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Messir Analysis Document
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Chapter 1

Introduction

1.1 Overview

1.2 Purpose and recipients of the document

1.3 Application Domain

1.4 Definitions, acronyms and abbreviations

1.5 Document structure

Chapter 2

General Description

2.1 Domain Stakeholders

2.2 System's Actors

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

2.3 Use Cases Model

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

2.3.1 Use Cases

2.3.1.1 summary-suGlobalManagementOfEvent

Shows the suGloBaManagementOfEvent use-case and its actors.

| USE-CASE DESCRIPTION | |
|---|--|
| <i>Name</i> | suGlobalManagementOfEvent |
| <i>Scope</i> | system |
| <i>Level</i> | 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 | <u>oeRequestCrisisEventLocation [0..*]</u> |
| 2 | <u>oeReceiveCrisisEventLocation [0..*]</u> |
| 3 | <u>oeConfirmCrisisEventLocation [1..*]</u> |
| 4 | <u>oeCreateNewCrisisEvent [1..*]</u> |
| 5 | <u>oeUpdateDispatchStatus [2..*]</u> |
| 6 | <u>oeRequestHelp [0..*]</u> |
| 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 <code>actCentralCoordinator</code> executes the <u><code>oeRequestCrisisEventLocation</code></u> use case |
| b | the actor <code>actCommunicationCompany</code> executes the <u><code>oeReceiveCrisisEventLocation</code></u> use case |
| c | the actor <code>actCentralCoordinator</code> executes the <u><code>oeConfirmCrisisEventLocation</code></u> use case |
| d | the actor <code>actCentralCoordinator</code> executes the <u><code>oeCreateNewCrisisEvent</code></u> use case |
| e | the actor <code>actFiremenCoordinator</code> executes the <u><code>oeUpdateDispatchStatus</code></u> use case |
| f | the actor <code>actTowServiceCoordinator</code> executes the <u><code>oeRefreshMap</code></u> use case |
| g | the actor <code>actTowServiceCoordinator</code> executes the <u><code>oeMessage</code></u> use case |
| h | the actor <code>actTowServiceCoordinator</code> executes the <u><code>oeUpdateDispatchStatus</code></u> use case |
| i | the actor <code>actFiremenCoordinator</code> executes the <u><code>oeUpdateDispatchStatus</code></u> use case |
| j | the actor <code>actFiremenCoordinator</code> executes the <u><code>oeRequestHelp</code></u> use case |
| k | the actor <code>actPoliceCoordinator</code> executes the <u><code>oeUpdateDispatchStatus</code></u> use case |
| l | the actor <code>actTowServiceCoordinator</code> executes the <u><code>oeUpdateDispatchStatus</code></u> use case |
| m | the actor <code>actPoliceCoordinator</code> executes the <u><code>oeUpdateDispatchStatus</code></u> 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 (k) |
| Additional Information | |
| none | |

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

2.3.1.2 subfunction-oeConfirmCrisisEventLocation

sent to confirm the crisis event's location.

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

| |
|-------------------------------|
| <i>Additional Information</i> |
| none |

2.3.1.3 subfunction-oeCreateNewCrisisEvent

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

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

2.3.1.4 subfunction-oeMessage

sent to transmit a message.

| USE-CASE DESCRIPTION | |
|----------------------|-------------|
| <i>Name</i> | oeMessage |
| <i>Scope</i> | system |
| <i>Level</i> | subfunction |
| <i>Parameters</i> | |

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 | |
|--|------------------------------|
| <i>Name</i> | oeReceiveCrisisEventLocation |
| <i>Scope</i> | system |
| <i>Level</i> | 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.

actAbstractDispatchCoordinator

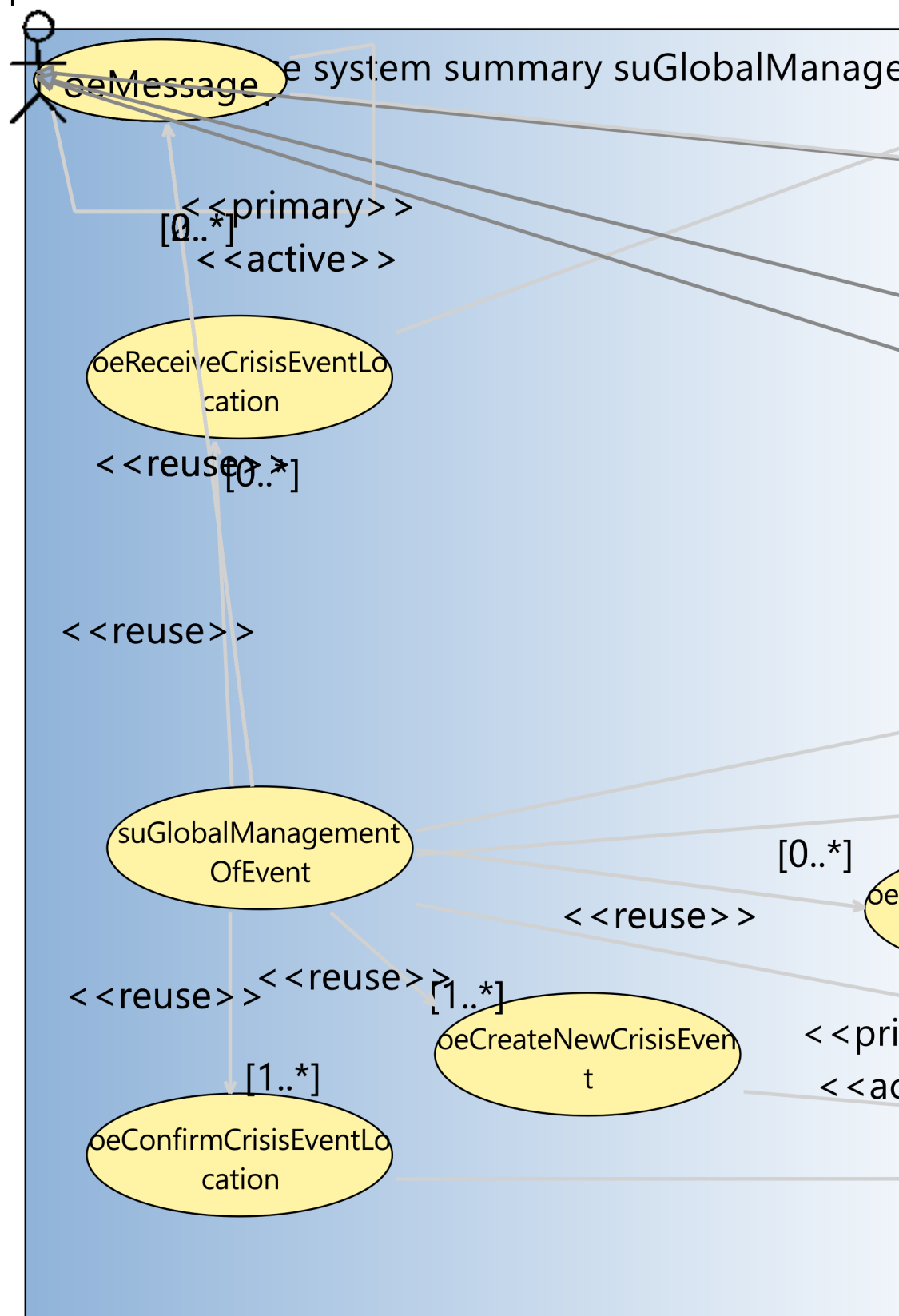


Figure 2.1:

| USE-CASE DESCRIPTION | |
|--------------------------------------|--|
| <i>Name</i> | oeRefreshMap |
| <i>Scope</i> | system |
| <i>Level</i> | subfunction |
| <i>Parameters</i> | |
| AdtCrisisID: dtCrisisID 1 | |
| <i>Primary actor(s)</i> | |
| 1 | actAbstractDispatchCoordinator[active] |
| <i>Goal(s) description</i> | |
| sent to refresh the map. | |
| <i>Protocol condition(s)</i> | |
| 1 | |
| <i>Pre-condition(s)</i> | |
| 1 | |
| <i>Main post-condition(s)</i> | |
| 1 | |
| <i>Additional Information</i> | |
| none | |

2.3.1.7 subfunction-oeRequestCrisisEventLocation

sent to request a crisis event's location.

| USE-CASE DESCRIPTION | |
|--|----------------------------------|
| <i>Name</i> | oeRequestCrisisEventLocation |
| <i>Scope</i> | system |
| <i>Level</i> | subfunction |
| <i>Parameters</i> | |
| AdtPhoneNumber: dtPhoneNumber 1 | |
| <i>Primary actor(s)</i> | |
| 1 | actCentralCoordinator[active] |
| <i>Secondary actor(s)</i> | |
| 1 | actCommunicationCompany[passive] |
| <i>Goal(s) description</i> | |
| sent to request a crisis event's location. | |
| <i>Protocol condition(s)</i> | |
| 1 | |
| <i>Pre-condition(s)</i> | |
| 1 | |
| <i>Main post-condition(s)</i> | |
| 1 | |
| <i>Additional Information</i> | |
| none | |

2.3.1.8 subfunction-oeRequestHelp

sent to request help from the corresponding team type.

| USE-CASE DESCRIPTION | |
|--|---|
| <i>Name</i> | oeRequestHelp |
| <i>Scope</i> | system |
| <i>Level</i> | subfunction |
| <i>Parameters</i> | |
| AetTeamType: etTeamType 1 | |
| RequestedNumber: ptInteger 2 | |
| <i>Primary actor(s)</i> | |
| 1 | actFiremenCoordinator[active] |
| <i>Secondary actor(s)</i> | |
| 1 | actAbstractDispatchCoordinator[passive] |
| <i>Goal(s) description</i> | |
| sent to request help from the corresponding team type. | |
| <i>Protocol condition(s)</i> | |
| 1 | |
| <i>Pre-condition(s)</i> | |
| 1 | |
| <i>Main post-condition(s)</i> | |
| 1 | |
| <i>Additional Information</i> | |
| none | |

2.3.1.9 subfunction-oeUpdateDispatchStatus

sent to update the dispatch status.

| USE-CASE DESCRIPTION | |
|---------------------------------------|--|
| <i>Name</i> | oeUpdateDispatchStatus |
| <i>Scope</i> | system |
| <i>Level</i> | subfunction |
| <i>Parameters</i> | |
| AetDispatchStatus: etDispatchStatus 1 | |
| <i>Primary actor(s)</i> | |
| 1 | actAbstractDispatchCoordinator[active] |
| <i>Goal(s) description</i> | |
| sent to update the dispatch status. | |
| <i>Protocol condition(s)</i> | |
| 1 | |
| <i>Pre-condition(s)</i> | |
| 1 | |
| <i>Main post-condition(s)</i> | |

continues in next page ...

... Use-Case Description table continuation

| |
|-------------------------------|
| 1 |
| <i>Additional Information</i> |
| none |

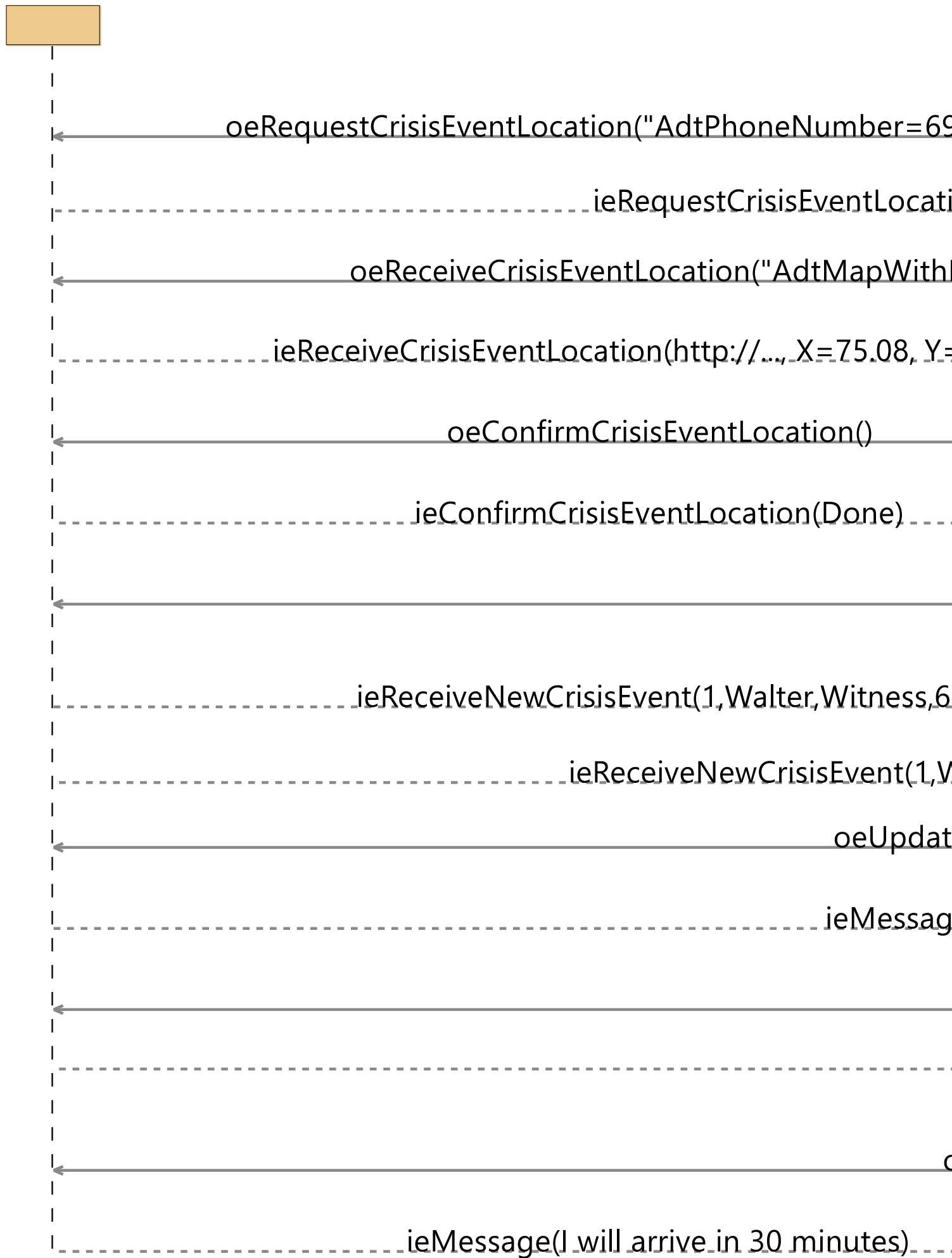
2.3.2 Use Case Instance(s)

2.3.2.1 Use-Case Instance - ucisuGlobalManagementOfEvent:suGlobalManagementOfEvent

Shows the suGlobaManagementOfEvent instance.

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

Figure 2.2 Shows the suGlobaManagementOfEvent instance.



Chapter 3

Environment Model

3.1 Environment model view(s)

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

3.2 Actors and Interfaces Descriptions

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

3.2.1 **actAbstractDispatchCoordinator** Actor

| ACTOR | |
|---|--|
| <i>actAbstractDispatchCoordinator</i> | |
| An abstract Actor which brings together the common operations of the FiremanCoordinator, the PoliceCoordinator and the TowServiceCoordinator. | |
| <i>OutputInterfaces</i> | |
| OUT 1 | oeMessage (AMessage:ptString) :ptBoolean |
| OUT 2 | oeUpdateDispatchStatus (AetDispatchStatus:etDispatchStatus) :ptBoolean |
| <i>InputInterfaces</i> | |
| 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 | |
|--|--|
| <i>actCentralCoordinator</i> | |
| Is representing the person that receives the victim's or witness' call in the emergency central. | |
| <i>OutputInterfaces</i> | |

continues in next page ...

... **Actor table continuation**

| | |
|------------------------|---|
| OUT 1 | <code>oeRequestCrisisEventLocation (AdtPhoneNumber:dtPhoneNumber) :ptBoolean</code> |
| OUT 2 | <code>oeMessage (AMessage:ptString) :ptBoolean</code> |
| OUT 3 | <code>oeCreateNewCrisisEvent (AdtCrisisID:dtCrisisID, AdtName:ptString, AetHumanType:etHumanType, AdtPhoneNumber:dtPhoneNumber, AdtMapWithPin:dtAddress, AMessage:ptString) :ptBoolean</code> |
| OUT 4 | <code>oeConfirmCrisisEventLocation () :ptBoolean</code> |
| <i>InputInterfaces</i> | |
| IN 1 | <code>ieReceiveCrisisEventLocation (AdtMapWithPin:dtMapWithPin) :ptBoolean</code> |
| IN 2 | <code>ieMessage (AMessage:ptString) :ptBoolean</code> |

3.2.3 actCommunicationCompany Actor

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

3.2.4 actFiremenCoordinator Actor

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

3.2.5 actPoliceCoordinator Actor

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

continues in next page ...

... Actor table continuation

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

3.2.6 actTowServiceCoordinator Actor

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

Chapter 4

Concept Model

4.1 PrimaryTypes-Datatypes

4.1.1 Local view 01

Figure 4.1 Is representing the address data type.

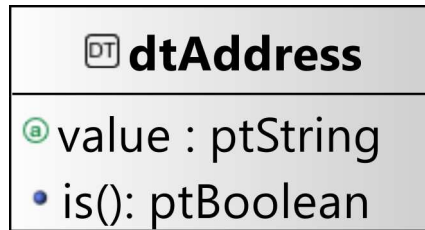


Figure 4.1: Concept Model - PrimaryTypes-Datatypes local view 01. .

4.1.2 Local view 02

Figure 4.2 Is representing the crisis id data type.

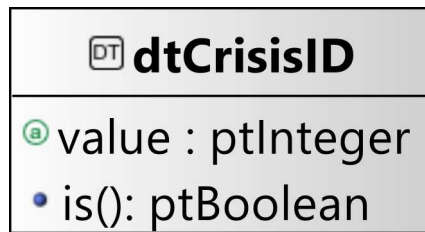


Figure 4.2: Concept Model - PrimaryTypes-Datatypes local view 02. .

4.1.3 Local view 03

Figure 4.3 Is representing the map including a pin data type.

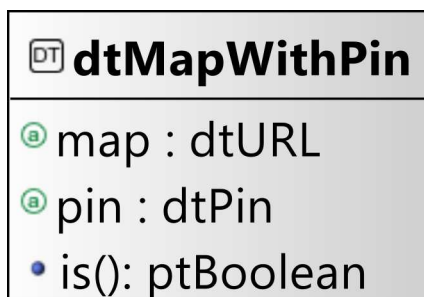


Figure 4.3: Concept Model - PrimaryTypes-Datatypes local view 03. .

4.1.4 Local view 04

Figure 4.4 Is representing the phone number data type.

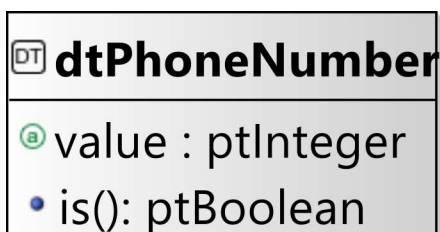


Figure 4.4: Concept Model - PrimaryTypes-Datatypes local view 04. .

4.1.5 Local view 05

Figure 4.5 Is representing the dispatch status enumeration type.

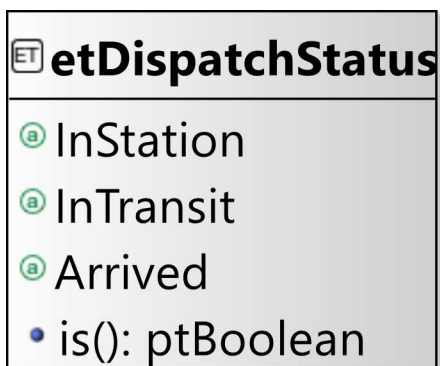


Figure 4.5: Concept Model - PrimaryTypes-Datatypes local view 05. .

4.1.6 Local view 06

Figure 4.6 Is representing the human type enumeration type.

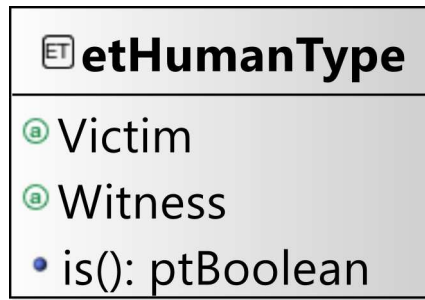


Figure 4.6: Concept Model - PrimaryTypes-Datatypes local view 06. .

4.1.7 Local view 07

Figure 4.7 Is representing the team type enumeration type.

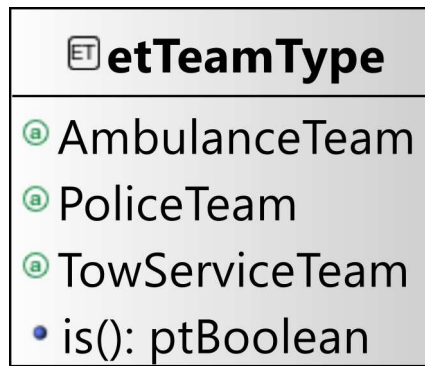


Figure 4.7: Concept Model - PrimaryTypes-Datatypes local view 07. .

4.2 SecondaryTypes-Datatypes

4.2.1 Local view 08

Figure 4.8 Is representing the map data type.

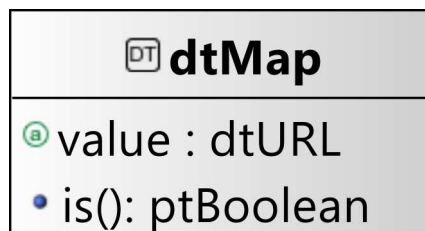


Figure 4.8: Concept Model - SecondaryTypes-Datatypes local view 08. .

4.2.2 Local view 09

Figure 4.9 Is representing the pin data type.

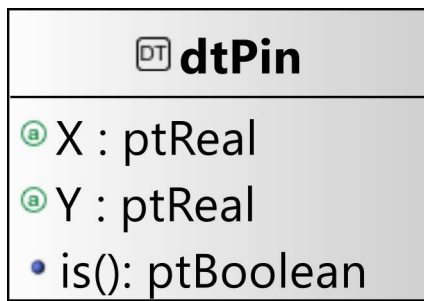


Figure 4.9: Concept Model - SecondaryTypes-Datatypes local view 09. .

4.2.3 Local view 10

Figure 4.10 Is representing the url data type.

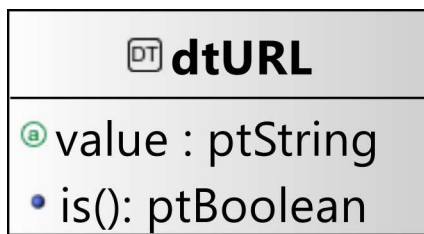


Figure 4.10: Concept Model - SecondaryTypes-Datatypes local view 10. .

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

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

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 |
|-----------|

continues in next page ...

... Datatypes table continuation

| | |
|--|-------------------------|
| <i>dtAddress</i> A string used to identify location addresses. | |
| attribute | value: ptString |
| <i>dtCrisisID</i> An integer used to identify crisis events. | |
| attribute | value: ptInteger |
| <i>dtMapWithPin</i> An URL including a two coordinates (real numbers) used to identify a map including a pin given by Google Maps. | |
| attribute | map: dtURL |
| attribute | pin: dtPin |
| <i>dtPhoneNumber</i> An Integer used to identify phone numbers. | |
| attribute | value: ptInteger |

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

4.3.3 Primary types - Association types descriptions

There are no association types for the primary types.

4.3.4 Primary types - Aggregation types descriptions

There are no aggregation types for the primary types.

4.3.4.1 Primary types - Composition types descriptions

There are no composition types for the primary types.

4.3.5 Secondary types - Class types descriptions

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

4.3.6 Secondary types - Datatypes types descriptions

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

| DATATYPES | |
|--|------------------------|
| <i>dtMap</i> An URL used to identify a map given by Google Maps. | |
| attribute | value: dtURL |
| operation | is():ptBoolean |
| <i>dtPin</i> Two coordinates (X and Y being real numbers) used to identify a pin on a map. | |
| attribute | X: ptReal |
| attribute | Y: ptReal |
| operation | is():ptBoolean |
| <i>dtURL</i> A String used to identify URLs. | |
| attribute | value: ptString |
| operation | is():ptBoolean |

4.3.7 Secondary types - Association types descriptions

There are no association types for the secondary types.

4.3.8 Secondary types - Aggregation types descriptions

There are no aggregation types for the secondary types.

4.3.9 Secondary types - Composition types descriptions

There are no composition types for the secondary types.

Chapter 5

Operation Model

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

5.1 Environment - Out Interface Operation Scheme for actCentralCoordinator

5.1.1 Operation Model for oeRequestCrisisEventLocation

The oeRequestCrisisEventLocation operation has the following properties:

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

Appendix B

Messir Specification Files Listing

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

```
1 //
2 //DON'T TOUCH THIS FILE !!!
3 //
4 package uuidff8a216549a64951bf055c8b5a9dde2a {
5   Concept Model {}
6 }
```

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

B.2 File ./src-gen/messir-spec/operations/environment/environment-actCentralCoordinator-oeRequestCrisisEventLocation.msr

```
1 package lu.uni.lassy.excalibur.group09.spec.environment.operations.actCentralCoordinator.
   outactCentralCoordinator.oeRequestCrisisEventLocation {
2
3 import lu.uni.lassy.messir.libraries.primitives
4 import lu.uni.lassy.messir.libraries.math
5 import lu.uni.lassy.messir.libraries.string
6 import lu.uni.lassy.messir.libraries.calendar
7 import lu.uni.lassy.excalibur.group09.spec.concepts.primarytypes.datatypes
8
9   Operation Model {
10
11   operation: lu.uni.lassy.excalibur.group09.spec.environment.actCentralCoordinator.
       outactCentralCoordinator.oeRequestCrisisEventLocation(AdtPhoneNumber:dtPhoneNumber):ptBoolean{
12   // include below the specification information (pre,post or ocl or prolog)
13   preP {
14     let AvpStarted: ptBoolean in
15     self.rnActor.rnSystem.vpStarted = AvpStarted
16     and AvpStarted = true
17   }
18
19   preF { true }
20
21   postF {
22     let TheactYou:lu.uni.lassy.excalibur.group09.spec.environment.actCentralCoordinator in
23     let AptString:ptString in
24     /* Post Functional:*/
25     /* PostF01 */
26     AptString = 'Hello World !'
27     and TheactYou.InterfaceIN = self.rnActor.InterfaceIN
28     and TheactYou.InterfaceIN^ieHelloWorld(AptString)
29   }
30
31   postP { true }
32 }
```

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:
31         etHumanType, AdtPhoneNumber:dtPhoneNumber, AdtMapWithPin:dtAddress, AMessage:ptString) :
32         ptBoolean
33       operation oeConfirmCrisisEventLocation() : ptBoolean
34     }
35   }
36
37   actor actCommunicationCompany role rnactCommunicationCompany cardinality [1..*] {
38
39     operation init() : ptBoolean
40
41     input interface inactCommunicationCompany {
42       operation ieRequestCrisisEventLocation(AdtPhoneNumber:dtPhoneNumber) : ptBoolean
43     }
44
45     output interface outactCommunicationCompany {
46       operation oeReceiveCrisisEventLocation(AdtMapWithPin:dtMapWithPin) : ptBoolean
47     }
48   }
49
50   actor actAbstractDispatchCoordinator role rnactAbstractDispatchCoordinator cardinality [1..*] {
51
52     operation init() : ptBoolean
53
54     input interface inactAbstractDispatchCoordinator {
55       operation ieReceiveNewCrisisEvent(AdtCrisisID:dtCrisisID, AdtName:ptString, AetHumanType:
56         etHumanType, AdtPhoneNumber:dtPhoneNumber, AdtMapWithPin:dtAddress, AMessage:ptString) :
57         ptBoolean
58       operation ieMessage(AMessage: ptString) : ptBoolean
59       operation ieReceiveMap(AdtMapWithPin: dtMapWithPin) : ptBoolean
60     }
61
62     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
13 Concept Model {
14
15     Primary Types {
16
17     }

```

```
18 }
19 }
```

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
13 import lu.uni.lassy.messir.libraries.primitives
14
15 Concept Model {
16
17 Primary Types {
18
19 state class ctState {
20 attribute vpStarted: ptBoolean
21
22 operation init(AvpStarted:ptBoolean): ptBoolean
23 }
24
25 }
26 }
27 }
```

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 map : dtURL
34     attribute pin : dtPin
35     operation is() : ptBoolean
36 }
37
38 enum etDispatchStatus {
39     constants["InStation", "InTransit", "Arrived"]
40     operation is() : ptBoolean
41 }
42
43 enum etHumanType {
44     constants["Victim", "Witness"]
45     operation is() : ptBoolean
46 }
47
48 enum etTeamType {
49     constants["AmbulanceTeam", "PoliceTeam", "TowServiceTeam"]
50     operation is() : ptBoolean
51 }
52 }
53 }
54 }

```

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     datatype dtURL {
17       attribute value : ptString
18       operation is() : ptBoolean
19     }
20
21     datatype dtMap{
22       attribute value : dtURL
23       operation is() : ptBoolean
24     }
25
26     datatype dtPin {
27       attribute X : ptReal
28       attribute Y : ptReal
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 instance of subfunction oeRequestCrisisEventLocation("AdtPhoneNumber=691123456")
20           {
21             ieRequestCrisisEventLocation("691123456") returned to Orange
22           }
23
24         Orange executed instance of subfunction oeReceiveCrisisEventLocation("AdtMapWithPin=http://..., X
25           =75.08, Y=23.03") {
26           ieReceiveCrisisEventLocation("http://..., X=75.08, Y=23.03") returned to Camille
27         }
28
29         Camille executed instance of subfunction oeConfirmCrisisEventLocation() {
30           ieConfirmCrisisEventLocation("Done") returned to Camille
31         }
32
33         Camille executed instance of subfunction oeCreateNewCrisisEvent("AdtCrisisID=1", "AdtName=Walter"
34           , "AenHumanType=Witness", "AdtPhoneNumberX=691123456", "AdtMapWithPin=http://..., X=75.08, Y
35           =23.03", "No additional comments") {
36           ieReceiveNewCrisisEvent("1", "Walter", "Witness", "691123456", "http://..., X=75.08, Y=23.03", "No
37             additional comments") returned to Fabio
38           ieReceiveNewCrisisEvent("1", "Walter", "Witness", "691123456", "http://..., X=75.08, Y=23.03", "No
39             additional comments") returned to Ted
40         }
41
42         Fabio executed instance of subfunction oeUpdateDispatchStatus(AenDispatchStatus="InTransit") {
43           ieMessage("Dispatch Status Updated.") returned to Fabio
44         }
45
46         Ted executed instance of subfunction oeRefreshMap("AdtCrisisID=1") {
47           ieReceiveMap("http://..., X=75.08, Y=23.03") returned to Ted
48         }
49
50         Ted executed instance of 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     }
57   }
58 }

```

```

49
50 Ted executed instance of subfunction oeUpdateDispatchStatus(AenDispatchStatusX="InTransit") {
51   ieMessage("Dispatch Status Updated.") returned to Ted
52 }
53
54 Fabio executed instance of subfunction oeUpdateDispatchStatus(AenDispatchStatusXX="Arrived") {
55   ieMessage("Dispatch Status Updated.") returned to Fabio
56 }
57
58 Fabio executed instance of 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 instance of subfunction oeUpdateDispatchStatus(AenDispatchStatusXXX="InTransit") {
63   ieMessage("Dispatch Status Updated.") returned to Polo
64 }
65
66 Ted executed instance of subfunction oeUpdateDispatchStatus(AenDispatchStatusXXXX="Arrived") {
67   ieMessage("Dispatch Status Updated.") returned to Ted
68 }
69
70 Polo executed instance of 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[2..*]
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 oeUpdateDispatchStatus
40  step j: actFiremenCoordinator executes oeRequestHelp
41  step k: actPoliceCoordinator executes oeUpdateDispatchStatus
42  step l: actTowServiceCoordinator executes oeUpdateDispatchStatus
43  step m: actPoliceCoordinator executes oeUpdateDispatchStatus
44
45  ordering constraint "if (b) then previously (a)"
46  ordering constraint "step (c) must be executed before step (d)"
47  ordering constraint "step (d) must be executed before the step (e) to (k)"
48 }
49
50 use case system subfunction oeRequestCrisisEventLocation(AdtPhoneNumber:dtPhoneNumber) {
51  actor actCentralCoordinator[primary,active]
52  actor actCommunicationCompany[secondary, passive]
53  returned messages{
54    ieRequestCrisisEventLocation(AdtPhoneNumber) returned to actCommunicationCompany //Slide 208..
55  }
56 }
57
58 use case system subfunction oeReceiveCrisisEventLocation(AdtMapWithPin:dtMapWithPin) {
59  actor actCommunicationCompany[primary, active]
60  actor actCentralCoordinator[secondary, passive]
61  returned messages{
62    ieReceiveCrisisEventLocation(AdtMapWithPin) returned to actCentralCoordinator
63  }
64 }
65
66 use case system subfunction oeConfirmCrisisEventLocation() {
67  actor actCentralCoordinator[primary, active]
68  returned messages{
69    ieConfirmCrisisEventLocation() returned to actCentralCoordinator
70  }
71 }
72
73 use case system subfunction oeCreateNewCrisisEvent(AdtCrisisID:dtCrisisID, AdtName:ptString,
    AetHumanType:etHumanType, AdtPhoneNumber:dtPhoneNumber, AdtMapWithPin:dtMapWithPin, AMessage:
    ptString) {
74  actor actCentralCoordinator[primary,active]
75  actor actAbstractDispatchCoordinator[secondary,passive]
76  returned messages{
77    ieReceiveNewCrisisEvent(AdtCrisisID, AdtName, AetHumanType, AdtPhoneNumber, AdtMapWithPin,
    AMessage) returned to actAbstractDispatchCoordinator
78 //    ieReceiveNewCrisisEvent(AdtCrisisID, AdtName, AetHumanType, AdtPhoneNumber, AdtMapWithPin)
    returned to actFiremenCoordinator
79 //    ieReceiveNewCrisisEvent(AdtCrisisID, AdtName, AetHumanType, AdtPhoneNumber, AdtMapWithPin)
    returned to actTowServiceCoordinator
80  }
81 }
82
83 use case system subfunction oeMessage(AMessage:ptString) {
84  actor actAbstractDispatchCoordinator[primary,active]
85  actor actCentralCoordinator[secondary, passive]
86  actor actAbstractDispatchCoordinator[secondary, multiple]
87  returned messages{
88    ieMessage(AMessage) returned to actAbstractDispatchCoordinator
89 //    ieMessage(AMessage) returned to actCentralCoordinator //PROBLEME DE IE DEUX FOIS
    SANS SOUS-TYPAGE
90  }
91 }
92
93 use case system subfunction oeUpdateDispatchStatus(AetDispatchStatus:etDispatchStatus) {
94  actor actAbstractDispatchCoordinator[primary,active]
95 //  actor actFiremenCoordinator[primary,active]
96 //  actor actPoliceCoordinator[primary,active]
97 //  actor actTowServiceCoordinator[primary,active]

```

```

98   returned messages{
99     ieMessage(AMessage) returned to actAbstractDispatchCoordinator
100  }
101 }
102
103 use case system subfunction oeRefreshMap(AdtCrisisID:dtCrisisID){
104   actor actAbstractDispatchCoordinator[primary,active]
105 //   actor actFiremenCoordinator[primary,active]
106 //   actor actPoliceCoordinator[primary,active]
107 //   actor actTowServiceCoordinator[primary,active]
108   returned messages{
109     ieReceiveMap(AdtMapWithPin) returned to actAbstractDispatchCoordinator
110   }
111 }
112
113 use case system subfunction oeRequestHelp(AetTeamType: etTeamType, RequestedNumber:ptInteger) {
114   actor actFiremenCoordinator[primary,active]
115   actor actAbstractDispatchCoordinator[secondary,passive]
116 //   actor actPoliceCoordinator[secondary,passive]
117 //   actor actTowServiceCoordinator[secondary,passive]
118
119   returned messages{
120     ieReceiveNewCrisisEvent(AdtCrisisID, AdtName, AetHumanType, AdtPhoneNumber, AdtMapWithPin,
121       AMessage) returned to actAbstractDispatchCoordinator
122 //     ieReceiveNewCrisisEvent(AdtCrisisID, AdtName, AetHumanType, AdtPhoneNumber, AdtMapWithPin)
123 //       returned to actFiremenCoordinator
124 //     ieReceiveNewCrisisEvent(AdtCrisisID, AdtName, AetHumanType, AdtPhoneNumber, AdtMapWithPin)
125 //       returned to actTowServiceCoordinator
126 //     ieReceiveNewCrisisEvent(AdtCrisisID, AdtName, AetHumanType, AdtPhoneNumber, AdtMapWithPin)
127 //       returned to actTowPoliceCoordinator
128   }
129 }

```

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

