emergency central.	
OutputInterfaces	
OUT 1	`oeRequestCrisisEventLocation(AdtPhoneNumber:dtPhoneNumber):ptBoolean`

continues in next page . . .

... Actor table continuation

OUT 2	**oeCreateNewCrisisEvent(AdtName:ptString, AetHumanType:etHumanType, AdtPhoneNumber:dtPhoneNumber, AdtMapWithPin:dtAddress, AdtComment:dtComment):ptBoolean**
OUT 3	**oeConfirmCrisisEventLocation():ptBoolean**
InputInterfaces	
IN 1	**ieReceiveCrisisEventLocation(AdtMapWithPin:dtMapWithPin):ptBoolean**
IN 2	**ieMessageCentralCoordinator(AdtComment:dtComment):ptBoolean**

3.2.3 `actCommunicationCompany` Actor

ACTOR
actCommunicationCompany Is representing any communication company in Luxembourg.
OutputInterfaces
OUT 1 **oeReceiveCrisisEventLocation(AdtGeoPos:dtGeoPos):ptBoolean**
InputInterfaces
IN 1 **ieRequestCrisisEventLocation(AdtPhoneNumber:dtPhoneNumber):ptBoolean**

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 **oeRequestHelp(AetTeamType:etTeamType, ARequestedNumber:ptInteger):ptBoo**

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

continues in next page . . .

... Classes table continuation

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

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
dtGeoPos Two Real numbers used to identify a geographical position on earth.

continues in next page ...

. . . Datatypes table continuation

attribute	**latitude: dtLatitude**
attribute	**longitude: dtLongitude**
operation	**is():ptBoolean**

Enumerations
etDispatchStatus A String used to identify a dispatch status.
etHumanType A String used to identify an Human type.
etTeamType 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
assClassActorDispatchCoordinator Association of a dispatched coordinator to an actor of the same type.
assctCommentctCentralCoordinator Association of a comment to a central coordinator actor.
assctCommentctCrisisEvent Association of a comment to a crisis event.
assctCommentctDispatchedCoordinator Association of a comment to a dispatched coordinator.
assctCrisisEventctHuman Association of a crisis event to an human.
assctCrisisEventctMapWithPin Association of a crisis event with a MapWithPin image.
assctDispatchedCoordinatorctCrisisEvent Association of a dispatched coordinator to a crisis event.
assDispatchedCoordinatortctMapWithPin 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.

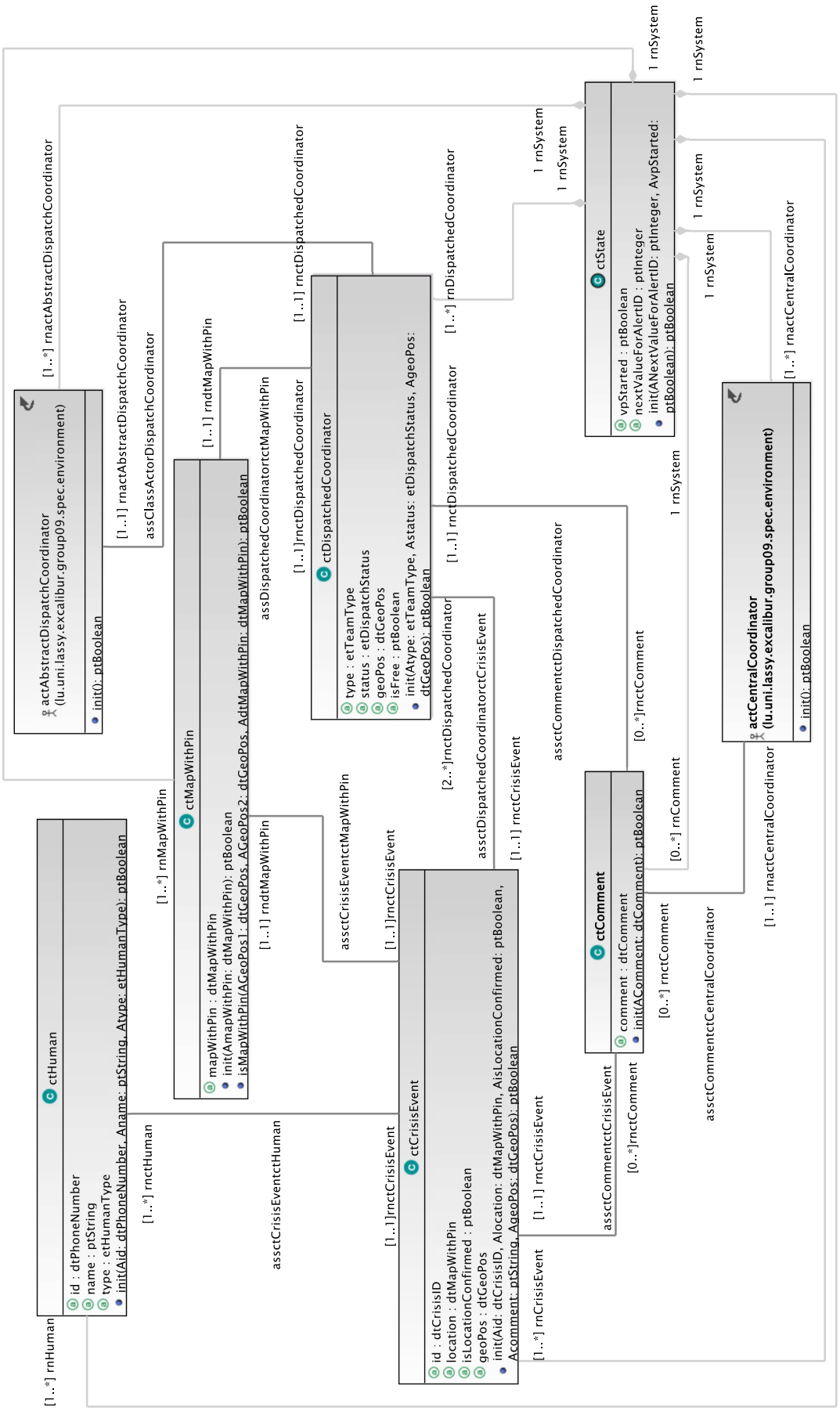


Figure 4.1: Concept Model - PrimaryTypes-Classes local view 12. .

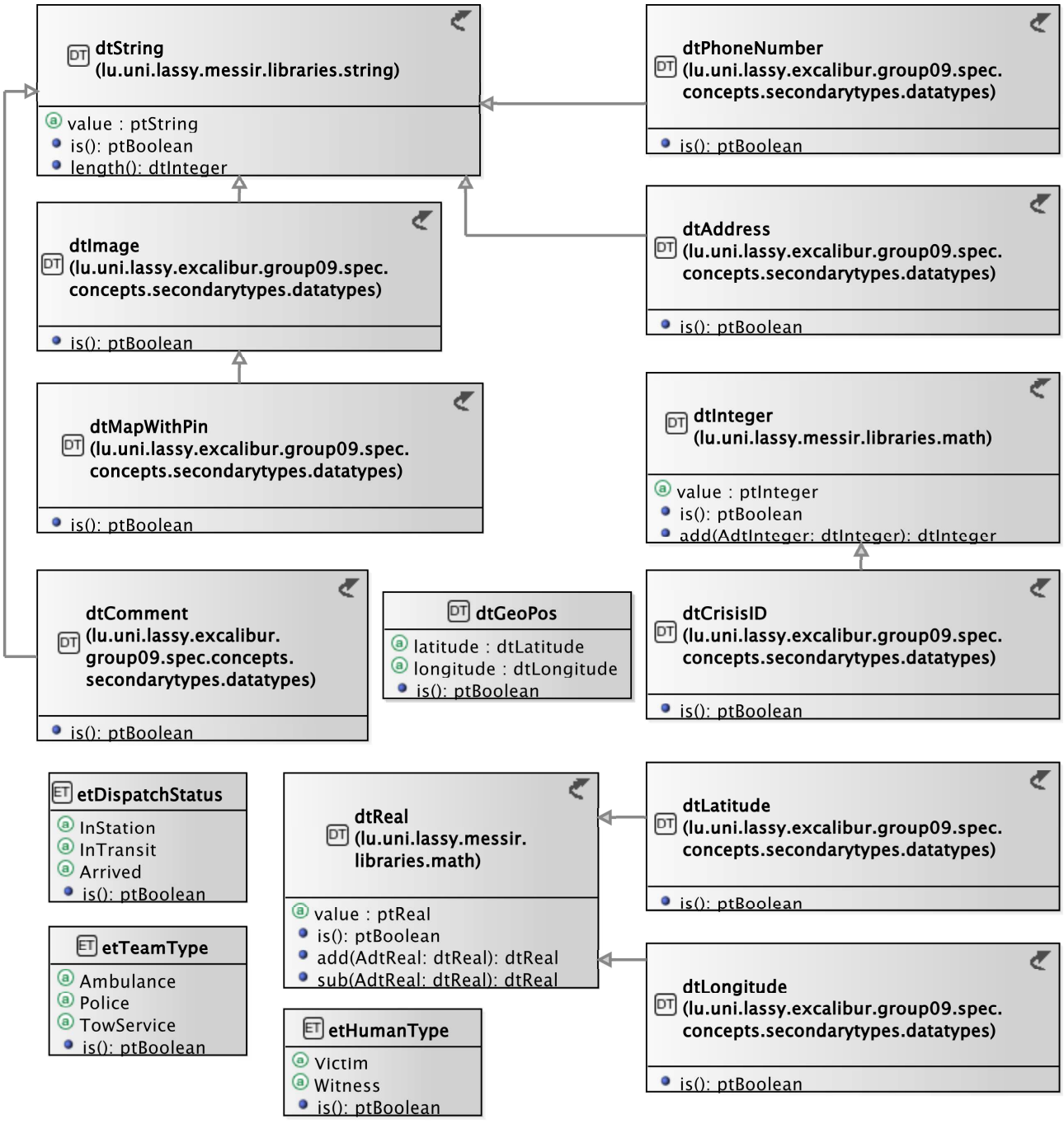


Figure 4.2: Concept Model - PrimaryTypes-Datatypes local view 15. .

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

continues in next page . . .

. . . Datatypes table continuation

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	
oeCloseCrisisEvent sent to close up the associated event.	
Return type	
ptBoolean	
Pre-Condition (protocol)	
PreP 1	the coordinator is associated to a crisis event.
Pre-Condition (functional)	
PreF 1	it is supposed that a dispatched coordinator can only be associated to one crisis event at the same time.
Post-Condition (functional)	
PostF 1	
Post-Condition (protocol)	
PostP 1	The coordinator's attribute `isFree` is set back to true and can thus be associated to another crisis event.

5.1.2 Operation Model for oeGetCrisisEventInformation

The `oeGetCrisisEventInformation` operation has the following properties:

Operation
oeGetCrisisEventInformation sent to get the information stored in the current state of the crisis event.
Parameters

continues in next page . . .

. . . Operation table continuation

1	**AdtGeoPos: dtGeoPos** a geographical position that identifies the actor's current position.
Return type	
ptBoolean	
Pre-Condition (protocol)	
PreP 1	the coordinator is associated to a crisis event.
PreP 2	the `GeoPos` given by the coordinator is a valid one.
Pre-Condition (functional)	
PreF 1	it is supposed that a dispatched coordinator can only be associated to one crisis event at the same time.
Post-Condition (functional)	
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.
Post-Condition (protocol)	
PostP 1	

5.1.3 Operation Model for oeMessage

The `oeMessage` operation has the following properties:

Operation

oeMessage	
sent to transmit a message.	
Parameters	
1	**AdtComment: dtComment**
Return type	
ptBoolean	
Pre-Condition (protocol)	
PreP 1	the coordinator is associated to a crisis event.
Pre-Condition (functional)	
PreF 1	it is supposed that a dispatched coordinator can only be associated to one crisis event at the same time.
Post-Condition (functional)	
PostF 1	
Post-Condition (protocol)	
PostP 1	

5.1.4 Operation Model for oeRefreshMap

The `oeRefreshMap` operation has the following properties:

Operation

oeRefreshMap	
sent to refresh the map.	
Parameters	

continues in next page . . .

. . . Operation table continuation

1	**AdtGeoPos: dtGeoPos**
Return type	
ptBoolean	
Pre-Condition (protocol)	
PreP 1	the coordinator is associated to a crisis event.
PreP 2	the `GeoPos` given by the coordinator is a valid one.
Pre-Condition (functional)	
PreF 1	it is supposed that a dispatched coordinator can only be associated to one crisis event at the same time.
Post-Condition (functional)	
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.
Post-Condition (protocol)	
PostP 1	

5.1.5 Operation Model for oeUpdateDispatchStatus

The `oeUpdateDispatchStatus` operation has the following properties:

Operation

oeUpdateDispatchStatus sent to update the dispatch status.	
Parameters	
1	**AetDispatchStatus: etDispatchStatus**
Return type	
ptBoolean	
Pre-Condition (protocol)	
PreP 1	the coordinator is associated to a crisis event.
Pre-Condition (functional)	
PreF 1	it is supposed that a dispatched coordinator can only be associated to one crisis event at the same time.
Post-Condition (functional)	
PostF 1	the attribute `status` of the coordinator is modified either from 'InStation' to 'InTransit' or from 'InTransit' to 'Arrived'
Post-Condition (protocol)	
PostP 1	

5.2 Environment - Out Interface Operation Scheme for actCentralCoordinator

5.2.1 Operation Model for oeConfirmCrisisEventLocation

The `oeConfirmCrisisEventLocation` operation has the following properties:

Operation
oeConfirmCrisisEventLocation
sent to confirm the crisis event's location.
Return type
ptBoolean
Pre-Condition (protocol)
PreP 1 the crisis event is supposed to be initialised, but not created yet.
Pre-Condition (functional)
PreF 1
Post-Condition (functional)
PostF 1 the attribute `isLocationConfirmed` of the newly initialised `ctCrisisEvent` is set to true.
Post-Condition (protocol)
PostP 1

5.2.2 Operation Model for oeCreateNewCrisisEvent

The `oeCreateNewCrisisEvent` operation has the following properties:

Operation	
oeCreateNewCrisisEvent	
sent to create an 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: dtAddress** a map with pins showing the crisis event's location.
Return type	
ptBoolean	
Pre-Condition (protocol)	
PreP 1	the crisis event is supposed to be initialised, but not created yet.
PreP 2	the attribute `isLocationConfirmed` is set to true.
Pre-Condition (functional)	
PreF 1	
Post-Condition (functional)	
PostF 1	An alert message is sent to a free FiremenCoordinator and a free TowServiceCoordinator that are geographically the nearest of the crisis event's location.
Post-Condition (protocol)	
PostP 1	The selected `ctDispatchCoordinator`'s attribute `isFree` is set to false and can thus no more be associated to another crisis event.

5.2.3 Operation Model for oeInitialiseNewCrisisEvent

The `oeInitialiseNewCrisisEvent` operation has the following properties:

Operation
oeInitialiseNewCrisisEvent sent to initialise a new crisis event with a new unique id that is the id of the previous crisis event incremented by one.
Return type
ptBoolean
Pre-Condition (protocol)
PreP 1
Pre-Condition (functional)
PreF 1
Post-Condition (functional)
PostF 1 ctState instance should be equal to the one @pre incremented by one : self.rnActor.rnSystem.nextValueForAlertID = self.rnActor.rnSystem.nextValueForAlertID@pre+1
Post-Condition (protocol)
PostP 1

5.2.4 Operation Model for oeRequestCrisisEventLocation

The `oeRequestCrisisEventLocation` operation has the following properties:

Operation
oeRequestCrisisEventLocation sent to request a crisis event's location.
Parameters
1 **AdtPhoneNumber: dtPhoneNumber**
Return type
ptBoolean
Pre-Condition (protocol)
PreP 1
Pre-Condition (functional)
PreF 1 it is supposed that the phone nuumber given by the `CentralCoordinator` is always sent to correct communication company.
Post-Condition (functional)
PostF 1 the phone number can be identified by the communication company.
Post-Condition (protocol)
PostP 1

5.3 Environment - Out Interface Operation Scheme for actCommunicationCompany

5.3.1 Operation Model for oeReceiveCrisisEventLocation

The `oeReceiveCrisisEventLocation` operation has the following properties:

Operation
oeReceiveCrisisEventLocation
sent to get a map with pin.
Parameters
1 **AdtGeoPos: dtGeoPos**
Return type
ptBoolean
Pre-Condition (protocol)
PreP 1 the `GeoPos` given by the communication company is a valid one.
Pre-Condition (functional)
PreF 1
Post-Condition (functional)
PostF 1 the map with pins returned to the `CentralCoordinator` includes a pin of the crisis event's location.
Post-Condition (protocol)
PostP 1

5.4 Environment - Out Interface Operation Scheme for actFiremenCoordinator

5.4.1 Operation Model for oeRequestHelp

The `oeRequestHelp` operation has the following properties:

Operation
oeRequestHelp
sent to request help from the corresponding team type.
Parameters
1 **AetTeamType: etTeamType**
2 **ARequestedNumber: ptInteger**
Return type
ptBoolean
Pre-Condition (protocol)
PreP 1 the coordinator is associated to a crisis event.
Pre-Condition (functional)
PreF 1 it is supposed that a dispatched coordinator can only be associated to one crisis event at the same time.
Post-Condition (functional)
PostF 1 An alert message is sent to the nearest and free requested coordinator type.
Post-Condition (protocol)
PostP 1 The selected `ctDispatchCoordinator`'s attribute `isFree` 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.oeConfirmCrisisEventLocation
- lu.uni.lassy.excalibur.group09.spec.usecases.oeCreateNewCrisisEvent
- lu.uni.lassy.excalibur.group09.spec.usecases.oeGetCrisisEventInformation
- lu.uni.lassy.excalibur.group09.spec.usecases.oeInitialiseNewCrisisEvent
- 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 Operation Specifications

- lu.uni.lassy.excalibur.group09.spec.concepts.primarytypes.classes.ctMapWithPin.isMapWithPin

Appendix B

Messir Specification Files Listing

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

```
//
//DON'T TOUCH THIS FILE !!!
//
package uuidff8a216549a64951bf055c8b5a9dde2a {
 Concept Model {}
}
```

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

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

```
package lu.uni.lassy.excalibur.group09.spec.environment.operations.actAbstractDispatchCoordinator.
    outactAbstractDispatchCoordinator.oeCloseCrisisEvent {

import lu.uni.lassy.messir.libraries.primitives
import lu.uni.lassy.messir.libraries.math
import lu.uni.lassy.messir.libraries.string
import lu.uni.lassy.messir.libraries.calendar
import lu.uni.lassy.excalibur.group09.spec.concepts.secondarytypes.datatypes
import lu.uni.lassy.excalibur.group09.spec.concepts.primarytypes.datatypes

 Operation Model {

  operation: lu.uni.lassy.excalibur.group09.spec.environment.actAbstractDispatchCoordinator.
      outactAbstractDispatchCoordinator.oeCloseCrisisEvent():ptBoolean{
  // include below the specification information (pre,post or ocl or prolog)

  }
 }
}
```

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

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

```
package lu.uni.lassy.excalibur.group09.spec.environment.operations.actAbstractDispatchCoordinator.
    outactAbstractDispatchCoordinator.oeGetCrisisEventInformation {

import lu.uni.lassy.messir.libraries.primitives
import lu.uni.lassy.messir.libraries.math
import lu.uni.lassy.messir.libraries.string
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-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.7: Messir Spec. file environment-actCentralCoordinator-oeConfirmCrisisEventLocation.msr.

B.8 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:dtAddress, AdtComment:dtComment):ptBoolean{
13   // include below the specification information (pre,post or ocl or prolog)
14
15   }
16  }
17 }
```

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

B.9 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.9: Messir Spec. file environment-actCentralCoordinator-oeInitialiseNewCrisisEvent.msr.

B.10 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.10: Messir Spec. file environment-actCentralCoordinator-oeRequestCrisisEventLocation.msr.

B.11 File ./src-gen/messir-spec/operations/environment/environment-actCommunicationCompany-oeReceiveCrisisEventLocation.msr

```
1 package lu.uni.lassy.excalibur.group09.spec.environment.operations.actCommunicationCompany.
      outactCommunicationCompany.oeReceiveCrisisEventLocation {
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.actCommunicationCompany.
        outactCommunicationCompany.oeReceiveCrisisEventLocation(AdtGeoPos:dtGeoPos):ptBoolean{
13   // include below the specification information (pre,post or ocl or prolog)
14
15   }
16  }
17 }
```

Listing B.11: Messir Spec. file environment-actCommunicationCompany-oeReceiveCrisisEventLocation.msr.

B.12 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.12: Messir Spec. file environment-actFiremenCoordinator-oeRequestHelp.msr.

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

```
/*
* @author Kira
* @date Tue Oct 25 23:54:03 CEST 2016
*/

package lu.uni.lassy.excalibur.group09.spec.environment {

import lu.uni.lassy.messir.libraries.calendar
import lu.uni.lassy.messir.libraries.math
import lu.uni.lassy.messir.libraries.primitives
import lu.uni.lassy.messir.libraries.string
import lu.uni.lassy.excalibur.group09.spec.concepts.primarytypes.datatypes
import lu.uni.lassy.excalibur.group09.spec.concepts.secondarytypes.datatypes

Environment Model {

  actor actCentralCoordinator role rnactCentralCoordinator cardinality [1..*] {

   operation init():ptBoolean

   input interface inactCentralCoordinator {
    operation ieReceiveCrisisEventLocation(AdtMapWithPin:dtMapWithPin) : ptBoolean
    operation ieConfirmCrisisEventLocation(AdMessage:ptString) : ptBoolean
    operation ieMessageCentralCoordinator(AdtComment:dtComment) : ptBoolean
   }

   output interface outactCentralCoordinator {
    operation oeInitialiseNewCrisisEvent() : ptBoolean
    operation oeRequestCrisisEventLocation(AdtPhoneNumber:dtPhoneNumber) : ptBoolean
    operation oeCreateNewCrisisEvent(AdtName:ptString, AetHumanType:etHumanType, AdtPhoneNumber:
        dtPhoneNumber, AdtMapWithPin:dtAddress, AdtComment:dtComment) : ptBoolean
    operation oeConfirmCrisisEventLocation() : ptBoolean
   }
  }

  actor actCommunicationCompany role rnactCommunicationCompany cardinality [1..*] {

   operation init() : ptBoolean

   input interface inactCommunicationCompany {
    operation ieRequestCrisisEventLocation(AdtPhoneNumber:dtPhoneNumber) : ptBoolean
   }

   output interface outactCommunicationCompany {
    operation oeReceiveCrisisEventLocation(AdtGeoPos:dtGeoPos) : ptBoolean
   }
  }

  actor actAbstractDispatchCoordinator role rnactAbstractDispatchCoordinator cardinality [1..*] {

   operation init() : ptBoolean

   input interface inactAbstractDispatchCoordinator {
    operation ieReceiveNewCrisisEvent(AdtCrisisID:dtCrisisID, AdtComment:dtComment) : ptBoolean
    operation ieReceiveCrisisEventInformation(AdtName:ptString, AetHumanType:etHumanType,
        AdtPhoneNumber:dtPhoneNumber, AdtMapWithPin:dtMapWithPin, AdtComment:dtComment) : ptBoolean
    operation ieMessageAbstractDispatchCoordinator(AdtComment: dtComment) : ptBoolean
    operation ieReceiveMap(AdtMapWithPin: dtMapWithPin) : ptBoolean
   }

   output interface outactAbstractDispatchCoordinator {
    operation oeGetCrisisEventInformation(AdtGeoPos:dtGeoPos) : ptBoolean
    operation oeMessage(AdtComment:dtComment) : ptBoolean
    operation oeUpdateDispatchStatus(AetDispatchStatus:etDispatchStatus): ptBoolean
    operation oeRefreshMap(AdtGeoPos:dtGeoPos) : ptBoolean
    operation oeCloseCrisisEvent(): ptBoolean
   }
  }
```

```
67
68    actor actFiremenCoordinator role rnactFiremenCoordinator cardinality [1..*] extends
          actAbstractDispatchCoordinator {
69
70     operation init() : ptBoolean
71
72     input interface inactFiremenCoordinator {
73     }
74
75     output interface outactFiremenCoordinator {
76      operation oeRequestHelp(AetTeamType: etTeamType, ARequestedNumber:ptInteger) : ptBoolean
77     }
78    }
79
80    actor actPoliceCoordinator role rnPoliceCoordinator cardinality [1..*] extends
          actAbstractDispatchCoordinator {
81
82     operation init() : ptBoolean
83
84     input interface inactPoliceCoordinator {
85     }
86
87     output interface outactPoliceCoordinator {
88     }
89    }
90
91    actor actTowServiceCoordinator role rnTowServiceCoordinator cardinality [1..*] extends
          actAbstractDispatchCoordinator {
92
93     operation init() : ptBoolean
94
95     input interface inactTowServiceCoordinator {
96     }
97
98     output interface outactTowServiceCoordinator {
99     }
100   }
101
102 }
103 }
```

Listing B.13: Messir Spec. file environment.msr.

B.14 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 assDispatchedCoordinatortctMapWithPin
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.14: Messir Spec. file primarytypes-associations.msr.

B.15 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   operation isMapWithPin(AGeoPos1:dtGeoPos, AGeoPos2:dtGeoPos, AdtMapWithPin:dtMapWithPin) :
         ptBoolean
83  }
84
85 }
86 }
87 }
```

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

B.16 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
```

```
package lu.uni.lassy.excalibur.group09.spec.concepts.primarytypes.datatypes {

import lu.uni.lassy.messir.libraries.calendar
import lu.uni.lassy.messir.libraries.math
import lu.uni.lassy.messir.libraries.primitives
import lu.uni.lassy.messir.libraries.string
import lu.uni.lassy.excalibur.group09.spec.concepts.secondarytypes.datatypes

Concept Model {

 Primary Types {

    datatype dtGeoPos{
      attribute latitude: dtLatitude
      attribute longitude: dtLongitude
      operation is() : ptBoolean
    }

    enum etDispatchStatus {
      constants["InStation", "InTransit", "Arrived"]
      operation is() : ptBoolean
    }

    enum etHumanType {
      constants["Victim", "Witness"]
      operation is() : ptBoolean
    }

    enum etTeamType {
      constants["Ambulance", "Police", "TowService"]
      operation is() : ptBoolean
    }
 }
}
}
```

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

B.17 File ./src-gen/messir-spec/concepts/secondarytypes-associations/secondarytypes-associations.msr

```
/*
* @author Kira
* @date Tue Oct 25 23:54:03 CEST 2016
*/

package lu.uni.lassy.excalibur.group09.spec.concepts.secondarytypes.associations {

import lu.uni.lassy.messir.libraries.calendar
import lu.uni.lassy.messir.libraries.math
import lu.uni.lassy.messir.libraries.primitives
import lu.uni.lassy.messir.libraries.string

Concept Model {

 Secondary Types {

 }
}
}
```

Listing B.17: Messir Spec. file secondarytypes-associations.msr.

B.18 File ./src-gen/messir-spec/concepts/secondarytypes-classes/secondarytypes-classes.msr

```
/*
* @author Kira
* @date Tue Oct 25 23:54:03 CEST 2016
*/

package lu.uni.lassy.excalibur.group09.spec.concepts.secondarytypes.classes {

import lu.uni.lassy.messir.libraries.calendar
import lu.uni.lassy.messir.libraries.math
import lu.uni.lassy.messir.libraries.primitives
import lu.uni.lassy.messir.libraries.string

Concept Model {

 Secondary Types {

 }
}
}
```

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

B.19 File ./src-gen/messir-spec/concepts/secondarytypes-datatypes/secondarytypes-datatypes.msr

```
/*
* @author Kira
* @date Tue Oct 25 23:54:03 CEST 2016
*/

package lu.uni.lassy.excalibur.group09.spec.concepts.secondarytypes.datatypes {

import lu.uni.lassy.messir.libraries.calendar
import lu.uni.lassy.messir.libraries.math
import lu.uni.lassy.messir.libraries.primitives
import lu.uni.lassy.messir.libraries.string
import lu.uni.lassy.excalibur.group09.spec.concepts.primarytypes.datatypes

Concept Model {

 Secondary Types {

  datatype dtPhoneNumber extends dtString {
    operation is() : ptBoolean
   }

  datatype dtAddress extends dtString {
    operation is() : ptBoolean
   }

  datatype dtCrisisID extends dtInteger {
    operation is() : ptBoolean
   }

  datatype dtLongitude extends dtReal {
      operation is() : ptBoolean
     }

  datatype dtLatitude extends dtReal {
      operation is() : ptBoolean
   }

  datatype dtImage extends dtString {
      operation is() : ptBoolean
   }

  datatype dtMapWithPin extends dtImage {
    operation is() : ptBoolean
```

```
44    }
45
46   datatype dtComment extends dtString {
47     operation is() : ptBoolean
48    }
49  }
50
51 }
52 }
```

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

B.20 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.20: Messir Spec. file tests.msr.

B.21 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
             34 56") {
22        ieRequestCrisisEventLocation("691 12 34 56") returned to Orange
23       }
24
25       Orange executed instanceof subfunction oeReceiveCrisisEventLocation("Latitude=75.08,
             Longitude=23.03") {
26        ieReceiveCrisisEventLocation("environment.rndtMapWithPin.image.value") returned to Camille
27       }
28
```

```
29        Camille executed instanceof subfunction oeConfirmCrisisEventLocation() {
30         ieConfirmCrisisEventLocation("Done") returned to Camille
31        }
32
33        Camille executed instanceof subfunction oeCreateNewCrisisEvent("AdtCrisisID=1", "AdtName=
              Walter", "AenHumanType=Witness", "AdtPhoneNumberX=691123456", "environment.rndtMapWithPin
              .image.value", "No additional comments") {
34         ieReceiveNewCrisisEvent("1","Walter","Witness","691123456","environment.rndtMapWithPin.image
               .value","No additional comments") returned to Fabio
35         ieReceiveNewCrisisEvent("1","Walter","Witness","691123456","environment.rndtMapWithPin.image
               .value","No additional comments") returned to Ted
36        }
37       }
38      }
39
40     Fabio executed instanceof ugGlobalDispatchManagement() {
41       use case steps {
42        Fabio executed instanceof subfunction oeUpdateDispatchStatus(AenDispatchStatus="InTransit") {
43         ieMessage("Dispatch Status Updated.") returned to Fabio
44        }
45
46        Ted executed instanceof subfunction oeRefreshMap("AdtCrisisID=1") {
47         ieReceiveMap("environment.rndtMapWithPin.image.value") returned to Ted
48        }
49
50        Ted executed instanceof subfunction oeMessage("AMessage=I will arrive in 30 minutes") {
51         ieMessage("I will arrive in 30 minutes") returned to Camille
52         ieMessage("I will arrive in 30 minutes") returned to Fabio
53         ieMessage("I will arrive in 30 minutes") returned to Ted
54        }
55
56        Ted executed instanceof subfunction oeUpdateDispatchStatus(AenDispatchStatusX="InTransit") {
57         ieMessage("Dispatch Status Updated.") returned to Ted
58        }
59
60        Fabio executed instanceof subfunction oeUpdateDispatchStatus(AenDispatchStatusXX="Arrived") {
61         ieMessage("Dispatch Status Updated.") returned to Fabio
62        }
63
64        Fabio executed instanceof subfunction oeRequestHelp(AenTeamType="Police", RequestedNumber="1"
              ) {
65         ieReceiveNewCrisisEvent("1","Walter","Witness","691123456","environment.rndtMapWithPin.image
               .value") returned to Polo
66        }
67
68        Polo executed instanceof subfunction oeUpdateDispatchStatus(AenDispatchStatusXXX="InTransit")
              {
69         ieMessage("Dispatch Status Updated.") returned to Polo
70        }
71
72        Ted executed instanceof subfunction oeUpdateDispatchStatus(AenDispatchStatusXXXX="Arrived") {
73         ieMessage("Dispatch Status Updated.") returned to Ted
74        }
75
76        Polo executed instanceof subfunction oeUpdateDispatchStatus(AenDispatchStatusXXXXX="Arrived")
              {
77         ieMessage("Dispatch Status Updated.") returned to Polo
78        }
79       }
80      }
81
82    }
83   }
84  }
85 }
```

Listing B.21: Messir Spec. file usecaseinstance-suGlobalManagementOfEvent-ucisuGlobalManagementOfEvent.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 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 instanceof subfunction oeInitialiseNewCrisisEvent() {
18     }
19
20    Camille executed instanceof subfunction oeRequestCrisisEventLocation("AdtPhoneNumber=691 12 34
          56") {
21     ieRequestCrisisEventLocation("691 12 34 56") returned to Orange
22    }
23
24    Orange executed instanceof subfunction oeReceiveCrisisEventLocation("Latitude=75.08, Longitude
          =23.03") {
25     ieReceiveCrisisEventLocation("A string for the image with the pins") returned to Camille
26    }
27
28    Camille executed instanceof subfunction oeConfirmCrisisEventLocation() {
29     ieConfirmCrisisEventLocation("Done") returned to Camille
30    }
31
32    Camille executed instanceof 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.") {
33     ieReceiveNewCrisisEvent("1","You have received a new Crisis Event Dispatch Order!") returned to
           Fabio
34     ieReceiveNewCrisisEvent("1","You have received a new Crisis Event Dispatch Order!") returned to
           Ted
35    }
36
37   }
38
39  }
40 }
41 }
```

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
             with the pins","The Witness can't stay at the accident's location for long.") returned to
             Fabio
18      }
19
20      Fabio executed instanceof subfunction oeUpdateDispatchStatus("AenDispatchStatus=InTransit") {
21       ieMessageAbstractDispatchCoordinator("Dispatch Status Updated.") returned to Fabio
22      }
23
24      Ted executed instanceof subfunction oeGetCrisisEventInformation() {
25       ieReceiveCrisisEventInformation("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
26      }
27
28      Ted executed instanceof subfunction oeRefreshMap("Latitude=80.57, Longitude=50.23") {
29       ieReceiveMap("A string for the image with the pins") returned to Ted
30      }
31
32      Ted executed instanceof subfunction oeMessage("AdtComment=I will arrive in 30 minutes") {
33       ieMessageCentralCoordinator("I will arrive in 30 minutes") returned to Camille
34       ieMessageAbstractDispatchCoordinator("I will arrive in 30 minutes") returned to Fabio
35       ieMessageAbstractDispatchCoordinator("I will arrive in 30 minutes") returned to Ted
36      }
37
38      Ted executed instanceof subfunction oeUpdateDispatchStatus("AenDispatchStatus=InTransit") {
39       ieMessageAbstractDispatchCoordinator("Dispatch Status Updated.") returned to Ted
40      }
41
42      Fabio executed instanceof subfunction oeUpdateDispatchStatus("AenDispatchStatus=Arrived") {
43       ieMessageAbstractDispatchCoordinator("Dispatch Status Updated.") returned to Fabio
44      }
45
46      Fabio executed instanceof subfunction oeRequestHelp("AenTeamType=Police", "RequestedNumber=1")
            {
47       ieReceiveNewCrisisEvent("1","You have received a new Crisis Event Dispatch Order!") returned
             to Polo
48      }
49
50      Polo executed instanceof subfunction oeGetCrisisEventInformation() {
51       ieReceiveCrisisEventInformation("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
             Polo
52      }
53
54      Polo executed instanceof subfunction oeUpdateDispatchStatus("AenDispatchStatus=InTransit") {
55       ieMessageAbstractDispatchCoordinator("Dispatch Status Updated.") returned to Polo
56      }
57
58      Ted executed instanceof subfunction oeUpdateDispatchStatus("AenDispatchStatus=Arrived") {
59       ieMessageAbstractDispatchCoordinator("Dispatch Status Updated.") returned to Ted
60      }
61
62      Polo executed instanceof subfunction oeUpdateDispatchStatus("AenDispatchStatus=Arrived") {
63       ieMessageAbstractDispatchCoordinator("Dispatch Status Updated.") returned to Polo
64      }
65
66      Fabio executed instanceof subfunction oeCloseCrisisEvent() {
67      }
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 oeInitialiseNewCrisisEvent[1..*]
43     reuse oeRequestCrisisEventLocation[0..*]
44     reuse oeReceiveCrisisEventLocation[0..*]
45     reuse oeConfirmCrisisEventLocation[1..*]
46     reuse oeCreateNewCrisisEvent[1..*]
47
48     step a: actCentralCoordinator executes oeInitialiseNewCrisisEvent
49     step b: actCentralCoordinator executes oeRequestCrisisEventLocation
50     step c: actCommunicationCompany executes oeReceiveCrisisEventLocation
51     step d: actCentralCoordinator executes oeConfirmCrisisEventLocation
52     step e: actCentralCoordinator executes oeCreateNewCrisisEvent
53
54     ordering constraint "step (a) must be executed first"
55     ordering constraint "if step (c) then previously step (b)"
56     ordering constraint "step (d) must be executed before step (e)"
```

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

```
125    actor actAbstractDispatchCoordinator[secondary,passive]
126    returned messages{
127     ieReceiveNewCrisisEvent(AdtCrisisID, AdtMessage) returned to actAbstractDispatchCoordinator
128    }
129   }
130
131   use case system subfunction oeGetCrisisEventInformation(AdtGeoPos:dtGeoPos) {
132    actor actAbstractDispatchCoordinator[primary,active]
133    returned messages{
134     ieReceiveCrisisEventInformation (AdtCrisisID, AdtName, AetHumanType, AdtPhoneNumber,
           AdtMapWithPin, AdtComment) returned to actAbstractDispatchCoordinator
135    }
136   }
137
138   use case system subfunction oeMessage(AdtComment:dtComment) {
139    actor actAbstractDispatchCoordinator[primary,active]
140    actor actCentralCoordinator[secondary, passive]
141    actor actAbstractDispatchCoordinator[secondary, multiple]
142    returned messages{
143     ieMessageAbstractDispatchCoordinator(AdtComment) returned to actAbstractDispatchCoordinator
144     ieMessageCentralCoordinator(AdtComment) returned to actCentralCoordinator
145    }
146   }
147
148   use case system subfunction oeUpdateDispatchStatus(AetDispatchStatus:etDispatchStatus){
149    actor actAbstractDispatchCoordinator[primary,active]
150    returned messages{
151     ieMessageAbstractDispatchCoordinator(AdtComment) returned to actAbstractDispatchCoordinator
152    }
153   }
154
155   use case system subfunction oeRefreshMap(AdtGeoPos:dtGeoPos){
156    actor actAbstractDispatchCoordinator[primary,active]
157    returned messages{
158     ieReceiveMap(AdtMapWithPin) returned to actAbstractDispatchCoordinator
159    }
160   }
161
162   use case system subfunction oeRequestHelp(AetTeamType: etTeamType, RequestedNumber:ptInteger) {
163    actor actFiremenCoordinator[primary,active]
164    actor actAbstractDispatchCoordinator[secondary,passive]
165    returned messages{
166     ieReceiveNewCrisisEvent(AdtCrisisID, AdtMessage) returned to actAbstractDispatchCoordinator
167    }
168   }
169
170   use case system subfunction oeCloseCrisisEvent() {
171    actor actAbstractDispatchCoordinator[primary,active]
172   }
173
174  }
175
176 }
```

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