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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 Cokburn template [?].

### 2.3.1 Use Cases

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

### **2.3.2 Use Case Instance(s)**

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



## 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

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



# Chapter 4

## Concept Model

### 4.1 Concept Model view(s)

There are no view(s) for the **Messip** concept model.

### 4.2 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.

#### 4.2.1 Primary types - Class types descriptions

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

#### 4.2.2 Primary types - Datatypes types descriptions

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

#### 4.2.3 Primary types - Association types descriptions

There are no association types for the primary types.

#### 4.2.4 Primary types - Aggregation types descriptions

There are no aggregation types for the primary types.

##### 4.2.4.1 Primary types - Composition types descriptions

There are no composition types for the primary types.

#### 4.2.5 Secondary types - Class types descriptions

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

#### 4.2.6 Secondary types - Datatypes types descriptions

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

**4.2.7 Secondary types - Association types descriptions**

There are no association types for the secondary types.

**4.2.8 Secondary types - Aggregation types descriptions**

There are no aggregation types for the secondary types.

**4.2.9 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 **messi** OCL code listing is joined to the comment table.

### 5.1 Environment - Out Interface Operation Schemes

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

### 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 Use Cases

#### A.1.1 Undocumented User-Goal Level Use Cases

- lu.uni.lassy.excalibur.sep.g05.mike.usecases.ugAddBook
- lu.uni.lassy.excalibur.sep.g05.mike.usecases.ugManagingLoans
- lu.uni.lassy.excalibur.sep.g05.mike.usecases.ugReinstateCustomer
- lu.uni.lassy.excalibur.sep.g05.mike.usecases.ugRemoveBook
- lu.uni.lassy.excalibur.sep.g05.mike.usecases.ugRequestCustomerBan
- lu.uni.lassy.excalibur.sep.g05.mike.usecases.ugRequestCustomerUnban
- lu.uni.lassy.excalibur.sep.g05.mike.usecases.ugSetNote
- lu.uni.lassy.excalibur.sep.g05.mike.usecases.ugSuspendCustomer

#### A.1.2 Undocumented Subfunction Level Use Cases

- lu.uni.lassy.excalibur.sep.g05.mike.usecases.sfAccessBookDatabase
- lu.uni.lassy.excalibur.sep.g05.mike.usecases.sfAccessCustomerDatabase
- lu.uni.lassy.excalibur.sep.g05.mike.usecases.sfAddBook
- lu.uni.lassy.excalibur.sep.g05.mike.usecases.sfAddLoan
- lu.uni.lassy.excalibur.sep.g05.mike.usecases.sfInspectCustomer
- lu.uni.lassy.excalibur.sep.g05.mike.usecases.sfReinstateCustomer
- lu.uni.lassy.excalibur.sep.g05.mike.usecases.sfRemoveBook
- lu.uni.lassy.excalibur.sep.g05.mike.usecases.sfRequestCustomerBan
- lu.uni.lassy.excalibur.sep.g05.mike.usecases.sfRequestCustomerUnban
- lu.uni.lassy.excalibur.sep.g05.mike.usecases.sfReturnBook

- lu.uni.lassy.excalibur.sep.g05.mike.usecases.sfSearchBook
- lu.uni.lassy.excalibur.sep.g05.mike.usecases.sfSearchCustomer
- lu.uni.lassy.excalibur.sep.g05.mike.usecases.sfSetNote
- lu.uni.lassy.excalibur.sep.g05.mike.usecases.sfSuspendCustomer

### A.1.3 Undocumented Use Case Views

- uc-ugAddBook
- uc-ugManagingLoans
- uc-ugReinstateCustomer
- uc-ugRemoveBook
- uc-ugRequestCustomerBan
- uc-ugRequestCustomerUnban
- uc-ugSetNote
- uc-ugSuspendCustomer

## A.2 Undocumented Use Case Instances

### A.2.1 Undocumented User-Goal Level Use Case Instances

- usecases.uciugManagingLoans.uciugAddBook
- usecases.uciugManagingLoans.uciugManagingLoans
- usecases.uciugManagingLoans.uciugReinstateCustomer
- usecases.uciugManagingLoans.uciugRemoveBook
- usecases.uciugManagingLoans.uciugRequestCustomerBan
- usecases.uciugManagingLoans.uciugRequestCustomerUnban
- usecases.uciugManagingLoans.uciugSetNote
- usecases.uciugManagingLoans.uciugSuspendCustomer

### A.2.2 Undocumented Use Case Instance Views

- uci-uciugAddBook
- uci-uciugManagingLoans
- uci-uciugReinstateCustomer
- uci-uciugRemoveBook
- uci-uciugRequestCustomerBan



- uci-uciugRequestCustomerUnban
- uci-uciugSetNote
- uci-uciugSuspendCustomer

## A.3 Undocumented Actors

- lu.uni.lassy.excalibur.sep.g05.mike.environment.actCustomer
- lu.uni.lassy.excalibur.sep.g05.mike.environment.actLibrarian

## A.4 Undocumented Primary Types

### A.4.1 Undocumented Primary Classe Types

- lu.uni.lassy.excalibur.sep.g05.mike.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 uuid8953ab999204777b3858769e538c72c {
5   Concept Model {}
6 }
```

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

### B.2 File ./src-gen/messir-spec/environment/environment.msr

```
1 /*
2 * @author nicentra
3 * @date Tue Nov 21 23:30:54 CET 2017
4 */
5
6 package lu.uni.lassy.excalibur.sep.g05.mike.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  Environment Model {
14
15    actor actLibrarian role ractLibrarian cardinality[1 .. *] {
16      input interface inactLibrarian {
17
18      }
19      output interface outactLibrarian {
20
21      }
22    }
23
24    actor actCustomer role ractCustomer cardinality[0 .. *] {
25      input interface inactCustomer {
26
27      }
28      output interface outactCustomer {
29
30      }
31    }
32  }
```

Listing B.2: Messir Spec. file environment.msr.

### B.3 File `./src-gen/messir-spec/concepts/primarytypes-associations/primarytypes-associations.msr`

```

1 /*
2 * @author nicentra
3 * @date Tue Nov 21 23:30:54 CET 2017
4 */
5
6 package lu.uni.lassy.excalibur.sep.g05.mike.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.3: Messir Spec. file primarytypes-associations.msr.

### B.4 File `./src-gen/messir-spec/concepts/primarytypes-classes/primarytypes-classes.msr`

```

1 /*
2 * @author nicentra
3 * @date Tue Nov 21 23:30:54 CET 2017
4 */
5
6 package lu.uni.lassy.excalibur.sep.g05.mike.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.4: Messir Spec. file primarytypes-classes.msr.

### B.5 File `./src-gen/messir-spec/concepts/primarytypes-datatypes/primarytypes-datatypes.msr`

```

1 /*
2 * @author nicentra
3 * @date Tue Nov 21 23:30:54 CET 2017

```

```

4 */
5
6 package lu.uni.lassy.excalibur.sep.g05.mike.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
13 Concept Model {
14
15 Primary Types {
16
17 }
18 }
19 }

```

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

## B.6 File `./src-gen/messir-spec/concepts/secondarytypes-associations/secondarytypes-associations.msr`

```

1 /*
2 * @author nicentra
3 * @date Tue Nov 21 23:30:54 CET 2017
4 */
5
6 package lu.uni.lassy.excalibur.sep.g05.mike.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.6: Messir Spec. file secondarytypes-associations.msr.

## B.7 File `./src-gen/messir-spec/concepts/secondarytypes-classes/secondarytypes-classes.msr`

```

1 /*
2 * @author nicentra
3 * @date Tue Nov 21 23:30:54 CET 2017
4 */
5
6 package lu.uni.lassy.excalibur.sep.g05.mike.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.7: Messir Spec. file secondarytypes-classes.msr.

## B.8 File `./src-gen/messir-spec/concepts/secondarytypes-datatypes/secondarytypes-datatypes.msr`

```

1 /*
2 * @author nicentra
3 * @date Tue Nov 21 23:30:54 CET 2017
4 */
5
6 package lu.uni.lassy.excalibur.sep.g05.mike.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 }
18
19 }
20 }

```

Listing B.8: Messir Spec. file secondarytypes-datatypes.msr.

## B.9 File `./src-gen/messir-spec/tests/tests.msr`

```

1 /*
2 * @author nicentra
3 * @date Tue Nov 21 23:30:54 CET 2017
4 */
5
6 package lu.uni.lassy.excalibur.sep.g05.mike.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.9: Messir Spec. file tests.msr.

## B.10 File `./src-gen/messir-spec/usecases/usecaseinstance-ugManagingLoans-uciugManagingLoans.msr`

```

1 package usecases.uciugManagingLoans {
2 import lu.uni.lassy.excalibur.sep.g05.mike.usecases
3
4 Use Case Model {
5
6 use case instance uciugManagingLoans : ugManagingLoans{
7 actors {
8 mikeSchmitz : lu.uni.lassy.excalibur.sep.g05.mike.environment.actLibrarian
9 }
10 use case steps {

```

```

11  mikeSchmitz executed instance of subfunction sfAddLoan("36958", "What if?", "003") {
12    ieLoan("Loan successfully granted.") returned to mikeSchmitz
13  }
14
15  mikeSchmitz executed instance of subfunction sfReturnBook("36958", "What if?", "003") {
16    ieReturnedBook("Book successfully returned.") returned to mikeSchmitz
17  }
18  }
19  }
20
21  use case instance uciugAddBook : ugAddBook{
22    actors {
23      mikeSchmitz : lu.uni.lassy.excalibur.sep.g05.mike.environment.actLibrarian
24    }
25    use case steps {
26      mikeSchmitz executed instance of subfunction sfAccessBookDatabase() {
27        ieBookDatabase("Book database opened.") returned to mikeSchmitz
28      }
29
30      mikeSchmitz executed instance of subfunction sfAddBook("0-544-27299-4", "Randall Munroe", "What
31        If?") {
32        ieBookAdded("Book successfully returned.") returned to mikeSchmitz
33      }
34    }
35
36  use case instance uciugReinstateCustomer : ugReinstateCustomer{
37    actors {
38      mikeSchmitz : lu.uni.lassy.excalibur.sep.g05.mike.environment.actLibrarian
39    }
40    use case steps {
41      mikeSchmitz executed instance of subfunction sfAccessCustomerDatabase() {
42        ieCustomerDatabase("Customer database opened.") returned to mikeSchmitz
43      }
44
45      mikeSchmitz executed instance of subfunction sfSearchCustomer("John Smith") {
46        ieCustomerQuery("Customer retrieved") returned to mikeSchmitz
47      }
48
49      mikeSchmitz executed instance of subfunction sfInspectCustomer() {
50        ieCustomerProfile("Customer profile opened") returned to mikeSchmitz
51      }
52
53      mikeSchmitz executed instance of subfunction sfReinstateCustomer() {
54        ieCustomerReinstated("Customer reinstated") returned to mikeSchmitz
55      }
56    }
57  }
58
59  use case instance uciugRemoveBook : ugRemoveBook {
60    actors {
61      mikeSchmitz: lu.uni.lassy.excalibur.sep.g05.mike.environment.actLibrarian
62    }
63    use case steps {
64      mikeSchmitz executed instance of subfunction sfAccessBookDatabase() {
65        ieBookDatabase("Book database opened") returned to mikeSchmitz
66      }
67      mikeSchmitz executed instance of subfunction sfRemoveBook("#000003") {
68        ieBookRemoved("Book successfully removed") returned to mikeSchmitz
69      }
70    }
71  }
72
73  use case instance uciugRequestCustomerBan : ugRequestCustomerBan{
74    actors {
75      mikeSchmitz : lu.uni.lassy.excalibur.sep.g05.mike.environment.actLibrarian
76    }
77    use case steps {
78      mikeSchmitz executed instance of subfunction sfAccessCustomerDatabase() {
79        ieCustomerDatabase("Customer database opened.") returned to mikeSchmitz

```

```

80     }
81
82     mikeSchmitz executed instance of subfunction sfSearchCustomer("John Smith") {
83         ieCustomerQuery("Customer retrieved") returned to mikeSchmitz
84     }
85
86     mikeSchmitz executed instance of subfunction sfInspectCustomer() {
87         ieCustomerProfile("Customer profile opened") returned to mikeSchmitz
88     }
89
90     mikeSchmitz executed instance of subfunction sfRequestCustomerBan("Second time now the customer
91         has returned a book in an almost destroyed state") {
92         ieSentBanRequest("Ban request send off") returned to mikeSchmitz
93     }
94 }
95
96 use case instance uciugRequestCustomerUnban : ugRequestCustomerUnban{
97     actors {
98         mikeSchmitz : lu.uni.lassy.excalibur.sep.g05.mike.environment.actLibrarian
99     }
100    use case steps {
101        mikeSchmitz executed instance of subfunction sfAccessCustomerDatabase() {
102            ieCustomerDatabase("Customer database opened.") returned to mikeSchmitz
103        }
104
105        mikeSchmitz executed instance of subfunction sfSearchCustomer("John Smith") {
106            ieCustomerQuery("Customer retrieved") returned to mikeSchmitz
107        }
108
109        mikeSchmitz executed instance of subfunction sfInspectCustomer() {
110            ieCustomerProfile("Customer profile opened") returned to mikeSchmitz
111        }
112
113        mikeSchmitz executed instance of subfunction sfRequestCustomerUnban("Customer has paid all
114            outstanding fines plus an extra donation and has handed in a long apology letter") {
115            ieSentUnbanRequest("Unban request send off") returned to mikeSchmitz
116        }
117    }
118
119    use case instance uciugSetNote : ugSetNote{
120        actors {
121            mikeSchmitz : lu.uni.lassy.excalibur.sep.g05.mike.environment.actLibrarian
122        }
123        use case steps {
124            mikeSchmitz executed instance of subfunction sfAccessCustomerDatabase() {
125                ieCustomerDatabase("Customer database opened.") returned to mikeSchmitz
126            }
127
128            mikeSchmitz executed instance of subfunction sfSearchCustomer("John Smith") {
129                ieCustomerQuery("Customer retrieved") returned to mikeSchmitz
130            }
131
132            mikeSchmitz executed instance of subfunction sfInspectCustomer() {
133                ieCustomerProfile("Customer profile opened") returned to mikeSchmitz
134            }
135
136            mikeSchmitz executed instance of subfunction sfSetNote("Customer is overdue on 2 books, suspended
137                until fine of 20 Euro is paid") {
138                ieSetNote("Note set") returned to mikeSchmitz
139            }
140        }
141
142    use case instance uciugSuspendCustomer : ugSuspendCustomer{
143        actors {
144            mikeSchmitz : lu.uni.lassy.excalibur.sep.g05.mike.environment.actLibrarian
145        }
146        use case steps {

```



```

147  mikeSchmitz executed instance of subfunction sfAccessCustomerDatabase() {
148      ieCustomerDatabase("Customer database opened.") returned to mikeSchmitz
149  }
150
151  mikeSchmitz executed instance of subfunction sfSearchCustomer("John Smith") {
152      ieCustomerQuery("Customer retrieved") returned to mikeSchmitz
153  }
154
155  mikeSchmitz executed instance of subfunction sfInspectCustomer() {
156      ieCustomerProfile("Customer profile opened") returned to mikeSchmitz
157  }
158
159  mikeSchmitz executed instance of subfunction sfSuspendCustomer() {
160      ieCustomerSuspended("Customer suspended") returned to mikeSchmitz
161  }
162  }
163  }
164  }
165  }

```

Listing B.10: Messir Spec. file usecaseinstance-ugManagingLoans-uciugManagingLoans.msr.

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

```

1 /*
2 * @author nicentra
3 * @date Tue Nov 21 23:30:54 CET 2017
4 */
5
6 package lu.uni.lassy.excalibur.sep.g05.mike.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
13 Use Case Model {
14
15 use case system subfunction sfAccessCustomerDatabase() {
16     actor lu.uni.lassy.excalibur.sep.g05.mike.environment.actLibrarian[primary, active]
17     returned messages{
18         ieCustomerDatabase returned to lu.uni.lassy.excalibur.sep.g05.mike.environment.actLibrarian
19     }
20 }
21
22 use case system subfunction sfSearchCustomer() {
23     actor lu.uni.lassy.excalibur.sep.g05.mike.environment.actLibrarian[primary, active]
24     returned messages{
25         ieCustomerQuery returned to lu.uni.lassy.excalibur.sep.g05.mike.environment.actLibrarian
26     }
27 }
28
29 use case system subfunction sfInspectCustomer() {
30     actor lu.uni.lassy.excalibur.sep.g05.mike.environment.actLibrarian[primary, active]
31     returned messages{
32         ieCustomerProfile returned to lu.uni.lassy.excalibur.sep.g05.mike.environment.actLibrarian
33     }
34 }
35
36 use case system subfunction sfAddLoan() {
37     actor lu.uni.lassy.excalibur.sep.g05.mike.environment.actLibrarian[primary, active]
38     returned messages{
39         ieLoan returned to lu.uni.lassy.excalibur.sep.g05.mike.environment.actLibrarian
40     }
41 }
42 use case system subfunction sfReturnBook() {
43     actor lu.uni.lassy.excalibur.sep.g05.mike.environment.actLibrarian[primary, active]
44     returned messages{
45         ieReturnedBook returned to lu.uni.lassy.excalibur.sep.g05.mike.environment.actLibrarian

```

```

46  }
47  }
48
49  use case system subfunction sfSuspendCustomer() {
50  actor lu.uni.lassy.excalibur.sep.g05.mike.environment.actLibrarian[primary, active]
51  returned messages{
52  ieCustomerSuspended returned to lu.uni.lassy.excalibur.sep.g05.mike.environment.actLibrarian
53  }
54  }
55
56  use case system subfunction sfReinstateCustomer() {
57  actor lu.uni.lassy.excalibur.sep.g05.mike.environment.actLibrarian[primary, active]
58  returned messages{
59  ieCustomerReinstated returned to lu.uni.lassy.excalibur.sep.g05.mike.environment.actLibrarian
60  }
61  }
62
63  use case system subfunction sfRequestCustomerBan() {
64  actor lu.uni.lassy.excalibur.sep.g05.mike.environment.actLibrarian[primary, active]
65  returned messages{
66  ieSentBanRequest returned to lu.uni.lassy.excalibur.sep.g05.mike.environment.actLibrarian
67  }
68  }
69
70  use case system subfunction sfRequestCustomerUnban() {
71  actor lu.uni.lassy.excalibur.sep.g05.mike.environment.actLibrarian[primary, active]
72  returned messages{
73  ieSentUnbanRequest returned to lu.uni.lassy.excalibur.sep.g05.mike.environment.actLibrarian
74  }
75  }
76
77  use case system subfunction sfSetNote() {
78  actor lu.uni.lassy.excalibur.sep.g05.mike.environment.actLibrarian[primary, active]
79  returned messages{
80  ieSetNote returned to lu.uni.lassy.excalibur.sep.g05.mike.environment.actLibrarian
81  }
82  }
83
84  use case system subfunction sfAccessBookDatabase() {
85  actor lu.uni.lassy.excalibur.sep.g05.mike.environment.actLibrarian[primary, active]
86  returned messages{
87  ieBookDatabase returned to lu.uni.lassy.excalibur.sep.g05.mike.environment.actLibrarian
88  }
89  }
90
91  use case system subfunction sfSearchBook() {
92  actor lu.uni.lassy.excalibur.sep.g05.mike.environment.actLibrarian[primary, active]
93  returned messages{
94  ieBookQuery returned to lu.uni.lassy.excalibur.sep.g05.mike.environment.actLibrarian
95  }
96  }
97
98  use case system subfunction sfAddBook() {
99  actor lu.uni.lassy.excalibur.sep.g05.mike.environment.actLibrarian[primary, active]
100 returned messages{
101 ieBookAdded returned to lu.uni.lassy.excalibur.sep.g05.mike.environment.actLibrarian
102 }
103 }
104
105 use case system subfunction sfRemoveBook() {
106 actor lu.uni.lassy.excalibur.sep.g05.mike.environment.actLibrarian[primary, active]
107 returned messages{
108 ieBookRemoved returned to lu.uni.lassy.excalibur.sep.g05.mike.environment.actLibrarian
109 }
110 }
111
112 use case system usergoal ugManagingLoans() {
113 actor lu.uni.lassy.excalibur.sep.g05.mike.environment.actLibrarian[primary, active]
114 reuse lu.uni.lassy.excalibur.sep.g05.mike.usecases.sfAddLoan[0..*]
115 reuse lu.uni.lassy.excalibur.sep.g05.mike.usecases.sfReturnBook[0..*]

```

```

116
117 step a: lu.uni.lassy.excalibur.sep.g05.mike.environment.actLibrarian executes sfAddLoan()
118 step b: lu.uni.lassy.excalibur.sep.g05.mike.environment.actLibrarian executes sfReturnBook()
119
120 ordering constraint "step a must be executed first"
121 }
122
123 use case system usergoal ugSuspendCustomer() {
124 actor lu.uni.lassy.excalibur.sep.g05.mike.environment.actLibrarian[primary, active]
125 reuse lu.uni.lassy.excalibur.sep.g05.mike.usecases.sfAccessCustomerDatabase[1..1]
126 reuse lu.uni.lassy.excalibur.sep.g05.mike.usecases.sfSearchCustomer[1..1]
127 reuse lu.uni.lassy.excalibur.sep.g05.mike.usecases.sfInspectCustomer[1..1]
128 reuse lu.uni.lassy.excalibur.sep.g05.mike.usecases.sfSuspendCustomer[1..1]
129
130 step a: lu.uni.lassy.excalibur.sep.g05.mike.environment.actLibrarian executes
      sfAccessCustomerDatabase()
131 step b: lu.uni.lassy.excalibur.sep.g05.mike.environment.actLibrarian executes sfSearchCustomer()
132 step c: lu.uni.lassy.excalibur.sep.g05.mike.environment.actLibrarian executes sfInspectCustomer()
133 step d: lu.uni.lassy.excalibur.sep.g05.mike.environment.actLibrarian executes sfSuspendCustomer()
134
135 ordering constraint "step a must be executed first"
136 ordering constraint "step b must be executed second"
137 ordering constraint "step c must be executed third"
138 ordering constraint "step d must be executed fourth"
139 }
140
141 use case system usergoal ugReinstateCustomer() {
142 actor lu.uni.lassy.excalibur.sep.g05.mike.environment.actLibrarian[primary, active]
143 reuse lu.uni.lassy.excalibur.sep.g05.mike.usecases.sfAccessCustomerDatabase[1..1]
144 reuse lu.uni.lassy.excalibur.sep.g05.mike.usecases.sfSearchCustomer[1..1]
145 reuse lu.uni.lassy.excalibur.sep.g05.mike.usecases.sfInspectCustomer[1..1]
146 reuse lu.uni.lassy.excalibur.sep.g05.mike.usecases.sfReinstateCustomer[1..1]
147
148 step a: lu.uni.lassy.excalibur.sep.g05.mike.environment.actLibrarian executes
      sfAccessCustomerDatabase()
149 step b: lu.uni.lassy.excalibur.sep.g05.mike.environment.actLibrarian executes sfSearchCustomer()
150 step c: lu.uni.lassy.excalibur.sep.g05.mike.environment.actLibrarian executes sfInspectCustomer()
151 step d: lu.uni.lassy.excalibur.sep.g05.mike.environment.actLibrarian executes sfReinstateCustomer
      ()
152
153 ordering constraint "step a must be executed first"
154 ordering constraint "step b must be executed second"
155 ordering constraint "step c must be executed third"
156 ordering constraint "step d must be executed fourth"
157 }
158
159 use case system usergoal ugRequestCustomerBan() {
160 actor lu.uni.lassy.excalibur.sep.g05.mike.environment.actLibrarian[primary, active]
161 reuse lu.uni.lassy.excalibur.sep.g05.mike.usecases.sfAccessCustomerDatabase[1..1]
162 reuse lu.uni.lassy.excalibur.sep.g05.mike.usecases.sfSearchCustomer[1..1]
163 reuse lu.uni.lassy.excalibur.sep.g05.mike.usecases.sfInspectCustomer[1..1]
164 reuse lu.uni.lassy.excalibur.sep.g05.mike.usecases.sfRequestCustomerBan[1..1]
165
166 step a: lu.uni.lassy.excalibur.sep.g05.mike.environment.actLibrarian executes
      sfAccessCustomerDatabase()
167 step b: lu.uni.lassy.excalibur.sep.g05.mike.environment.actLibrarian executes sfSearchCustomer()
168 step c: lu.uni.lassy.excalibur.sep.g05.mike.environment.actLibrarian executes sfInspectCustomer()
169 step d: lu.uni.lassy.excalibur.sep.g05.mike.environment.actLibrarian executes
      sfRequestCustomerBan()
170
171 ordering constraint "step a must be executed first"
172 ordering constraint "step b must be executed second"
173 ordering constraint "step c must be executed third"
174 ordering constraint "step d must be executed fourth"
175 }
176
177 use case system usergoal ugRequestCustomerUnban() {
178 actor lu.uni.lassy.excalibur.sep.g05.mike.environment.actLibrarian[primary, active]
179 reuse lu.uni.lassy.excalibur.sep.g05.mike.usecases.sfAccessCustomerDatabase[1..1]
180 reuse lu.uni.lassy.excalibur.sep.g05.mike.usecases.sfSearchCustomer[1..1]

```

```

181 reuse lu.uni.lassy.excalibur.sep.g05.mike.usecases.sfInspectCustomer[1..1]
182 reuse lu.uni.lassy.excalibur.sep.g05.mike.usecases.sfRequestCustomerUnban[1..1]
183
184 step a: lu.uni.lassy.excalibur.sep.g05.mike.environment.actLibrarian executes
      sfAccessCustomerDatabase()
185 step b: lu.uni.lassy.excalibur.sep.g05.mike.environment.actLibrarian executes sfSearchCustomer()
186 step c: lu.uni.lassy.excalibur.sep.g05.mike.environment.actLibrarian executes sfInspectCustomer()
187 step d: lu.uni.lassy.excalibur.sep.g05.mike.environment.actLibrarian executes
      sfRequestCustomerUnban()
188
189 ordering constraint "step a must be executed first"
190 ordering constraint "step b must be executed second"
191 ordering constraint "step c must be executed third"
192 ordering constraint "step d must be executed fourth"
193 }
194
195 use case system usergoal ugSetNote() {
196 actor lu.uni.lassy.excalibur.sep.g05.mike.environment.actLibrarian[primary, active]
197 reuse lu.uni.lassy.excalibur.sep.g05.mike.usecases.sfAccessCustomerDatabase[1..1]
198 reuse lu.uni.lassy.excalibur.sep.g05.mike.usecases.sfSearchCustomer[1..1]
199 reuse lu.uni.lassy.excalibur.sep.g05.mike.usecases.sfInspectCustomer[1..1]
200 reuse lu.uni.lassy.excalibur.sep.g05.mike.usecases.sfSetNote[1..1]
201
202 step a: lu.uni.lassy.excalibur.sep.g05.mike.environment.actLibrarian executes
      sfAccessCustomerDatabase()
203 step b: lu.uni.lassy.excalibur.sep.g05.mike.environment.actLibrarian executes sfSearchCustomer()
204 step c: lu.uni.lassy.excalibur.sep.g05.mike.environment.actLibrarian executes sfInspectCustomer()
205 step d: lu.uni.lassy.excalibur.sep.g05.mike.environment.actLibrarian executes sfSetNote()
206
207 ordering constraint "step a must be executed first"
208 ordering constraint "step b must be executed second"
209 ordering constraint "step c must be executed third"
210 ordering constraint "step d must be executed fourth"
211 }
212
213 use case system usergoal ugAddBook() {
214 actor lu.uni.lassy.excalibur.sep.g05.mike.environment.actLibrarian[primary, active]
215 reuse lu.uni.lassy.excalibur.sep.g05.mike.usecases.sfAccessBookDatabase[1..1]
216 reuse lu.uni.lassy.excalibur.sep.g05.mike.usecases.sfAddBook[1..*]
217
218 step a: lu.uni.lassy.excalibur.sep.g05.mike.environment.actLibrarian executes
      sfAccessBookDatabase()
219 step b: lu.uni.lassy.excalibur.sep.g05.mike.environment.actLibrarian executes sfAddBook()
220
221 ordering constraint "step a must be executed first"
222 }
223
224 use case system usergoal ugRemoveBook() {
225 actor lu.uni.lassy.excalibur.sep.g05.mike.environment.actLibrarian[primary, active]
226 reuse lu.uni.lassy.excalibur.sep.g05.mike.usecases.sfAccessBookDatabase[1..1]
227 reuse lu.uni.lassy.excalibur.sep.g05.mike.usecases.sfRemoveBook[1..*]
228
229 step a: lu.uni.lassy.excalibur.sep.g05.mike.environment.actLibrarian executes
      sfAccessBookDatabase()
230 step b: lu.uni.lassy.excalibur.sep.g05.mike.environment.actLibrarian executes sfRemoveBook()
231
232 ordering constraint "step a must be executed first"
233 }
234
235 // use case system summary suDeployAndRun() {
236 // actor lu.uni.lassy.excalibur.sep.g05.mike.environment.actLibrarian[primary, active]
237 //
238 // reuse ugManagingLoans[0..*]
239 // reuse sfAccessCustomerDatabase[0..*]
240 //
241 // // step shit
242 //
243 // //ordering constraint
244 //
245 //

```

```
246 //  }  
247 }  
248 }
```

Listing B.11: Messir Spec. file usecases.msr.



