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Telecommunication management;
Fixed Mobile Convergence (FMC)
Federated Network Operation Model (FNOM)
Umbrella Operation Model (UOM)
(3GPP TR 28.820 version 12.0.0 Release 12)**



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Foreword

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where:

- x the first digit:
 - 1 presented to TSG for information;
 - 2 presented to TSG for approval;
 - 3 or greater indicates TSG approved document under change control.
- y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.
- z the third digit is incremented when editorial only changes have been incorporated in the document.

1 Scope

The present document is the result of the Multi-SDO JWG on Model Alignment which 3GPP TSG SA WG5 (SA5) has developed jointly with TMF and NGMN, and which does not fully follow the 3GPP templates and drafting rules.

Therefore 3GPP SA5 has desired to keep the present document as similar as possible to the original, for comparison with the corresponding TMF version.

Thus 3GPP SA5 has done only the strictly necessary changes from the 3GPP drafting rules perspective in order to publish the present document as a 3GPP Technical Report.

As a result of the analysis of the requirements for the harmonization of the 3GPP and TM Forum Information Models in the context of FMC basic use cases were developed 3GPP TR 32.833 [1], TM Forum TR 166 [2]. These use cases led to the recognition that it would be necessary to define common operation model elements applicable for wire-line and wireless networks. The present document defines these common model elements.

To be noted:

- The Umbrella Operation Model (UOM) described in the present document provides the set of interfaces/operations etc. that have been agreed for convergence to strengthen consistency of representation and semantics of network management operations in the fixed and mobile environments.
- The UOM is necessary but not sufficient for implementation.
- The UOM cannot be used directly for implementation. Implementation classes must be derived from those in the UOM by Inheritance or some other appropriate mechanism.
- Classes derived from those in the UOM (e.g. for the fixed environment) may use different names from those used in the UOM.

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

- [1] 3GPP TR 32.833: "Telecommunication management; Study on management of converged networks".
- [2] TM Forum TR 166: "Information Model Federation Concepts and Principles".
<http://collab.tmforum.org/sf/go/doc13634?nav=1>.
- [3] Fixed Mobile Convergence (FMC) Federated Network Information Model (FNIM).
- [4] Fixed Mobile Convergence (FMC) Model Repertoire.

3 Definitions, symbols and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in Fixed Mobile Convergence (FMC) Federated Network Information Model (FNIM) [3] apply.

3.2 Symbols

For the purposes of the present document, the symbols given in Fixed Mobile Convergence (FMC) Federated Network Information Model (FNIM) [3] apply.

3.3 Abbreviations

For the purposes of the present document, the abbreviations given in Fixed Mobile Convergence (FMC) Federated Network Information Model (FNIM) [3] and the following apply:

FFS	For Further Study
FMC	Fixed Mobile Convergence
FNIM	Federated Network Information Model
FNOM	Federated Network Operation Model
M	Mandatory
ME	Managed Element
NM	Network Management
NW	Network
O	Optional
OMG	Object Management Group
SC	Selection Criteria
SDO	Standards Developing Organization
UOM	Umbrella Operation Model
XML	Extensible Markup Language
XPath	XML Path Language

4 Umbrella Operation Model (UOM)

4.1 Introduction

This clause introduces a number of classes and their relations that form the UOM. These classes are defined as the OMG UML defined classifier called interface.

The definitions of these classes are implementation neutral in that they only capture the semantics of the operations. They do not:

- a) Include syntax or representation of the operation model elements.
- b) Relate to the information model elements.

Various SDOs and organizations are expected to use this interface definition for their definitions of domain/technology-specific "interface" classes. This procedure will maximize the probability of the domain/technology specific concrete "interface" classes (from various SDOs) being semantically consistent, a necessary characteristic for FMC NM purposes.

The set of "interface" is basic in that their definitions and usage are necessary for the harmonization of various domain/technology-specific "interface" classes, forming the so-called FNOM.

4.2 Interface/Signal diagram

These Interfaces are *abstract*. Other Interfaces are for further study.

The UML diagrams in figure 4.2-1 do not show operation parameters. See annex A for the UML diagrams that do.

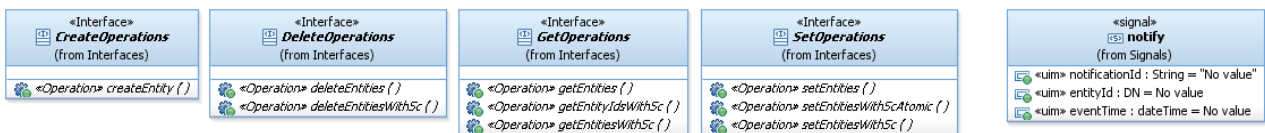


Figure 4.2-1: Interface/Signal diagram

4.3 Operations

4.3.1 Create Operations Group

4.3.1.1 Operation createEntity

4.3.1.1.1 Definition

The client requests the server to create an identifiable entity.

It is possible to provide an identifier of an existing entity of the same class to be used as the template for the new entity to be created.

The operation properties are:

Property name	Legal values
isAtomic	True
preconditions	None
postconditions	Entity has been created as requested.
bulkTransferPattern	NONE
emitsEvents	False
emittedEvents	--
isOneWay	False
operationExceptions	All mandatory pre-defined Exceptions (see Table 9 of [4]). Optional pre-defined Exceptions: CapacityExceeded ObjectExisting
supportQualifier	M

4.3.1.1.2 Input parameters

Parameter Name	Documentation and Allowed Values	Properties
entityId	This parameter provides the identifier of the entity to be created by the Server. If no identifier is provided, the Server provides a unique identifier. allowedValues: FFS	type: DN isOrdered: False isUnique: True defaultValue: No value multiplicity: 1 isBulkPotential: False supportQualifier: M
referenceEntity	This parameter provides the identifier of an existing entity that is of the same class as the entity to be created. Attribute values associated with the referenced entity become the default values for those not specified by the attributeList parameter. This parameter may contain no information. allowedValues: Distinguished Name of an existing entity of the same class known by the server.	type: DN isOrdered: False isUnique: True defaultValue: No value multiplicity: 1 isBulkPotential: False supportQualifier: O
attributeList	This parameter provides the entity attribute names and values to be populated to the new entity. These values override the values of the referenceEntity (if the referenceEntity parameter contains information) and the default values property of the entity definition. allowedValues: For the attribute names, only the subject entity class defined attributes. For the attribute values, see the subject entity class attribute allowedValues property.	type: AttributeValuePair isOrdered: False isUnique: True defaultValue: No value multiplicity: * isBulkPotential: False supportQualifier: O

4.3.1.1.3 Output parameters

None.

4.3.2 Delete Operations Group

4.3.2.1 Operation deleteEntitiesWithSc

4.3.2.1.1 Definition

The client requests the server to delete entities identified by selection criteria.

The operation properties are:

Property name	Legal values
isAtomic	False
preconditions	None
postconditions	Selected entities do not exist.
bulkTransferPattern	NONE
emitsEvents	False
emittedEvents	--
isOneWay	False
operationExceptions	All mandatory pre-defined Exceptions (see Table 9 of [4]). Optional pre-defined Exceptions: None
supportQualifier	M

4.3.2.1.2 Input parameters

Parameter Name	Documentation and Allowed Values	Properties
selectionCriteria	This parameter provides the criteria whose evaluation would yield zero or more entity identifier(s). The grammar for selectionCriteria is not defined in the UOM and may be dependent on the technology used (e.g. in case of XML use XPath). allowedValues: N/A	type: External isOrdered: False isUnique: True defaultValue: No value multiplicity: 1 isBulkPotential: False supportQualifier: M

4.3.2.1.3 Output parameters

Parameter Name	Documentation	Properties
states	This parameter provides information about the status of the operation. allowedValues: See property::type.	type: OperationStatusBestEffort isOrdered: False isUnique: True defaultValue: No value multiplicity: 1 isBulkPotential: False supportQualifier: M

4.3.2.2 Operation deleteEntities

4.3.2.2.1 Definition

The client requests the server to delete entities identified by explicit object identifiers.

The operation properties are:

Property name	Legal values
isAtomic	False
preconditions	None
postconditions	Identified entities do not exist.
bulkTransferPattern	NONE
emitsEvents	False
emittedEvents	--
isOneWay	False
operationExceptions	All mandatory pre-defined Exceptions (see Table 9 of [4]). Optional pre-defined Exceptions: None
supportQualifier	M

4.3.2.2.2 Input parameters

Parameter Name	Documentation	Properties
entityIdList	This parameter provides the identifiers of the entities to be deleted by the Server. allowedValues: See property::type.	type: DN isOrdered: False isUnique: True defaultValue: No value multiplicity: 1..* isBulkPotential: False supportQualifier: M

4.3.2.2.3 Output parameters

Parameter Name	Documentation	Properties
status	This parameter provides information about the status of the operation. allowedValues: See property::type.	type: OperationStatusBestEffort isOrdered: False isUnique: True defaultValue: No value multiplicity: 1 isBulkPotential: False supportQualifier: M

4.3.3 Get Operations Group

4.3.3.1 Operation `getEntityIdsWithSc`

4.3.3.1.1 Definition

The client requests the server to return the identifiers of the entities identified by selection criteria.

The operation properties are:

Property name	Legal values
<code>isAtomic</code>	False
<code>preconditions</code>	None
<code>postconditions</code>	No change in the entities.
<code>bulkTransferPattern</code>	NONE
<code>emitsEvents</code>	False
<code>emittedEvents</code>	--
<code>isOneWay</code>	False
<code>operationExceptions</code>	All mandatory pre-defined Exceptions (see Table 9 of [4]). Optional pre-defined Exceptions: AccessDenied FilterNotSupported
<code>supportQualifier</code>	M

4.3.3.1.2 Input parameters

Parameter Name	Documentation and Allowed Values	Properties
<code>selectionCriteria</code>	It This parameter provides the criteria whose evaluation would yield zero or more entity identifier(s). The grammar for <code>selectionCriteria</code> is not defined in the UOM and may be dependent on the technology used (e.g. in case of XML use XPath). allowedValues: N/A	type: External isOrdered: False isUnique: True defaultValue: No value multiplicity: 1 isBulkPotential: False supportQualifier: M

4.3.3.1.3 Output parameters

Parameter Name	Documentation	Properties
<code>entityIdList</code>	This parameter returns a list of entity identifiers. allowedValues: See property::type.	type: DN isOrdered: False isUnique: True defaultValue: No value multiplicity: * isBulkPotential: False supportQualifier: M
<code>status</code>	This parameter returns information about the status of the operation. allowedValues: See property::type.	type: OperationStatusBestEffort isOrdered: False isUnique: True defaultValue: No value multiplicity: 1 isBulkPotential: False supportQualifier: M

4.3.3.2 Operation `getEntitiesWithSc`

4.3.3.2.1 Definition

The client requests the server to return information (list of attribute values) of the entities identified by selection criteria.

The operation properties are:

Property name	Legal values
<code>isAtomic</code>	False
<code>preconditions</code>	None
<code>postconditions</code>	No change in the entities.
<code>bulkTransferPattern</code>	ITERATOR
<code>emitsEvents</code>	False
<code>emittedEvents</code>	--
<code>isOneWay</code>	False
<code>operationExceptions</code>	All mandatory pre-defined Exceptions (see Table 9 of [4]). Optional pre-defined Exceptions: AccessDenied FilterNotSupported
<code>supportQualifier</code>	M

4.3.3.2.2 Input parameters

Parameter Name	Documentation	Properties
<code>selectionCriteria</code>	This parameter provides the criteria whose evaluation would yield zero or more entity identifier(s). For the identified entities the attribute values are to be returned. The grammar for <code>selectionCriteria</code> is not defined in the UOM and may be dependent on the technology used (e.g. in case of XML use XPath). allowedValues: N/A	type: External isOrdered: False isUnique: True defaultValue: No value multiplicity: 1 isBulkPotential: False supportQualifier: M
<code>attributeNameList</code>	This parameter provides the names of attributes whose values are requested by the client. If no attribute name is provided, all available attributes have to be returned. allowedValues: See property::type.	type: String isOrdered: False isUnique: True defaultValue: No value multiplicity: * isBulkPotential: False supportQualifier: M

4.3.3.2.3 Output parameters

Parameter Name	Documentation	Properties
<code>entityInstanceList</code>	This parameter returns the list of entities together with their requested attributes. NOTE: The type is <code>Top_</code> . The class of the returned entity instances are derived from <code>Top_</code> . AllowedValues: See property::type.	type: <code>Top_</code> isOrdered: False isUnique: True defaultValue: No value multiplicity: * isBulkPotential: True supportQualifier: M
<code>status</code>	This parameter returns information about the status of the operation. FAILURE: All identified entities exist. None of the entities have all identified attributes. SUCCESS: All identified entities exist and have all identified attributes. PARTIAL_SUCCESS: Not FAILURE and not SUCCESS. allowedValues: See property::type.	type: <code>OperationStatusBestEffort</code> isOrdered: False isUnique: True defaultValue: No value multiplicity: 1 isBulkPotential: False supportQualifier: M

4.3.3.3 Operation `getEntities`

4.3.3.3.1 Definition

The client requests the server to return information (list of attribute values) of one or more entities identified by object identifiers.

The operation properties are:

Property name	Legal values
<code>isAtomic</code>	False
<code>preconditions</code>	None
<code>postconditions</code>	No change in the entities.
<code>bulkTransferPattern</code>	ITERATOR
<code>emitsEvents</code>	False
<code>emittedEvents</code>	--
<code>isOneWay</code>	False
<code>operationExceptions</code>	All mandatory pre-defined Exceptions (see Table 9 of [4]). Optional pre-defined Exceptions: AccessDenied
<code>supportQualifier</code>	M

4.3.3.3.2 Input parameters

Parameter Name	Documentation	Properties
<code>entityIdList</code>	This parameter provides the identifiers of the entities to be returned by the Server. allowedValues: See property::type.	type: DN isOrdered: False isUnique: True defaultValue: No value multiplicity: 1..* isBulkPotential: False supportQualifier: M
<code>attributeNameList</code>	This parameter provides the names of attributes whose values are requested by the client. If no attribute name is provided, all available attributes have to be returned. allowedValues: See property::type.	type: String isOrdered: False isUnique: True defaultValue: No value multiplicity: * isBulkPotential: False supportQualifier: M

4.3.3.3.3 Output parameters

Parameter Name	Documentation	Properties
<code>entityInstanceList</code>	This parameter returns the list of entity identifiers with their requested attributes. NOTE: The type is <i>Top_</i> . The class of the returned entity instances are derived from <i>Top_</i> . allowedValues: See property::type.	type: <i>Top_</i> isOrdered: False isUnique: True defaultValue: No value multiplicity: * isBulkPotential: True supportQualifier: M
<code>status</code>	This parameter returns information about the status of the operation. FAILURE: All identified entities exist. None of the entities have all identified attributes. SUCCESS: All identified entities exist and have all identified attributes. PARTIAL_SUCCESS: Not FAILURE and not SUCCESS. allowedValues: See property::type.	type: OperationStatusBestEffort isOrdered: False isUnique: True defaultValue: No value multiplicity: 1 isBulkPotential: False supportQualifier: M

4.3.4 Set Operations Group

4.3.4.1 Operation setEntitiesWithScAtomic

4.3.4.1.1 Definition

The client requests the server to populate information (list of attribute values) in entities identified by selection criteria.

NOTE: If attribute property (isNotifiable) has been specified as True, an appropriate number of attribute value change notification(s) should be sent when this operation is successful.

The operation properties are:

Property name	Legal values
isAtomic	True
preconditions	None
postconditions	Entities have been set as requested.
bulkTransferPattern	NONE
emitsEvents	False
emittedEvents	--
isOneWay	False
operationExceptions	All mandatory pre-defined Exceptions (see Table 9 of [4]). Optional pre-defined Exceptions: AccessDenied FilterNotSupported NotInValidState
supportQualifier	M

4.3.4.1.2 Input parameters

Parameter Name	Documentation and Allowed Values	Properties
selectionCriteria	This parameter provides the criteria whose evaluation would yield zero or more entity identifier(s). For the identified entities, the values of the requested attributes (see next parameter) are to be set. The grammar for selectionCriteria is not defined in the UOM and may be dependent on the technology used (e.g. in case of XML use XPath). allowedValues: N/A	type: External isOrdered: False isUnique: True defaultValue: No value multiplicity: 1 isBulkPotential: False supportQualifier: M
attributeValueList	This parameter provides a list of attribute names and values which shall be populated. The listed attribute values shall entirely replace the corresponding attribute values in the entities. Note: Per entity, either all or none of the requested attributes shall be replaced. allowedValues: See property::type.	type: AttributeValuePair isOrdered: False isUnique: True defaultValue: No value multiplicity: 1..* isBulkPotential: False supportQualifier: M

4.3.4.1.3 Output parameters

Parameter Name	Documentation	Properties
status	This parameter returns information about the status of the operation. allowedValues: See property::type.	type: OperationStatusAtomic isOrdered: False isUnique: True defaultValue: No value multiplicity: 1 isBulkPotential: False supportQualifier: M

4.3.4.2 Operation setEntitiesWithSc

4.3.4.2.1 Definition

The client requests the server to populate information (list of attribute values) in entities identified by selection criteria.

NOTE: If attribute property (isNotifiable) has been specified as True, an appropriate number of attribute value change notification(s) should be sent when this operation is successful or partially successful.

The operation properties are:

Property name	Legal values
isAtomic	False
preconditions	None
postconditions	Entities have been set as requested.
bulkTransferPattern	NONE
emitsEvents	False
emittedEvents	--
isOneWay	False
operationExceptions	All mandatory pre-defined Exceptions (see Table 9 of [4]). Optional pre-defined Exceptions: AccessDenied FilterNotSupported NotInValidState
supportQualifier	M

4.3.4.2.2 Input parameters

Parameter Name	Documentation	Properties
selectionCriteria	This parameter provides the criteria whose evaluation would yield zero or more entity identifier(s). For the identified entities, the values of the requested attributes (see next parameter) are to be set. The grammar for selectionCriteria is not defined in the UOM and may be dependent on the technology used (e.g. in case of XML use XPath). allowedValues: N/A.	type: External isOrdered: False isUnique: True defaultValue: No value multiplicity: 1 isBulkPotential: False supportQualifier: M
attributeValueList	This parameter provides a list of attribute names and values which shall be populated. The listed attribute values shall entirely replace the corresponding attribute values in the entities. Note: Per entity, either all or none of the requested attributes shall be replaced. allowedValues: See property::type.	type: AttributeValuePair isOrdered: False isUnique: True defaultValue: No value multiplicity: 1..* isBulkPotential: False supportQualifier: M

4.3.4.2.3 Output parameters

Parameter Name	Documentation	Properties
modifiedEntityList	<p>This parameter returns the entities whose attribute values have been changed.</p> <p>NOTE 1: If the evaluation of the criteria yields to zero entity, this parameter is empty and the status is success.</p> <p>NOTE 2: The type is <i>Top_</i>. The class of the returned entity instances are derived from <i>Top_</i>.</p> <p>allowedValues: See property::type.</p>	<p>type: <i>Top_</i></p> <p>isOrdered: False</p> <p>isUnique: True</p> <p>defaultValue: No value</p> <p>multiplicity: *</p> <p>isBulkPotential: True</p> <p>supportQualifier: M</p>
status	<p>This parameter returns information about the status of the operation.</p> <p>FAILURE: All identified entities exist. None of the entities have all identified attributes.</p> <p>SUCCESS: All identified entities exist and have all identified attributes and their values are changed as requested.</p> <p>PARTIAL_SUCCESS: Not FAILURE and not SUCCESS.</p> <p>allowedValues: See property::type.</p>	<p>type: <i>OperationStatusBestEffort</i></p> <p>isOrdered: False</p> <p>isUnique: True</p> <p>defaultValue: No value</p> <p>multiplicity: 1</p> <p>isBulkPotential: False</p> <p>supportQualifier: M</p>

4.3.4.3 Operation setEntities

4.3.4.3.1 Definition

The client requests the server to populate information (list of attribute values) in one or more identified entities.

NOTE: If attribute property (isNotifiable) has been specified as True, an appropriate number of attribute value change notification(s) should be sent when this operation is successful.

The operation properties are:

Property name	Legal values
isAtomic	False
preconditions	None
postconditions	Entities have been set as requested.
bulkTransferPattern	NONE
emitsEvents	False
emittedEvents	--
isOneWay	False
operationExceptions	All mandatory pre-defined Exceptions (see Table 9 of [4]). Optional pre-defined Exceptions: AccessDenied NotInValidState ObjectNotExisting
supportQualifier	M

4.3.4.3.2 Input parameters

Parameter Name	Documentation	Properties
entityIdList	This parameter provides the identifiers of the entities whose attribute values (see next parameter) are to be set. allowedValues: See property::type.	type: DN isOrdered: False isUnique: True defaultValue: No value multiplicity: 1..* isBulkPotential: False supportQualifier: M
attributeValueList	This parameter provides a list of attribute names and values which shall be populated. The listed attribute values shall entirely replace the corresponding attribute values in the entities. NOTE: Per entity, either all or none of the requested attributes shall be replaced. allowedValues: See property::type.	type: AttributeValuePair isOrdered: False isUnique: True defaultValue: No value multiplicity: 1..* isBulkPotential: False supportQualifier: M

4.3.4.3.3 Output parameters

Parameter Name	Documentation	Properties
modifiedEntityList	This parameter returns the entities whose attribute values have been changed. NOTE: The type is <i>Top_</i> . The class of the returned entity instances are derived from <i>Top_</i> . allowedValues: See properties::type.	type: <i>Top_</i> isOrdered: False isUnique: True defaultValue: No value multiplicity: * isBulkPotential: True supportQualifier: M
status	This parameter returns information about the status of the operation. FAILURE: All identified entities exist. None of the entities have all identified attributes. SUCCESS: All identified entities exist and have all identified attributes and their values are changed as requested. PARTIAL_SUCCESS: Not FAILURE and not SUCCESS. allowedValues: See property::type.	type: OperationStatusBestEffort isOrdered: False isUnique: True defaultValue: No value multiplicity: 1 isBulkPotential: False supportQualifier: M

4.4 Notifications

4.4.1 Notification notify

4.4.1.1 Definition

The server notifies the client of information regarding the managed network resources.

The notification properties are:

Property name	Legal values
isAtomic	True
Preconditions	None
Postconditions	None
bulkTransferPattern	NONE
emitsEvents	False
emittedEvents	--
isOneWay	True
operationExceptions	None
supportQualifier	M

4.4.1.2 Input parameters

NOTE: The notification here is modelled in similar fashion as operation, i.e. they have parameters and the Notify parameters are listed in the table below. In some UML model tools, the notification is modelled using the <<Signal>> artefact (special kind of class), i.e. they have attributes. See annex B.

Parameter Name	Documentation and Allowed Values	Properties
notificationId	This parameter provides the identifier of the notification. allowedValues: See property::type.	type: String isOrdered: False isUnique: True defaultValue: No value multiplicity: 1 isBulkPotential: False supportQualifier: M
entityId	This parameter provides the identifier of the entity whose information is being sent from server to client. allowedValues: See property::type.	type: DN isOrdered: False isUnique: True defaultValue: No value multiplicity: 1 isBulkPotential: False supportQualifier: M
eventTime	This parameter indicates the time when the entity information was sent. allowedValues: See property::type.	type: DateTime isOrdered: False isUnique: True defaultValue: No value multiplicity: 1 isBulkPotential: False supportQualifier: M

4.4.1.3 Output parameters

Notification is 'one-way'. There is no output parameter.

Annex A: Interface/Signal diagrams

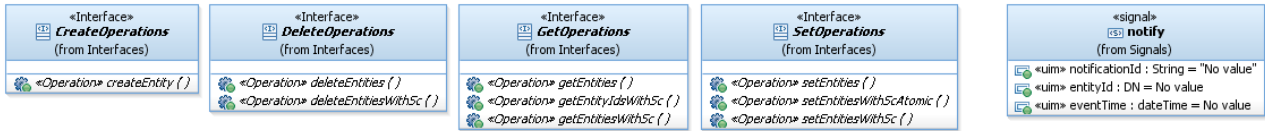


Figure A.1: Interface/Signal diagram

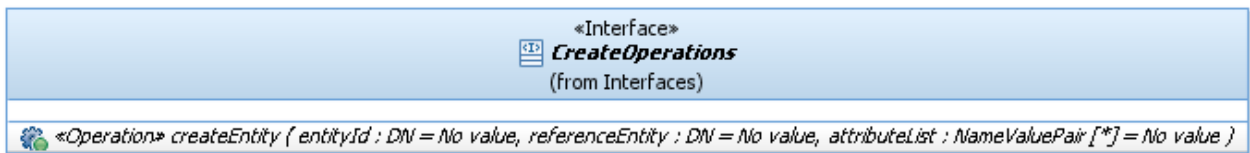


Figure A.2: Create Operations Interface

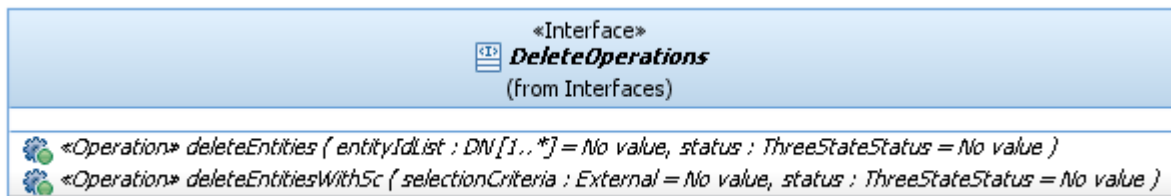


Figure A.3: Delete Operations Interface

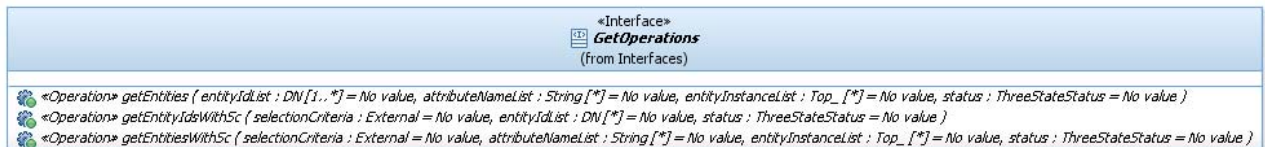


Figure A.4: Get Operations Interface

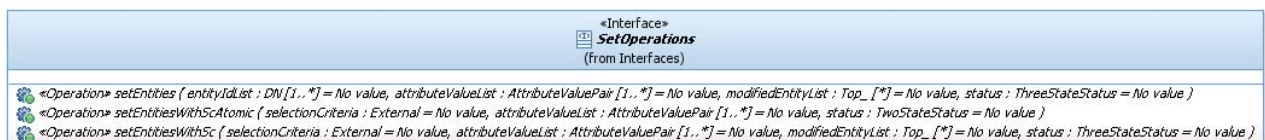


Figure A.5: Set Operations Interface

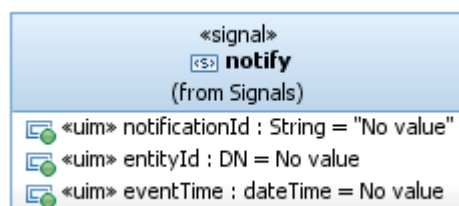


Figure A.6: notify Notification

Annex B: Notification `Notify` attributes

In clause 4.4.1.2, the notification is modelled in similar fashion as operation, i.e. they have parameters. The notification here is modelled using the `<<Signal>>` artefact (special kind of class), i.e. the `Notify` attributes have attributes and are listed in the following tables.

This notification has 3 attribute(s).

A) `notificationId`

Attribute definition:

This attribute provides the identifier of the notification.

Attribute Property	Property Value	Property Qualifier	Condition
<code>type</code>	String		
<code>multiplicity</code>	1		
<code>isOrdered</code>	false		
<code>isUnique</code>	true		
<code>defaultValue</code>	No value		
Allowed values:	See <code>property::type</code> .		
<code>isInvariant</code>	true	-	
<code>isNotifiable</code>	false	M	
<code>isNullable</code>	false		
<code>isReadable</code>	true	M	
<code>isWritable</code>	false	-	
<code>passedById</code>	false		
<code>supportQualifier</code>	M		

B) `entityId`

Attribute definition:

This attribute provides the identifier of the entity whose information is being sent from server to client.

Attribute Property	Property Value	Property Qualifier	Condition
<code>type</code>	DN		
<code>multiplicity</code>	1		
<code>isOrdered</code>	false		
<code>isUnique</code>	true		
<code>defaultValue</code>	No value		
Allowed values:	See <code>property::type</code> .		
<code>isInvariant</code>	true	-	
<code>isNotifiable</code>	false	M	
<code>isNullable</code>	false		
<code>isReadable</code>	true	M	
<code>isWritable</code>	false	-	
<code>passedById</code>	false		
<code>supportQualifier</code>	M		

C) eventTime

Attribute definition:

This attribute indicates the time when the entity information was sent.

Attribute Property	Property Value	Property Qualifier	Condition
type	DateTime		
multiplicity	1		
isOrdered	false		
isUnique	true		
defaultValue	No value		
Allowed values:	See property::type.		
isInvariant	true	-	
isNotifyable	false	M	
isNullable	false		
isReadable	true	M	
isWritable	false	-	
passedById	false		
supportQualifier	M		

Annex C: Change history

Change history							
Date	TSG #	TSG Doc.	CR	Rev	Subject/Comment	Old	New
2014-08					Initial draft TR	---	0.1.0
2014-08					Editorial updates by EditHelp	0.1.0	0.1.1
2014-08					Editorial updates by MCC	0.1.1	0.1.2
2014-09	SA#65	SP-140553			Presented for information and approval	0.1.2	1.0.0
					Upgrade to REI-12 version	1.0.0	12.0.0

History

Document history		
V12.0.0	October 2014	Publication