Affiliation line 1
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Author line 1
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MyProjectName : Your Title
Messir Analysis Document
- v 0.0 -

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Contents

List of Figures

Listings

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 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 [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 Messir method and inspired by the standard Cokburn template [2].

2.3.1 Use Cases

2.3.1.1 summary-suGlobalManagementOfEvent

Shows the suGlobaManagementOfEvent use-case and its actors.

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	`actPoliceCoordinator[active]`
4	`actTowServiceCoordinator[active]`
Goal(s) description	
Shows the suGlobaManagementOfEvent use-case and its actors.	
Reuse	
1	`oeRequestCrisisEventLocation [0..*]`
2	`oeReceiveCrisisEventLocation [0..*]`
3	`oeConfirmCrisisEventLocation [1..*]`
4	`oeCreateNewCrisisEvent [1..*]`
5	`oeUpdateDispatchStatus [4..*]`
6	`oeRequestHelp [0..*]`
Protocol condition(s)	
1	
Pre-condition(s)	
1	
Main post-condition(s)	
1	

continues in next page . . .

... Use-Case Description table continuation

Main Steps	
a	the actor actCentralCoordinator executes the oeRequestCrisisEventLocation use case
b	the actor actCommunicationCompany executes the oeReceiveCrisisEventLocation use case
c	the actor actCentralCoordinator executes the oeConfirmCrisisEventLocation use case
d	the actor actCentralCoordinator executes the oeCreateNewCrisisEvent use case
e	the actor actFiremenCoordinator executes the oeUpdateDispatchStatus use case
f	the actor actTowServiceCoordinator executes the oeRefreshMap use case
g	the actor actTowServiceCoordinator executes the oeMessage use case
h	the actor actTowServiceCoordinator executes the oeUpdateDispatchStatus use case
i	the actor actFiremenCoordinator executes the oeRequestHelp use case
j	the actor actPoliceCoordinator executes the oeUpdateDispatchStatus use case
Steps Ordering Constraints	
1	if (b) then previously (a)
2	step (c) must be executed before step (d)
3	step (d) must be executed before the step (e) to (j)
4	step (e) must be executed at least two times
5	step (h) must be executed at least two times
6	step (j) can only be executed if step (i) has at least been executed once previously
7	step (j) must be executed at least two times
Additional Information	
none	

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

2.3.1.2 subfunction-oeConfirmCrisisEventLocation

sent to confirm the crisis event's location.

USE-CASE DESCRIPTION	
Name	oeConfirmCrisisEventLocation
Scope	system
Level	subfunction
Primary actor(s)	
1	actCentralCoordinator[active]
Goal(s) description	
sent to confirm the crisis event's location.	
Protocol condition(s)	
1	
Pre-condition(s)	
1	
Main post-condition(s)	
1	

continues in next page . . .

. . . Use-Case Description table continuation

Additional Information
none

2.3.1.3 subfunction-oeCreateNewCrisisEvent

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

Use-Case Description	
Name	oeCreateNewCrisisEvent
Scope	system
Level	subfunction
Parameters	
AdtCrisisID: dtCrisisID 1 AdtName: ptString 2 AetHumanType: etHumanType 3 AdtPhoneNumber: dtPhoneNumber 4 AdtMapWithPin: dtMapWithPin 5	
Primary actor(s)	
1	`actCentralCoordinator[active]`
Secondary actor(s)	
1	`actAbstractDispatchCoordinator[passive]`
Goal(s) description	
sent to create an new crisis event and to alert the corresponding coordinators.	
Protocol condition(s)	
1	
Pre-condition(s)	
1	
Main post-condition(s)	
1	
Additional Information	
none	

2.3.1.4 subfunction-oeMessage

sent to transmit a message.

Use-Case Description	
Name	oeMessage
Scope	system
Level	subfunction
Parameters	

continues in next page . . .

. . . Use-Case Description table continuation

AMessage: ptString 1
Primary actor(s)
1 actAbstractDispatchCoordinator[active]
Secondary actor(s)
1 actCentralCoordinator[passive] 2 actAbstractDispatchCoordinator[multiple]
Goal(s) description
sent to transmit a message.
Protocol condition(s)
1
Pre-condition(s)
1
Main post-condition(s)
1
Additional Information
none

2.3.1.5 subfunction-oeReceiveCrisisEventLocation

sent to return a map with pin.

USE-CASE DESCRIPTION	
Name	oeReceiveCrisisEventLocation
Scope	system
Level	subfunction
Parameters	
AdtMapWithPin: dtMapWithPin 1	
Primary actor(s)	
1	actCommunicationCompany[active]
Secondary actor(s)	
1	actCentralCoordinator[passive]
Goal(s) description	
sent to return a map with pin.	
Protocol condition(s)	
1	
Pre-condition(s)	
1	
Main post-condition(s)	
1	
Additional Information	
none	

2.3.1.6 subfunction-oeRefreshMap

sent to refresh the map.

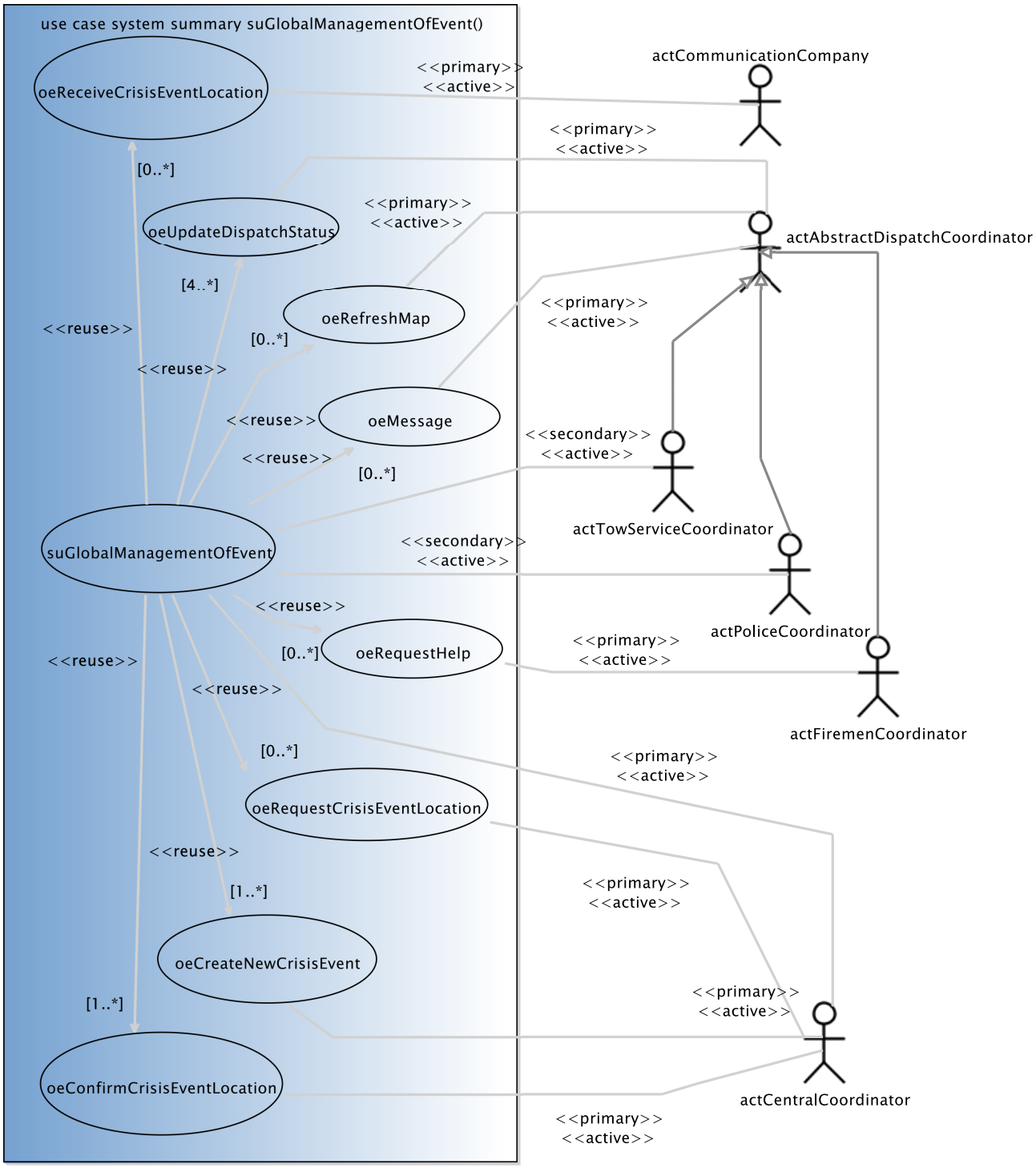
use case system summary suGlobalManagementOfEvent()
oeReceiveCrisisEventLocation
oeUpdateDispatchStatus
oeRefreshMap
oeMessage
suGlobalManagementOfEvent
oeRequestHelp
oeRequestCrisisEventLocation
oeCreateNewCrisisEvent
oeConfirmCrisisEventLocation
actCommunicationCompany
actAbstractDispatchCoordinator
actTowServiceCoordinator
actPoliceCoordinator
actFiremenCoordinator
actCentralCoordinator
<<primary>>
<<active>>
<<secondary>>
<<reuse>>
[0..*]
[4..*]
[1..*]

Figure 2.1:

Use-Case Description	
Name	oeRefreshMap
Scope	system
Level	subfunction
Parameters	
AdtCrisisID: dtCrisisID 1	
Primary actor(s)	
1	actAbstractDispatchCoordinator[active]
Goal(s) description	
sent to refresh the map.	
Protocol condition(s)	
1	
Pre-condition(s)	
1	
Main post-condition(s)	
1	
Additional Information	
none	

2.3.1.7 subfunction-oeRequestCrisisEventLocation

sent to request a crisis event's location.

Use-Case Description	
Name	oeRequestCrisisEventLocation
Scope	system
Level	subfunction
Parameters	
AdtPhoneNumber: dtPhoneNumber 1	
Primary actor(s)	
1	actCentralCoordinator[active]
Secondary actor(s)	
1	actCommunicationCompany[passive]
Goal(s) description	
sent to request a crisis event's location.	
Protocol condition(s)	
1	
Pre-condition(s)	
1	
Main post-condition(s)	
1	
Additional Information	
none	

2.3.1.8 subfunction-oeRequestHelp

sent to request help from the corresponding team type.

Use-Case Description	
Name	oeRequestHelp
Scope	system
Level	subfunction
Parameters	
AetTeamType: etTeamType 1 RequestedNumber: ptInteger 2	
Primary actor(s)	
1	`actFiremenCoordinator[active]`
Secondary actor(s)	
1	`actAbstractDispatchCoordinator[passive]`
Goal(s) description	
sent to request help from the corresponding team type.	
Protocol condition(s)	
1	
Pre-condition(s)	
1	
Main post-condition(s)	
1	
Additional Information	
none	

2.3.1.9 subfunction-oeUpdateDispatchStatus

sent to update the dispatch status.

Use-Case Description	
Name	oeUpdateDispatchStatus
Scope	system
Level	subfunction
Parameters	
AetDispatchStatus: etDispatchStatus 1	
Primary actor(s)	
1	`actAbstractDispatchCoordinator[active]`
Goal(s) description	
sent to update the dispatch status.	
Protocol condition(s)	
1	
Pre-condition(s)	
1	
Main post-condition(s)	

continues in next page . . .

. . . Use-Case Description table continuation

1
Additional Information
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
Instantiated Use Case suGlobalManagementOfEvent
Instance ID ucisuGlobalManagementOfEvent

Figure 2.2 Shows the suGlobaManagementOfEvent instance.

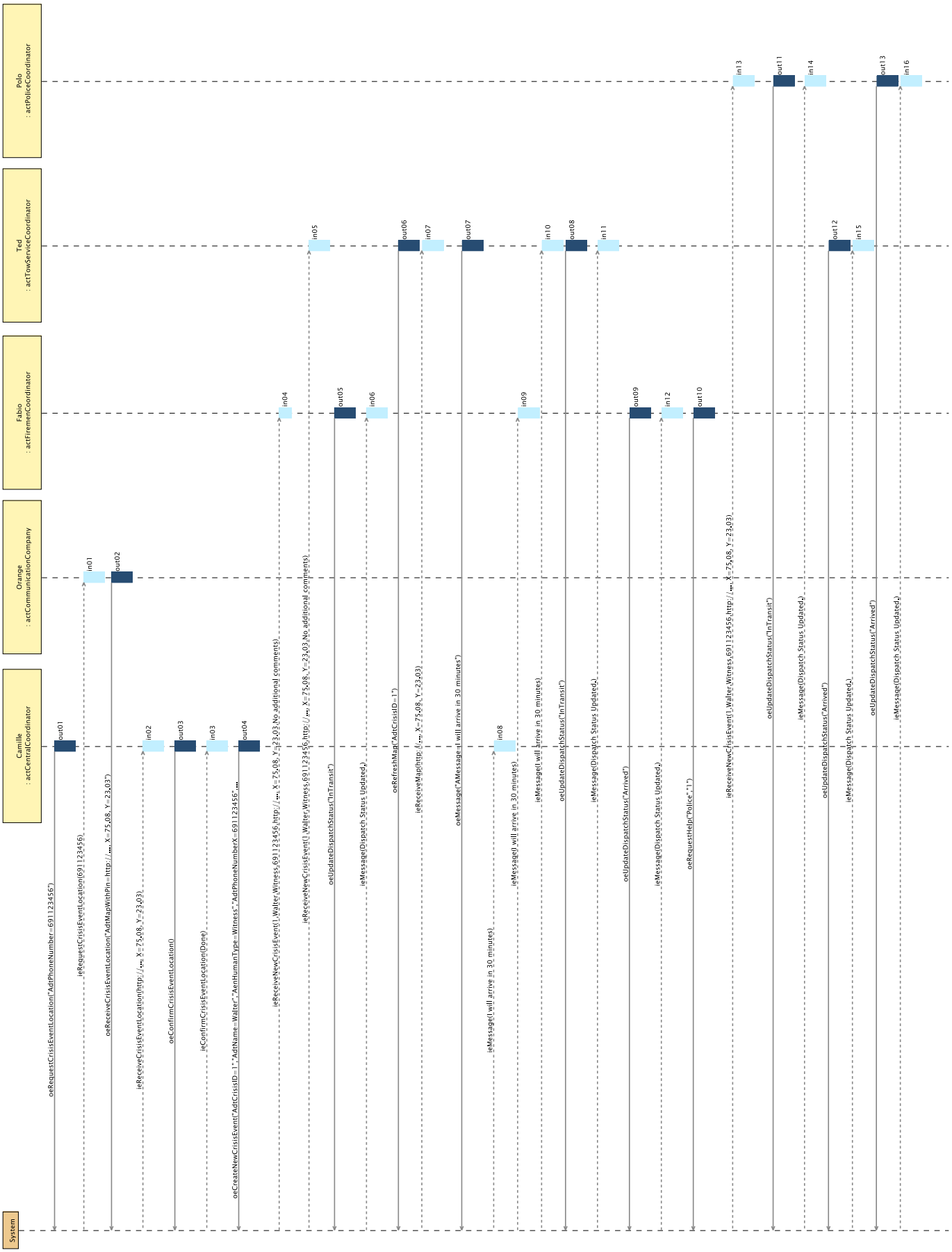
System
Camille : actCentralCoordinator
Orange : actCommunicationCompany
Fabio : actFiremenCoordinator
Ted : actTowServiceCoordinator
Polo : actPoliceCoordinator
oeRequestCrisisEventLocation("AdtPhoneNumber=691123456")
ieRequestCrisisEventLocation(691123456)
oeReceiveCrisisEventLocation("AdtMapWithPin=http://.... X=75,08, Y=23,03")
ieReceiveCrisisEventLocation(http://.... X=75,08, Y=23,03)
oeConfirmCrisisEventLocation()
ieConfirmCrisisEventLocation(Done)
oeCreateNewCrisisEvent("AdtCrisisID=1","AdtName=Walter","AenHumanType=Witness","AdtPhoneNumberX=691123456",....
ieReceiveNewCrisisEvent(1,Walter,Witness,691123456,http://.... X=75,08, Y=23,03,No additional comments)
ieReceiveNewCrisisEvent(1,Walter,Witness,691123456,http://.... X=75,08, Y=23,03,No additional comments)
oeUpdateDispatchStatus("InTransit")
ieMessage(Dispatch Status Updated)
oeRefreshMap("AdtCrisisID=1")
ieReceiveMap(http://.... X=75,08, Y=23,03)
oeMessage("AMessage=I will arrive in 30 minutes")
ieMessage(I will arrive in 30 minutes)
ieMessage(I will arrive in 30 minutes)
ieMessage(I will arrive in 30 minutes)
oeUpdateDispatchStatus("InTransit")
ieMessage(Dispatch Status Updated)
oeUpdateDispatchStatus("Arrived")
ieMessage(Dispatch Status Updated)
oeRequestHelp("Police","1")
ieReceiveNewCrisisEvent(1,Walter,Witness,691123456,http://.... X=75,08, Y=23,03)
oeUpdateDispatchStatus("InTransit")
ieMessage(Dispatch Status Updated)
oeUpdateDispatchStatus("Arrived")
ieMessage(Dispatch Status Updated)
oeUpdateDispatchStatus("Arrived")
ieMessage(Dispatch Status Updated)
in01
out01
out02
in02
out03
in03
out04
in04
out05
in05
in06
out06
in07
out07
in08
in09
in10
out08
in11
out09
in12
out10
in13
out11
in14
out12
in15
out13
in16

Figure 2.2:

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(AMessage:ptString):ptBoolean`** OUT 2 **`oeUpdateDispatchStatus(AetDispatchStatus:etDispatchStatus):ptBoolean`**
InputInterfaces
IN 1 **`ieReceiveNewCrisisEvent(AdtCrisisID:dtCrisisID, AdtName:ptString, AetHumanType:etHumanType, AdtPhoneNumber:dtPhoneNumber, AdtMapWithPin:dtAddress, AMessage:ptString):ptBoolean`** IN 2 **`ieMessage(AMessage:ptString):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

continues in next page . . .

... Actor table continuation

OUT 1	**oeRequestCrisisEventLocation(AdtPhoneNumber:dtPhoneNumber):ptBoolean**
OUT 2	**oeMessage(AMessage:ptString):ptBoolean**
OUT 3	**oeCreateNewCrisisEvent(AdtCrisisID:dtCrisisID, AdtName:ptString, AetHumanType:etHumanType, AdtPhoneNumber:dtPhoneNumber, AdtMapWithPin:dtAddress, AMessage:ptString):ptBoolean**
OUT 4	**oeConfirmCrisisEventLocation():ptBoolean**
InputInterfaces	
IN 1	**ieReceiveCrisisEventLocation(AdtMapWithPin:dtMapWithPin):ptBoolean**
IN 2	**ieMessage(AMessage:ptString):ptBoolean**

3.2.3 `actCommunicationCompany` Actor

ACTOR	
actCommunicationCompany	
Is representing any communication company in Luxembourg.	
OutputInterfaces	
OUT 1	**oeReceiveCrisisEventLocation(AdtMapWithPin:dtMapWithPin):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

continues in next page ...

. . . Actor table continuation

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 Illustration of all the associations.

4.2 PrimaryTypes-Datatypes

4.2.1 Local view 01

Figure 4.2 Is representing the address data type.

4.2.2 Local view 02

Figure 4.3 Is representing the crisis id data type.

4.2.3 Local view 03

Figure 4.4 Is representing the map including a pin data type.

4.2.4 Local view 04

Figure 4.5 Is representing the phone number data type.

4.2.5 Local view 05

Figure 4.6 Is representing the dispatch status enumeration type.

4.2.6 Local view 06

Figure 4.7 Is representing the human type enumeration type.

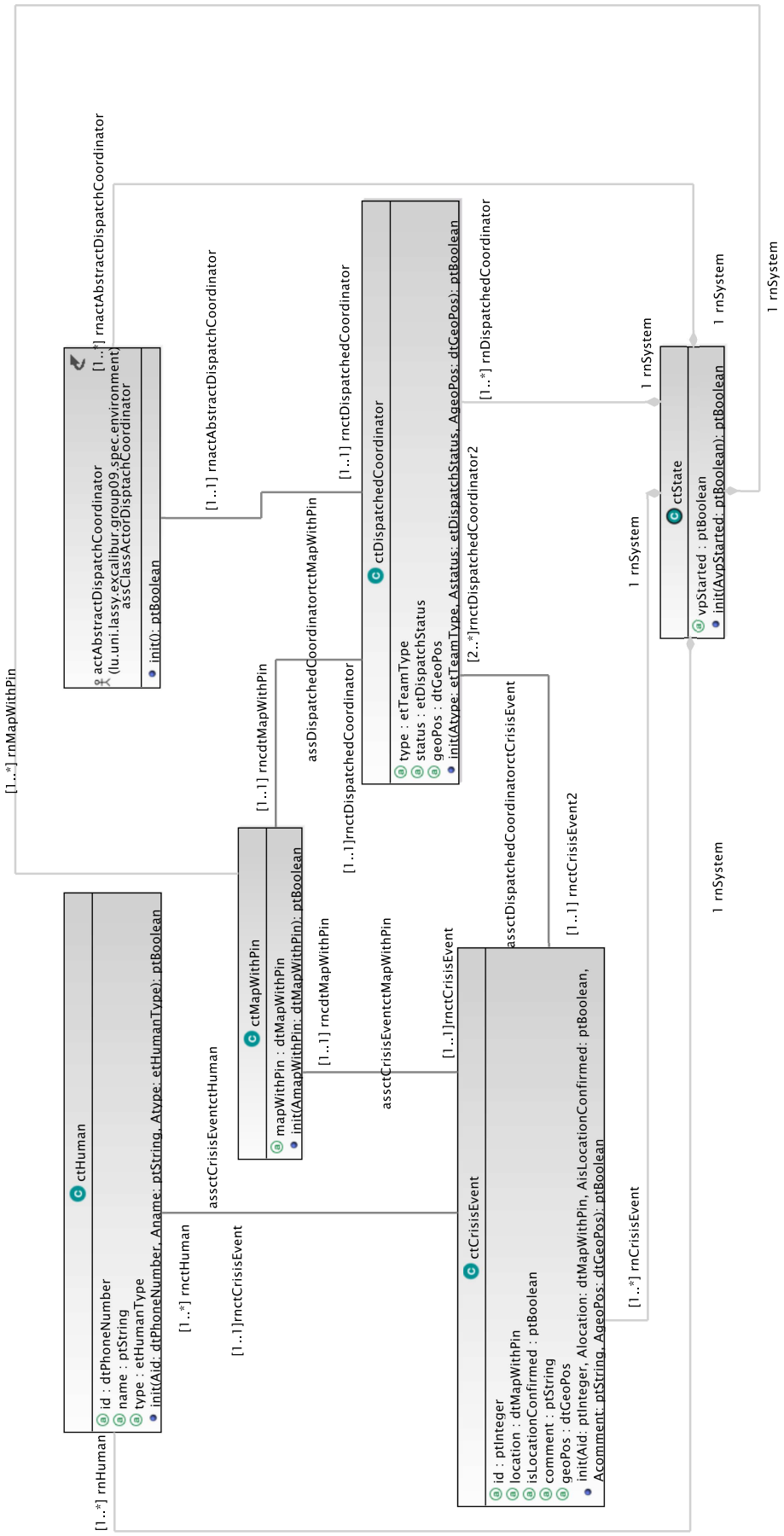

Figure 4.1: Concept Model - PrimaryTypes-Classes local view 12. .

Figure 4.2: Concept Model - PrimaryTypes-Datatypes local view 01. .

Figure 4.3: Concept Model - PrimaryTypes-Datatypes local view 02. .

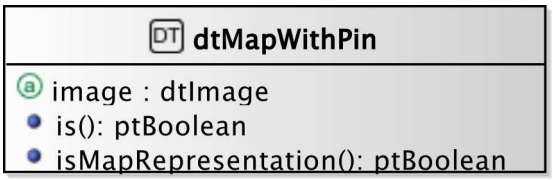

Figure 4.4: Concept Model - PrimaryTypes-Datatypes local view 03. .

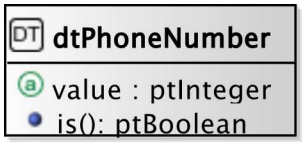

Figure 4.5: Concept Model - PrimaryTypes-Datatypes local view 04. .

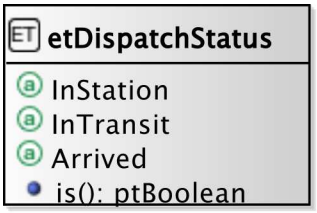

Figure 4.6: Concept Model - PrimaryTypes-Datatypes local view 05. .

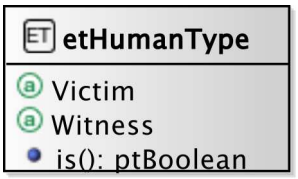

Figure 4.7: Concept Model - PrimaryTypes-Datatypes local view 06. .

4.2.7 Local view 07

Figure 4.8 Is representing the team type enumeration type.

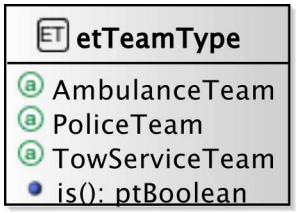

Figure 4.8: Concept Model - PrimaryTypes-Datatypes local view 07. .

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	
ctCrisisEvent A class containing the attributes identifying a crisis event.	
attribute	**comment: ptString**
attribute	**id: ptInteger**
attribute	**isLocationConfirmed: ptBoolean**
attribute	**location: dtMapWithPin**
operation	**init(Aid:ptInteger, 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**

continues in next page . . .

. . . Classes table continuation

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**

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	
dtAddress	
A string used to identify location addresses.	
attribute	**value: ptString**
dtCrisisID	
An integer used to identify crisis events.	
attribute	**value: ptInteger**
dtPhoneNumber	
An Integer used to identify phone numbers.	
attribute	**value: ptInteger**

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
assClassActorDisptachCoordinator
Association of a dispatched coordinator to an actor of the same type.
assctCrisisEventctHuman

continues in next page . . .

. . . Undirected associations table continuation

Association of a crisis event to an human.
assctDispatchedCoordinatorctCrisisEvent Association of a dispatched coordinator to a crisis event.

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

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

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 actCentralCoordinator

5.1.1 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
Post-Condition (functional)
PostF 1
Post-Condition (protocol)
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 Primary Types

A.1.1 Undocumented Primary Classe Types

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

A.1.2 Undocumented Primary Datatype Types

- lu.uni.lassy.excalibur.group09.spec.concepts.primarytypes.datatypes.dtGeoPos
- lu.uni.lassy.excalibur.group09.spec.concepts.primarytypes.datatypes.dtMapWithPin

A.2 Undocumented Primary Relationships

A.2.1 Undocumented Primary Type Associations

- lu.uni.lassy.excalibur.group09.spec.concepts.primarytypes.associations.assDispatchedCoordinatortctMapWithPin
- lu.uni.lassy.excalibur.group09.spec.concepts.primarytypes.associations.assctCrisisEventctMapWithPin

A.3 Undocumented Secondary Types

A.3.1 Undocumented Secondary Datatype Types

- lu.uni.lassy.excalibur.group09.spec.concepts.secondarytypes.datatypes.dtImage
- lu.uni.lassy.excalibur.group09.spec.concepts.secondarytypes.datatypes.dtLatitude
- lu.uni.lassy.excalibur.group09.spec.concepts.secondarytypes.datatypes.dtLongitude

A.4 Undocumented Operation Specifications

- lu.uni.lassy.excalibur.group09.spec.concepts.primarytypes.datatypes.dtGeoPos.is
- lu.uni.lassy.excalibur.group09.spec.concepts.primarytypes.datatypes.dtMapWithPin.isMapRepresentation

- lu.uni.lassy.excalibur.group09.spec.concepts.secondarytypes.datatypes.dtImage.is
- lu.uni.lassy.excalibur.group09.spec.concepts.secondarytypes.datatypes.dtLatitude.is
- lu.uni.lassy.excalibur.group09.spec.concepts.secondarytypes.datatypes.dtLongitude.is

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-actCentralCoordinator-oeRequestCrisisEventLocation.msr

```
package lu.uni.lassy.excalibur.group09.spec.environment.operations.actCentralCoordinator.
    outactCentralCoordinator.oeRequestCrisisEventLocation {

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.primarytypes.datatypes

 Operation Model {

  operation: lu.uni.lassy.excalibur.group09.spec.environment.actCentralCoordinator.
      outactCentralCoordinator.oeRequestCrisisEventLocation(AdtPhoneNumber:dtPhoneNumber):ptBoolean{
  // include below the specification information (pre,post or ocl or prolog)
 preP {
   let AvpStarted: ptBoolean in
   self.rnActor.rnSystem.vpStarted = AvpStarted
   and AvpStarted = true
 }

 preF { true }

 postF {
  let TheactYou:lu.uni.lassy.excalibur.group09.spec.environment.actCentralCoordinator in
  let AptString:ptString in
  /* Post Functional:*/
  /* PostF01 */
  AptString = 'Hello World !'
  and TheactYou.InterfaceIN = self.rnActor.InterfaceIN
  and TheactYou.InterfaceIN^ieHelloWorld(AptString)
 }

 postP { true }
  }
```

```
33  }
34 }
```

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
13 import lu.uni.lassy.excalibur.group09.spec.concepts.primarytypes.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 ieMessage(AMessage:ptString) : ptBoolean
25    }
26
27    output interface outactCentralCoordinator {
28     operation oeRequestCrisisEventLocation(AdtPhoneNumber:dtPhoneNumber) : ptBoolean
29     operation oeMessage(AMessage:ptString) : ptBoolean
30     operation oeCreateNewCrisisEvent(AdtCrisisID:dtCrisisID, AdtName:ptString, AetHumanType:
           etHumanType, AdtPhoneNumber:dtPhoneNumber, AdtMapWithPin:dtAddress,AMessage:ptString) :
           ptBoolean
31     operation oeConfirmCrisisEventLocation() : ptBoolean
32    }
33   }
34
35   actor actCommunicationCompany role rnactCommunicationCompany cardinality [1..*] {
36
37    operation init() : ptBoolean
38
39    input interface inactCommunicationCompany {
40     operation ieRequestCrisisEventLocation(AdtPhoneNumber:dtPhoneNumber) : ptBoolean
41    }
42
43    output interface outactCommunicationCompany {
44     operation oeReceiveCrisisEventLocation(AdtMapWithPin:dtMapWithPin) : ptBoolean
45    }
46   }
47
48   actor actAbstractDispatchCoordinator role rnactAbstractDispatchCoordinator cardinality [1..*] {
49
50    operation init() : ptBoolean
51
52    input interface inactAbstractDispatchCoordinator {
53     operation ieReceiveNewCrisisEvent(AdtCrisisID:dtCrisisID, AdtName:ptString, AetHumanType:
           etHumanType, AdtPhoneNumber:dtPhoneNumber, AdtMapWithPin:dtAddress, AMessage:ptString) :
           ptBoolean
54     operation ieMessage(AMessage: ptString) : ptBoolean
55     operation ieReceiveMap(AdtMapWithPin: dtMapWithPin) : ptBoolean
56    }
57
58    output interface outactAbstractDispatchCoordinator {
```

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

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(rncdtMapWithPin)[1..1]
26
27   association assDispatchedCoordinatortctMapWithPin
28    ctDispatchedCoordinator(rnctDispatchedCoordinator)[1..1]
29    ctMapWithPin(rncdtMapWithPin)[1..1]
30
31   association assClassActorDisptachCoordinator
32    ctDispatchedCoordinator(rnctDispatchedCoordinator)[1..1]
33    actAbstractDispatchCoordinator(rnactAbstractDispatchCoordinator)[1..1]
34
35   association assctDispatchedCoordinatorctCrisisEvent
36    ctDispatchedCoordinator(rnctDispatchedCoordinator2)[2..*]
37    ctCrisisEvent(rnctCrisisEvent2)[1..1]
38
39  }
40 }
41 }
```

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
14 import lu.uni.lassy.messir.libraries.primitives
15
16 Concept Model {
17
18  Primary Types {
19
20   state class ctState {
21    attribute vpStarted: ptBoolean
22
23    operation init(AvpStarted:ptBoolean): ptBoolean
24   }
25
26   class ctHuman role rnHuman cardinality [1..*] {
27    attribute id: dtPhoneNumber
28    attribute name: ptString
29    attribute type: etHumanType
30
31    operation init( Aid:dtPhoneNumber,
32        Aname:ptString,
33        Atype:etHumanType
34    ): ptBoolean
35
36   }
37
38   class ctCrisisEvent role rnCrisisEvent cardinality [1..*] {
```

```
39    attribute id: ptInteger
40    attribute location: dtMapWithPin
41    attribute isLocationConfirmed: ptBoolean
42    attribute comment: ptString     //Multiple Comments?
43    attribute geoPos: dtGeoPos
44
45    operation init( Aid:ptInteger,
46        Alocation:dtMapWithPin,
47        AisLocationConfirmed:ptBoolean,
48        Acomment:ptString,
49        AgeoPos:dtGeoPos
50    ): ptBoolean
51
52   }
53
54   class ctDispatchedCoordinator role rnDispatchedCoordinator cardinality [1..*] {
55    attribute type: etTeamType
56    attribute status: etDispatchStatus
57    attribute geoPos: dtGeoPos
58
59    operation init( Atype:etTeamType,
60        Astatus:etDispatchStatus,
61        AgeoPos:dtGeoPos
62    ): ptBoolean
63   }
64
65   class ctMapWithPin role rnMapWithPin cardinality [1..*] {
66    attribute mapWithPin: dtMapWithPin
67
68    operation init( AmapWithPin:dtMapWithPin
69    ) : ptBoolean
70   }
71
72  }
73 }
74 }
```

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     datatype dtPhoneNumber {
18       attribute value : ptInteger
19       operation is() : ptBoolean
20     }
21
22     datatype dtAddress {
23       attribute value : ptString
24       operation is() : ptBoolean
25     }
26
```

```
27     datatype dtCrisisID {
28       attribute value : ptInteger
29       operation is() : ptBoolean
30     }
31
32     datatype dtMapWithPin{
33       attribute image : dtImage
34       operation is() : ptBoolean
35       external operation isMapRepresentation() : ptBoolean
36     }
37
38     datatype dtGeoPos{
39       attribute latitude: dtLatitude
40       attribute longitude: dtLongitude
41       operation is() : ptBoolean
42     }
43
44     enum etDispatchStatus {
45       constants["InStation", "InTransit", "Arrived"]
46       operation is() : ptBoolean
47     }
48
49     enum etHumanType {
50       constants["Victim", "Witness"]
51       operation is() : ptBoolean
52     }
53
54     enum etTeamType {
55       constants["AmbulanceTeam", "PoliceTeam", "TowServiceTeam"]
56       operation is() : ptBoolean
57     }
58  }
59 }
60 }
```

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
13 Concept Model {
14
15  Secondary Types {
16
17   datatype dtLongitude {
18       attribute value : ptReal
19       operation is() : ptBoolean
20     }
21
22   datatype dtLatitude {
23       attribute value : ptReal
24       operation is() : ptBoolean
25     }
26
27   datatype dtImage {
28       attribute value : ptString
29       operation is() : ptBoolean
30     }
31  }
32
33 }
34 }
```

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 subfunction oeRequestCrisisEventLocation("AdtPhoneNumber=691123456")
          {
20     ieRequestCrisisEventLocation("691123456") returned to Orange
21    }
22
23    Orange executed instanceof subfunction oeReceiveCrisisEventLocation("AdtMapWithPin=http://..., X
          =75.08, Y=23.03") {
24     ieReceiveCrisisEventLocation("http://..., X=75.08, Y=23.03") returned to Camille
25    }
26
27    Camille executed instanceof subfunction oeConfirmCrisisEventLocation() {
28     ieConfirmCrisisEventLocation("Done") returned to Camille
29    }
30
31    Camille executed instanceof subfunction oeCreateNewCrisisEvent("AdtCrisisID=1", "AdtName=Walter"
          , "AenHumanType=Witness", "AdtPhoneNumberX=691123456", "AdtMapWithPin=http://..., X=75.08, Y
          =23.03", "No additional comments") {
32     ieReceiveNewCrisisEvent("1","Walter","Witness","691123456","http://..., X=75.08, Y=23.03","No
           additional comments") returned to Fabio
33     ieReceiveNewCrisisEvent("1","Walter","Witness","691123456","http://..., X=75.08, Y=23.03","No
           additional comments") returned to Ted
34    }
35
36    Fabio executed instanceof subfunction oeUpdateDispatchStatus(AenDispatchStatus="InTransit") {
37     ieMessage("Dispatch Status Updated.") returned to Fabio
38    }
39
40    Ted executed instanceof subfunction oeRefreshMap("AdtCrisisID=1") {
41     ieReceiveMap("http://..., X=75.08, Y=23.03") returned to Ted
42    }
43
```

```
44     Ted executed instanceof subfunction oeMessage("AMessage=I will arrive in 30 minutes") {
45      ieMessage("I will arrive in 30 minutes") returned to Camille
46      ieMessage("I will arrive in 30 minutes") returned to Fabio
47      ieMessage("I will arrive in 30 minutes") returned to Ted
48     }
49
50     Ted executed instanceof subfunction oeUpdateDispatchStatus(AenDispatchStatusX="InTransit") {
51      ieMessage("Dispatch Status Updated.") returned to Ted
52     }
53
54     Fabio executed instanceof subfunction oeUpdateDispatchStatus(AenDispatchStatusXX="Arrived") {
55      ieMessage("Dispatch Status Updated.") returned to Fabio
56     }
57
58     Fabio executed instanceof subfunction oeRequestHelp(AenTeamType="Police", RequestedNumber="1") {
59      ieReceiveNewCrisisEvent("1","Walter","Witness","691123456","http://..., X=75.08, Y=23.03")
            returned to Polo
60     }
61
62     Polo executed instanceof subfunction oeUpdateDispatchStatus(AenDispatchStatusXXX="InTransit") {
63      ieMessage("Dispatch Status Updated.") returned to Polo
64     }
65
66     Ted executed instanceof subfunction oeUpdateDispatchStatus(AenDispatchStatusXXXX="Arrived") {
67      ieMessage("Dispatch Status Updated.") returned to Ted
68     }
69
70     Polo executed instanceof subfunction oeUpdateDispatchStatus(AenDispatchStatusXXXXX="Arrived") {
71      ieMessage("Dispatch Status Updated.") returned to Polo
72     }
73
74    }
75   }
76  }
77 }
```

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

B.12 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
15  Use Case Model {
16
17   use case system summary suGlobalManagementOfEvent() {
18     actor actCentralCoordinator[primary, active]
19     actor actCommunicationCompany[secondary, active]
20     actor actFiremenCoordinator[secondary, active]
21     actor actPoliceCoordinator[secondary, active]
22     actor actTowServiceCoordinator[secondary, active]
23
24     reuse oeRequestCrisisEventLocation[0..*]
25     reuse oeReceiveCrisisEventLocation[0..*]
26     reuse oeConfirmCrisisEventLocation[1..*]
27     reuse oeCreateNewCrisisEvent[1..*]
28     reuse oeUpdateDispatchStatus[4..*]
```

```
29    reuse oeRequestHelp[0..*]
30
31    step a: actCentralCoordinator executes oeRequestCrisisEventLocation
32    step b: actCommunicationCompany executes oeReceiveCrisisEventLocation
33    step c: actCentralCoordinator executes oeConfirmCrisisEventLocation
34    step d: actCentralCoordinator executes oeCreateNewCrisisEvent
35    step e: actFiremenCoordinator executes oeUpdateDispatchStatus
36    step f: actTowServiceCoordinator executes oeRefreshMap
37    step g: actTowServiceCoordinator executes oeMessage
38    step h: actTowServiceCoordinator executes oeUpdateDispatchStatus
39    step i: actFiremenCoordinator executes oeRequestHelp
40    step j: actPoliceCoordinator executes oeUpdateDispatchStatus
41
42    ordering constraint "if (b) then previously (a)"
43    ordering constraint "step (c) must be executed before step (d)"
44    ordering constraint "step (d) must be executed before the step (e) to (j)"
45    ordering constraint "step (e) must be executed at least two times"
46    ordering constraint "step (h) must be executed at least two times"
47    ordering constraint "step (j) can only be executed if step (i) has at least been executed once
          previously"
48    ordering constraint "step (j) must be executed at least two times"
49  }
50
51  use case system subfunction oeRequestCrisisEventLocation(AdtPhoneNumber:dtPhoneNumber) {
52   actor actCentralCoordinator[primary,active]
53   actor actCommunicationCompany[secondary, passive]
54   returned messages{
55    ieRequestCrisisEventLocation(AdtPhoneNumber) returned to actCommunicationCompany //Slide 208..
56   }
57  }
58
59  use case system subfunction oeReceiveCrisisEventLocation(AdtMapWithPin:dtMapWithPin) {
60   actor actCommunicationCompany[primary, active]
61   actor actCentralCoordinator[secondary, passive]
62   returned messages{
63    ieReceiveCrisisEventLocation(AdtMapWithPin) returned to actCentralCoordinator
64   }
65  }
66
67  use case system subfunction oeConfirmCrisisEventLocation() {
68   actor actCentralCoordinator[primary, active]
69   returned messages{
70    ieConfirmCrisisEventLocation() returned to actCentralCoordinator
71   }
72  }
73
74  use case system subfunction oeCreateNewCrisisEvent(AdtCrisisID:dtCrisisID, AdtName:ptString,
        AetHumanType:etHumanType, AdtPhoneNumber:dtPhoneNumber, AdtMapWithPin:dtMapWithPin, AMessage:
        ptString) {
75   actor actCentralCoordinator[primary,active]
76   actor actAbstractDispatchCoordinator[secondary,passive]
77   returned messages{
78    ieReceiveNewCrisisEvent(AdtCrisisID, AdtName, AetHumanType, AdtPhoneNumber, AdtMapWithPin,
          AMessage) returned to actAbstractDispatchCoordinator
79   }
80  }
81
82  use case system subfunction oeMessage(AMessage:ptString) {
83   actor actAbstractDispatchCoordinator[primary,active]
84   actor actCentralCoordinator[secondary, passive]
85   actor actAbstractDispatchCoordinator[secondary, multiple]
86   returned messages{
87    ieMessage(AMessage) returned to actAbstractDispatchCoordinator
88 //    ieMessage(AMessage) returned to actCentralCoordinator  6          //PROBLEME DE IE DEUX FOIS
      SANS SOUS-TYPAGE
89   }
90  }
91
92  use case system subfunction oeUpdateDispatchStatus(AetDispatchStatus:etDispatchStatus){
93   actor actAbstractDispatchCoordinator[primary,active]
```

```
94    returned messages{
95     ieMessage(AMessage) returned to actAbstractDispatchCoordinator
96    }
97   }
98
99   use case system subfunction oeRefreshMap(AdtCrisisID:dtCrisisID){
100   actor actAbstractDispatchCoordinator[primary,active]
101   returned messages{
102    ieReceiveMap(AdtMapWithPin) returned to actAbstractDispatchCoordinator
103   }
104  }
105
106  use case system subfunction oeRequestHelp(AetTeamType: etTeamType, RequestedNumber:ptInteger) {
107   actor actFiremenCoordinator[primary,active]
108   actor actAbstractDispatchCoordinator[secondary,passive]
109   returned messages{
110    ieReceiveNewCrisisEvent(AdtCrisisID, AdtName, AetHumanType, AdtPhoneNumber, AdtMapWithPin,
          AMessage) returned to actAbstractDispatchCoordinator
111   }
112  }
113
114 }
115
116 }
```

Listing B.12: Messir Spec. file usecases.msr.

Bibliography

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[2] Armour, F., Miller, G.: Advanced Use Case Modeling: Software Systems. Addison-Wesley (2001)