

# Schema documentation for sms.xsd

august 18, 2012

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## Namespace: "http://www.ime.iiasa.ac.at/model/spec"

### Schema(s)

#### Main schema sms.xsd

|            |                                       |
|------------|---------------------------------------|
| Namespace  | http://www.ime.iiasa.ac.at/model/spec |
| Properties | attribute form default: unqualified   |
|            | element form default: unqualified     |

### Complex Type(s)

#### Complex Type m:modelSpec

|           |  |
|-----------|--|
| Namespace | http://www.ime.iiasa.ac.at/model/spec  |
| Diagram   |  |
| Model     | id{0,1} , shortName , name{0,1} , description{0,1} , status , setSpec+ , entitySpec+   |
| Children  | description, entitySpec, id, name, setSpec, shortName, status  |
| Source    | <pre>&lt;xs:complexType name="modelSpec"&gt;   &lt;xs:sequence&gt;     &lt;xs:element name="id" type="xs:int" minOccurs="0" maxOccurs="1"/&gt;     &lt;xs:element name="shortName" type="m:shortName"/&gt;     &lt;xs:element name="name" type="m:name" minOccurs="0" maxOccurs="1"/&gt;</pre> |

```

<xs:element name="description" type="m:description" minOccurs="0" maxOccurs="1"/>
<xs:element name="status" type="m:status"/>
<xs:element name="setSpec" type="m:setSpec" maxOccurs="unbounded"/>
<xs:element name="entitySpec" type="m:entitySpec" maxOccurs="unbounded"/>
</xs:sequence>
</xs:complexType>

```

## Complex Type m:setSpec

|           |  |
|-----------|--|
| Namespace | http://www.ime.iiasa.ac.at/model/spec  |
| Diagram   |  |
| Used by   | Element m:modelSpec/setSpec  |
| Model     | id{0,1} , idParent{0,1} , shortName , name{0,1} , description{0,1} , type , idx{0,1} , iteratorContainer{0,1}  |
| Children  | description, id, idParent, idx, iteratorContainer, name, shortName, type   |
| Source    | <pre> &lt;xs:complexType name="setSpec"&gt;   &lt;xs:sequence&gt;     &lt;xs:element name="id" type="xs:int" minOccurs="0" maxOccurs="1"/&gt;     &lt;xs:element name="idParent" type="xs:int" minOccurs="0" maxOccurs="1"&gt;       &lt;xs:annotation&gt;         &lt;xs:documentation&gt;only for sub set&lt;/xs:documentation&gt;       &lt;/xs:annotation&gt;     &lt;/xs:element&gt;     &lt;xs:element name="shortName" type="m:shortName"/&gt;     &lt;xs:element name="name" type="m:name" minOccurs="0" maxOccurs="1"/&gt;     &lt;xs:element name="description" type="m:description" minOccurs="0" maxOccurs="1"/&gt;     &lt;xs:element name="type" type="m:setSpecType"/&gt;     &lt;xs:element name="idx" type="xs:string" minOccurs="0" maxOccurs="1"&gt;       &lt;xs:annotation&gt;         &lt;xs:documentation&gt;default index name (for main set only)&lt;/xs:documentation&gt;       &lt;/xs:annotation&gt;     &lt;/xs:element&gt;     &lt;xs:element name="iteratorContainer" type="m:iteratorContainer" minOccurs="0" maxOccurs="1"&gt;       &lt;xs:annotation&gt;         &lt;xs:documentation&gt;for index set only&lt;/xs:documentation&gt;       &lt;/xs:annotation&gt;     &lt;/xs:element&gt;   &lt;/xs:sequence&gt; &lt;/xs:complexType&gt; </pre> |

## Complex Type m:iteratorContainer

|           |                                       |
|-----------|---------------------------------------|
| Namespace | http://www.ime.iiasa.ac.at/model/spec |
| Diagram   |                                       |

|          |  |
|----------|--|
| Used by  | Elements<br>m:entitySpec/iteratorContainer, m:setSpec/iteratorContainer  |
| Model    | idSetSpec+   |
| Children | idSetSpec  |
| Source   | <pre> &lt;xs:complexType name="iteratorContainer"&gt;   &lt;xs:sequence&gt;     &lt;xs:element name="idSetSpec" type="xs:int" minOccurs="1" maxOccurs="unbounded"/&gt;   &lt;/xs:sequence&gt; &lt;/xs:complexType&gt; </pre> |

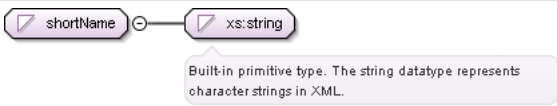
## Complex Type m:entitySpec

|           |  |
|-----------|--|
| Namespace | http://www.ime.iiasa.ac.at/model/spec  |
| Diagram   | <pre> graph TD     entitySpec[m:entitySpec] --- id[id]     entitySpec --- shortName[shortName]     entitySpec --- name[name]     entitySpec --- description[description]     entitySpec --- idLowerBound[idLowerBound]     entitySpec --- idUpperBound[idUpperBound]     entitySpec --- constantValue[constantValue]     entitySpec --- iteratorContainer[iteratorContainer]     entitySpec --- role[role]     entitySpec --- mathType[mathType]     entitySpec --- unit[unit]     entitySpec --- formula[formula]     entitySpec --- source[source]     entitySpec --- groupGroup[0..∞ group]     entitySpec --- modelSpec[modelSpec]     entitySpec --- batch[0..∞ batch]      id --- idType[Type: xs:int]     shortName --- shortNameType[Type: m:shortName]     name --- nameType[Type: m:name]     description --- descriptionType[Type: m:description]     idLowerBound --- idLowerBoundType[Type: xs:int]     idUpperBound --- idUpperBoundType[Type: xs:int]     constantValue --- constantValueType[Type: xs:double]     iteratorContainer --- iteratorContainerType[Type: m:iteratorContainer]     role --- roleType[Type: m:entityRole]     mathType --- mathTypeType[Type: m:mathType]     unit --- unitType[Type: xs:string]     formula --- formulaType[Type: xs:string]     source --- sourceType[Type: xs:string]     groupGroup --- groupType[Type: xs:string]     modelSpec --- modelSpecType[Type: xs:string]     batch --- batchType[Type: xs:string]      constantValue --- note1[optional, only for constant type of entity]     source --- note2[specification of the data source (optional, but very useful for organizing data management processes)]     groupGroup --- note3[for grouping parameters (optional, but very useful for management of the data access rights).]     modelSpec --- note4[which modelSpec it belongs to]     batch --- note5[define subset of entity which has same index/indices structure] </pre> |

|          |   |
|----------|---|
| Used by  | Element<br>m:modelSpec/entitySpec   |
| Model    | id{0,1} , shortName , name{0,1} , description{0,1} , idLowerBound{0,1} , idUpperBound{0,1} , constantValue{0,1} , iteratorContainer{0,1} , role{0,1} , mathType , unit{0,1} , formula{0,1} , source{0,1} , group* , modelSpec{0,1} , batch*   |
| Children | batch, constantValue, description, formula, group, id, idLowerBound, idUpperBound, iteratorContainer, mathType, modelSpec, name, role, shortName, source, unit  |
| Source   | <pre> &lt;xs:complexType name="entitySpec"&gt;   &lt;xs:sequence&gt;     &lt;xs:element name="id" type="xs:int" minOccurs="0" maxOccurs="1"/&gt;     &lt;xs:element name="shortName" type="m:shortName"/&gt;     &lt;xs:element name="name" type="m:name" minOccurs="0" maxOccurs="1"/&gt;     &lt;xs:element name="description" type="m:description" minOccurs="0" maxOccurs="1"/&gt;     &lt;xs:element name="idLowerBound" type="xs:int" minOccurs="0" maxOccurs="1"/&gt;     &lt;xs:element name="idUpperBound" type="xs:int" minOccurs="0" maxOccurs="1"/&gt;     &lt;xs:element name="constantValue" type="xs:double" minOccurs="0" maxOccurs="1"/&gt;     &lt;xs:annotation&gt;       &lt;xs:documentation&gt;optional, only for constant type of entity&lt;/xs:documentation&gt;     &lt;/xs:annotation&gt;   &lt;/xs:sequence&gt;   &lt;xs:element name="iteratorContainer" type="m:iteratorContainer" minOccurs="0" maxOccurs="1"/&gt;   &lt;xs:element name="role" type="m:entityRole" minOccurs="0" maxOccurs="1"/&gt;   &lt;xs:element name="mathType" type="m:mathType" minOccurs="1" maxOccurs="1"/&gt;   &lt;xs:element name="unit" type="xs:string" minOccurs="0" maxOccurs="1"/&gt;   &lt;xs:element name="formula" type="xs:string" minOccurs="0" maxOccurs="1"/&gt;   &lt;xs:element name="source" type="xs:string" minOccurs="0" maxOccurs="1"/&gt;   &lt;xs:annotation&gt;     &lt;xs:documentation&gt;specification of the data source (optional, but very useful for organizing data management processes&lt;/xs:documentation&gt;   &lt;/xs:annotation&gt;   &lt;/xs:element&gt;   &lt;xs:element name="group" type="xs:string" minOccurs="0" maxOccurs="unbounded"&gt;     &lt;xs:annotation&gt;       &lt;xs:documentation&gt;for grouping parameters (optional, but very useful for management of the data access rights).&lt;/xs:documentation&gt;     &lt;/xs:annotation&gt;   &lt;/xs:element&gt;   &lt;xs:element name="modelSpec" type="xs:string" minOccurs="0" maxOccurs="1"&gt;     &lt;xs:annotation&gt;       &lt;xs:documentation&gt;which modelSpec it belongs&lt;/xs:documentation&gt;     &lt;/xs:annotation&gt;   &lt;/xs:element&gt;   &lt;xs:element name="batch" type="xs:string" minOccurs="0" maxOccurs="unbounded"&gt;     &lt;xs:annotation&gt;       &lt;xs:documentation&gt;define subset of entity which has same index/indices structure&lt;/ xs:documentation&gt;     &lt;/xs:annotation&gt;   &lt;/xs:element&gt; &lt;/xs:sequence&gt; &lt;/xs:complexType&gt; </pre> |

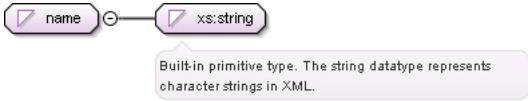
## Simple Type(s)

### Simple Type m:shortName

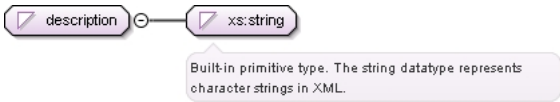
|           |   |           |   |           |    |
|-----------|---|-----------|---|-----------|----|
| Namespace | http://www.ime.iiasa.ac.at/model/spec   |           |   |           |    |
| Diagram   |    |           |   |           |    |
| Type      | restriction of xs:string  |           |   |           |    |
| Facets    | <table> <tr> <td>minLength</td><td>1</td></tr> <tr> <td>maxLength</td><td>16</td></tr> </table>   | minLength | 1 | maxLength | 16 |
| minLength | 1   |           |   |           |    |
| maxLength | 16  |           |   |           |    |
| Used by   | Elements<br>m:entitySpec/shortName, m:modelSpec/shortName, m:setSpec/shortName  |           |   |           |    |
| Source    | <pre> &lt;xs:simpleType name="shortName"&gt;   &lt;xs:restriction base="xs:string"&gt;     &lt;xs:minLength value="1"/&gt;     &lt;xs:maxLength value="16"/&gt;   &lt;/xs:restriction&gt; &lt;/xs:simpleType&gt; </pre> |           |   |           |    |

### Simple Type m:name

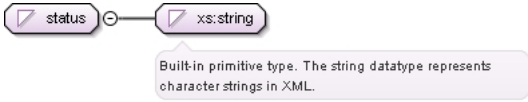
|           |                                       |
|-----------|---------------------------------------|
| Namespace | http://www.ime.iiasa.ac.at/model/spec |
|-----------|---------------------------------------|

|           |  |           |   |           |    |
|-----------|--|-----------|---|-----------|----|
| Diagram   |   |           |   |           |    |
| Type      | restriction of xs:string   |           |   |           |    |
| Facets    | <table border="1"> <tr> <td>minLength</td> <td>1</td> </tr> <tr> <td>maxLength</td> <td>64</td> </tr> </table>   | minLength | 1 | maxLength | 64 |
| minLength | 1  |           |   |           |    |
| maxLength | 64   |           |   |           |    |
| Used by   | Elements<br>m:entitySpec/name, m:modelSpec/name, m:setSpec/name  |           |   |           |    |
| Source    | <pre>&lt;xs:simpleType name="name"&gt;   &lt;xs:restriction base="xs:string"&gt;     &lt;xs:minLength value="1"/&gt;     &lt;xs:maxLength value="64"/&gt;   &lt;/xs:restriction&gt; &lt;/xs:simpleType&gt;</pre> |           |   |           |    |

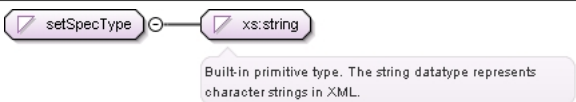
### Simple Type m:description

|           |   |           |   |           |      |
|-----------|---|-----------|---|-----------|------|
| Namespace | http://www.ime.iiasa.ac.at/model/spec   |           |   |           |      |
| Diagram   |    |           |   |           |      |
| Type      | restriction of xs:string  |           |   |           |      |
| Facets    | <table border="1"> <tr> <td>minLength</td> <td>1</td> </tr> <tr> <td>maxLength</td> <td>1000</td> </tr> </table>  | minLength | 1 | maxLength | 1000 |
| minLength | 1   |           |   |           |      |
| maxLength | 1000  |           |   |           |      |
| Used by   | Elements<br>m:entitySpec/description, m:modelSpec/description, m:setSpec/description  |           |   |           |      |
| Source    | <pre>&lt;xs:simpleType name="description"&gt;   &lt;xs:restriction base="xs:string"&gt;     &lt;xs:minLength value="1"/&gt;     &lt;xs:maxLength value="1000"/&gt;   &lt;/xs:restriction&gt; &lt;/xs:simpleType&gt;</pre> |           |   |           |      |

### Simple Type m:status

|             |   |             |      |             |      |             |           |
|-------------|---|-------------|------|-------------|------|-------------|-----------|
| Namespace   | http://www.ime.iiasa.ac.at/model/spec   |             |      |             |      |             |           |
| Diagram     |    |             |      |             |      |             |           |
| Type        | restriction of xs:string  |             |      |             |      |             |           |
| Facets      | <table border="1"> <tr> <td>enumeration</td> <td>EDIT</td> </tr> <tr> <td>enumeration</td> <td>TEST</td> </tr> <tr> <td>enumeration</td> <td>COMMITTED</td> </tr> </table>  | enumeration | EDIT | enumeration | TEST | enumeration | COMMITTED |
| enumeration | EDIT  |             |      |             |      |             |           |
| enumeration | TEST  |             |      |             |      |             |           |
| enumeration | COMMITTED   |             |      |             |      |             |           |
| Used by     | Element<br>m:modelSpec/status   |             |      |             |      |             |           |
| Source      | <pre>&lt;xs:simpleType name="status"&gt;   &lt;xs:restriction base="xs:string"&gt;     &lt;xs:enumeration value="EDIT"/&gt;     &lt;xs:enumeration value="TEST"/&gt;     &lt;xs:enumeration value="COMMITTED"/&gt;   &lt;/xs:restriction&gt; &lt;/xs:simpleType&gt;</pre> |             |      |             |      |             |           |

### Simple Type m:setSpecType

|           |   |
|-----------|---|
| Namespace | http://www.ime.iiasa.ac.at/model/spec   |
| Diagram   |  |
| Type      | restriction of xs:string  |

|         |  |                |
|---------|--|----------------|
| Facets  | enumeration  | MAINSET        |
|         | enumeration  | SUBSET         |
|         | enumeration  | INDEXEDSUBSET  |
| Used by | Element  | m:setSpec/type |
| Source  | <pre> &lt;xs:simpleType name="setSpecType"&gt;   &lt;xs:restriction base="xs:string"&gt;     &lt;xs:enumeration value="MAINSET" /&gt;     &lt;xs:enumeration value="SUBSET" /&gt;     &lt;xs:enumeration value="INDEXEDSUBSET" /&gt;   &lt;/xs:restriction&gt; &lt;/xs:simpleType&gt; </pre> |                |

## Simple Type m:entityRole

|           |   |                       |  |
|-----------|---|-----------------------|--|
| Namespace | http://www.ime.iiasa.ac.at/model/spec   |                       |  |
| Diagram   |   |                       |  |
| Type      | restriction of xs:string  |                       |  |
| Facets    | enumeration   | CONSTANT              |  |
|           | enumeration   | PARAMETER             |  |
|           | enumeration   | DECISION_VAR          |  |
|           | enumeration   | EXTERNAL_DECISION_VAR |  |
|           | enumeration   | OUTCOME_VAR           |  |
|           | enumeration   | AUXILIARY_VAR         |  |
|           | enumeration   | ASSIGNMENT            |  |
|           | enumeration   | CONSTRAINT            |  |
|           | enumeration   | A_VARIABLE            | any type of variable: DECISION_VAR, EXTERNAL_DECISION_VAR, OUTCOME_VAR, or AUXILIARY_VAR |
|           | enumeration   | A_FORMULA             | any type of formula: ASSIGNMENT or CONSTRAINT  |
| Used by   | Element   | m:entitySpec/role     |  |
| Source    | <pre>&lt;xs:simpleType name="entityRole"&gt;   &lt;xs:restriction base="xs:string"&gt;     &lt;xs:enumeration value="CONSTANT" /&gt;     &lt;xs:enumeration value="PARAMETER" /&gt;     &lt;xs:enumeration value="DECISION_VAR" /&gt;     &lt;xs:enumeration value="EXTERNAL_DECISION_VAR" /&gt;     &lt;xs:enumeration value="OUTCOME_VAR" /&gt;     &lt;xs:enumeration value="AUXILIARY_VAR" /&gt;     &lt;xs:enumeration value="ASSIGNMENT" /&gt;     &lt;xs:enumeration value="CONSTRAINT" /&gt;     &lt;xs:enumeration value="A_VARIABLE"&gt;       &lt;xs:annotation&gt;         &lt;xs:documentation&gt;any type of variable: DECISION_VAR, EXTERNAL_DECISION_VAR, OUTCOME_VAR, or AUXILIARY_VAR&lt;/xs:documentation&gt;       &lt;/xs:annotation&gt;     &lt;/xs:enumeration&gt;     &lt;xs:enumeration value="A_FORMULA"&gt;       &lt;xs:annotation&gt;         &lt;xs:documentation&gt;any type of formula: ASSIGNMENT or CONSTRAINT&lt;/xs:documentation&gt;       &lt;/xs:annotation&gt;     &lt;/xs:enumeration&gt;   &lt;/xs:restriction&gt; &lt;/xs:simpleType&gt;</pre> |                       |  |

## Simple Type m:mathType

|           |   |  |
|-----------|---|--|
| Namespace | http://www.ime.iiasa.ac.at/model/spec   |  |
| Diagram   |  |  |

|         |  |                       |
|---------|--|-----------------------|
| Type    | restriction of xs:string   |                       |
| Facets  | enumeration  | INTEGER               |
|         | enumeration  | REAL                  |
| Used by | Element  | m:entitySpec/mathType |
| Source  | <pre>&lt;xs:simpleType name="mathType"&gt;   &lt;xs:restriction base="xs:string"&gt;     &lt;xs:enumeration value="INTEGER"/&gt;     &lt;!-- &lt;xs:enumeration value="BINARY"/&gt; --&gt;     &lt;xs:enumeration value="REAL"/&gt;   &lt;/xs:restriction&gt; &lt;/xs:simpleType&gt;</pre> |                       |