

# Comparison of encoding rules

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## Introduction

This document compares the encoding rules of ISO 19136, ISO 19139 and XMI from an UML viewpoint. It lists UML modelling elements (general or specific to an encoding standard) and shows the generated XML schema.

## General comment

There is a relevant change between the metamodels of UML 1.4.2 and UML 2.x. UML 2.x unifies association end and attribute as property, where in UML 1.4.2 these are different concepts.

## Used specifications

UML 1.4.2	<a href="http://www.omg.org/uml/">www.omg.org/uml/</a> Document: formal/05-04-01 Date January 2005
19103	Document : ISO_TS_19103_2005.pdf Date : 2005-07-15
19136	Document: ISO_DIS_19136.pdf Date: 2005
19139	Document: 211n2049.pdf Date: 2006-08-18
XMI 2.1	<a href="http://www.omg.org/xmi/">www.omg.org/xmi/</a> Document: formal/05-09-01 Date September 2005

## Description of comparison table

UML	An example of the model element, shown as a UML class diagram.
Source specification	Links back to the source definition of that modeling element. Used values: uml, 19103, 19136, 19139 or xmi (The specifications as listed before).
Comments	General comments or explanations of the modelling element.
ISO 19136	XML schema generated by 19136 encoding rules. If the model element is specific to 19139 or XMI, this remains blank.
19136 comments	Comments related to the generated schema. „no encoding rules specified“ means, it is not specified if you can use this construct but it will be ignored or if you are not allowed to use it.

	<p>“ignored” means, you can use it, but it will not influence the generated schema.</p> <p>“forbidden” means, you are not allowed to use it.</p>
ISO 19139	XML schema generated by 19139 encoding rules. If the model element is specific to 19136 or XMI, this remains blank.
19139 comments	The same as 19136 comments but related to 19139, see above.
XMI	XML schema generated by XMI encoding rules. If the model element is specific to 19136 or 19139, this remains blank.
XMI comments	The same as 19136 comments but related to XMI, see above.

## Comparison table


### Class

#### uml: class (#1)

UML	
Source specification	uml
Comments	
ISO 19136	<pre>&lt;complexType name="ClassAType"&gt;   &lt;complexContent&gt;     &lt;extension base="gml:AbstractGMLType"&gt;       &lt;sequence&gt;         &lt;/sequence&gt;       &lt;/extension&gt;     &lt;/complexContent&gt;   &lt;/complexType&gt;    &lt;complexType name="ClassAPropertyType"&gt;     &lt;sequence minOccurs="0"&gt;       &lt;element ref="ClassA"/&gt;     &lt;/sequence&gt;     &lt;attributeGroup ref="gml:AssociationAttributeGroup"/&gt;     &lt;attributeGroup ref="gml:OwnershipAttributeGroup" /&gt;   &lt;/complexType&gt;    &lt;element name="ClassA" type="ClassAType"     substitutionGroup="gml:AbstractGML"/&gt;</pre>
19136 comments	All class names within the same Application Schema shall be unique and a "NCName" as defined by W3C XML Namespaces:1999.
ISO 19139	<pre>&lt;complexType name="ClassA_Type"&gt;   &lt;complexContent&gt;     &lt;extension base="gco:AbstractObject_Type"&gt;       &lt;sequence&gt;</pre>

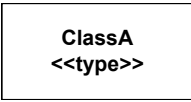
	<pre> &lt;/sequence&gt; &lt;/extension&gt; &lt;/complexContent&gt; &lt;/complexType&gt;  &lt;complexType name="ClassA_PropertyType"&gt;   &lt;sequence minOccurs="0"&gt;     &lt;element ref="ClassA"/&gt;   &lt;/sequence&gt;   &lt;attributeGroup ref="gco:ObjectReference"/&gt;   &lt;attribute ref="gco:nilReason" /&gt; &lt;/complexType&gt;  &lt;element name="ClassA" type="ClassA_Type"/&gt; </pre>
19139 comments	
XMI	<pre> &lt;xsd:element name="ClassA" type="ClassA"/&gt; &lt;xsd:complexType name="ClassA"&gt;   &lt;xsd:choice minOccurs="0" maxOccurs="unbounded"&gt;     &lt;xsd:element ref="xmi:Extension"/&gt;   &lt;/xsd:choice&gt;   &lt;xsd:attribute ref="xmi:id"/&gt;   &lt;xsd:attributeGroup ref="xmi:ObjectAttribs"/&gt; &lt;/xsd:complexType&gt; </pre>
XMI comments	

### uml: class {abstract} (#2)

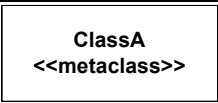
UML	 <pre> classDiagram     class ClassA {         &lt;isAbstract=true&gt;     } </pre>
Source specification	uml
Comments	
ISO 19136	
19136 comments	
ISO 19139	<pre> &lt;complexType name="AbstractClassA_Type" abstract="true"&gt;   &lt;complexContent&gt;     &lt;extension base="gco:AbstractObject_Type"&gt;       &lt;sequence&gt;         &lt;/sequence&gt;     &lt;/extension&gt;   &lt;/complexContent&gt; &lt;/complexType&gt;  &lt;complexType name="ClassA_PropertyType"&gt;   &lt;sequence minOccurs="0"&gt;     &lt;element ref="AbstractClassA"/&gt;   &lt;/sequence&gt;   &lt;attributeGroup ref="gco:ObjectReference"/&gt;   &lt;attribute ref="gco:nilReason" /&gt; </pre>

	<pre> &lt;/complexType&gt;  &lt;element name="AbstractClassA" type="AbstractClassA_Type" abstract="true"/&gt; </pre>
19139 comments	
XMI	<pre> &lt;xsd:element name="ClassA" type="ClassA"/&gt; &lt;xsd:complexType name="ClassA"&gt;   &lt;xsd:choice minOccurs="0" maxOccurs="unbounded"&gt;     &lt;xsd:element ref="xmi:Extension"/&gt;   &lt;/xsd:choice&gt;   &lt;xsd:attribute ref="xmi:id"/&gt;   &lt;xsd:attributeGroup ref="xmi:ObjectAttribs"/&gt; &lt;/xsd:complexType&gt; </pre>
XMI comments	

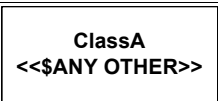
### uml: class <<type>> (#3)

UML	
Source specification	uml
Comments	Defined in Annex E of UML 1.4.2
ISO 19136	
19136 comments	ignored (unknown stereotype to 19136)
ISO 19139	
19139 comments	no encoding rules specified
XMI	
XMI comments	no encoding rules specified

### uml: class <<metaclass>> (#4)

UML	
Source specification	uml
Comments	Defined in Annex E of UML 1.4.2
ISO 19136	
19136 comments	ignored (unknown stereotype to 19136)
ISO 19139	
19139 comments	no encoding rules specified
XMI	
XMI comments	no encoding rules specified

### uml: class <<\$ANYOTHER>> (#5)

UML	
Source specification	uml

Comments	Class with any not explicitly specified stereotype
ISO 19136	
19136 comments	ignored
ISO 19139	
19139 comments	no encoding rules specified
XMI	
XMI comments	no encoding rules specified

### uml: class {documentation} (#6)

UML	<pre> classDiagram     class ClassA {         &lt;documentation&gt;This class ...&lt;/documentation&gt;     } </pre>
Source specification	uml
Comments	
ISO 19136	<pre> &lt;complexType name="ClassAType"&gt;   &lt;complexContent&gt;     &lt;extension base="gml:AbstractGMLType"&gt;       &lt;sequence&gt;         &lt;/sequence&gt;     &lt;/extension&gt;   &lt;/complexContent&gt; &lt;/complexType&gt;  &lt;complexType name="ClassAPropertyType"&gt;   &lt;sequence minOccurs="0"&gt;     &lt;element ref="pcl:ClassA"/&gt;   &lt;/sequence&gt;   &lt;attributeGroup ref="gml:AssociationAttributeGroup"/&gt;   &lt;attributeGroup ref="gml:OwnershipAttributeGroup" /&gt; &lt;/complexType&gt;  &lt;element name="ClassA" type="pcl:ClassAType" substitutionGroup="gml:AbstractGML"&gt;   &lt;annotation&gt;     &lt;documentation&gt;This class ...&lt;/documentation&gt;   &lt;/annotation&gt; &lt;/element&gt; </pre>
19136 comments	
ISO 19139	
19139 comments	same as class without documentation
XMI	
XMI comments	same as class without documentation

### 19103: class <<Type>> (#7)

UML	<pre> classDiagram     class ClassA &lt;&lt;Type&gt;&gt; </pre>
Source	19103

specification	
Comments	Used, but not defined in 19103 ch. 6.8.2
ISO 19136	<pre> &lt;complexType name="ClassAType"&gt;   &lt;complexContent&gt;     &lt;extension base="gml:AbstractGMLType"&gt;       &lt;sequence&gt;       &lt;/sequence&gt;     &lt;/extension&gt;   &lt;/complexContent&gt; &lt;/complexType&gt;  &lt;complexType name="ClassAPropertyType"&gt;   &lt;sequence minOccurs="0"&gt;     &lt;element ref="pcl:ClassA"/&gt;   &lt;/sequence&gt;   &lt;attributeGroup ref="gml:AssociationAttributeGroup"/&gt;   &lt;attributeGroup ref="gml:OwnershipAttributeGroup" /&gt; &lt;/complexType&gt;  &lt;element name="ClassA" type="pcl:ClassAType" substitutionGroup="gml:AbstractGML"/&gt; </pre>
19136 comments	same as class without stereotype
ISO 19139	<pre> &lt;complexType name="ClassA_Type"&gt;   &lt;complexContent&gt;     &lt;extension base="gco:AbstractObject_Type"&gt;       &lt;sequence&gt;       &lt;/sequence&gt;     &lt;/extension&gt;   &lt;/complexContent&gt; &lt;/complexType&gt;  &lt;complexType name="ClassA_PropertyType"&gt;   &lt;sequence minOccurs="0"&gt;     &lt;element ref="ClassA"/&gt;   &lt;/sequence&gt;   &lt;attributeGroup ref="gco:ObjectReference"/&gt;   &lt;attribute ref="gco:nilReason" /&gt; &lt;/complexType&gt;  &lt;element name="ClassA" type="ClassA_Type"/&gt; </pre>
19139 comments	
XMI	
XMI comments	



## 19103: class <<CodeList>> (#8)

UML	<table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="text-align: center;">CodeListA &lt;&lt;CodeList&gt;&gt;</td> </tr> <tr> <td>a = 1 b = 2 c = 3</td> </tr> </table>	CodeListA <<CodeList>>	a = 1 b = 2 c = 3
CodeListA <<CodeList>>			
a = 1 b = 2 c = 3			
Source specification	19103		
Comments			
ISO 19136	<pre> &lt;simpleType name="CodeListAType"&gt;   &lt;union memberTypes="CodeListAEnumerationType CodeListAOtherType"/&gt; &lt;/simpleType&gt; &lt;simpleType name="CodeListAEnumerationType"&gt;   &lt;restriction base="string"&gt;     &lt;enumeration value="1"&gt;       &lt;annotation&gt;         &lt;appinfo&gt;&lt;gml:description&gt;a&lt;/gml:description&gt;&lt;/appinfo&gt;       &lt;/annotation&gt;     &lt;/enumeration&gt;     &lt;enumeration value="2"&gt;       &lt;annotation&gt;         &lt;appinfo&gt;&lt;gml:description&gt;b&lt;/gml:description&gt;&lt;/appinfo&gt;       &lt;/annotation&gt;     &lt;/enumeration&gt;     &lt;enumeration value="3"&gt;       &lt;annotation&gt;         &lt;appinfo&gt;&lt;gml:description&gt;c&lt;/gml:description&gt;&lt;/appinfo&gt;       &lt;/annotation&gt;     &lt;/enumeration&gt;   &lt;/restriction&gt; &lt;/simpleType&gt; &lt;simpleType name="CodeListAOtherType"&gt;   &lt;restriction base="string"&gt;     &lt;pattern value="other: \w{2,}"/&gt;   &lt;/restriction&gt; &lt;/simpleType&gt; </pre>		
19136 comments			
ISO 19139	<pre> &lt;complexType name="CodeListA_PropertyType"&gt;   &lt;sequence minOccurs="0"&gt;     &lt;element ref="CodeListA"/&gt;   &lt;/sequence&gt;   &lt;attribute ref="gco:nilReason" /&gt; &lt;/complexType&gt;  &lt;element name="CodeListA" type="gco:CodeListValue_Type" substitutionGroup="gco:CharacterString"/&gt; </pre>		
19139 comments			
XMI			

XML comments	
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### uml: class <<DataType>> (#9)

UML	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;"> <p style="margin: 0;">ClassA &lt;&lt;DataType&gt;&gt;</p> </div>
Source specification	uml
Comments	
ISO 19136	<pre> &lt;complexType name="ClassAType"&gt;   &lt;sequence&gt;   &lt;/sequence&gt; &lt;/complexType&gt;  &lt;complexType name="ClassAPropertyType"&gt;   &lt;sequence&gt;     &lt;element ref="ClassA"/&gt;   &lt;/sequence&gt;   &lt;attributeGroup ref="gml:OwnershipAttributeGroup" /&gt; &lt;/complexType&gt;  &lt;element name="ClassA" type="ClassAType" substitutionGroup="gml:AbstractObject"/&gt; </pre>
19136 comments	
ISO 19139	<pre> &lt;complexType name="ClassA_Type"&gt;   &lt;complexContent&gt;     &lt;extension base="gco:AbstractObject_Type"&gt;       &lt;sequence&gt;       &lt;/sequence&gt;     &lt;/extension&gt;   &lt;/complexContent&gt; &lt;/complexType&gt;  &lt;complexType name="ClassA_PropertyType"&gt;   &lt;sequence minOccurs="0"&gt;     &lt;element ref="ClassA"/&gt;   &lt;/sequence&gt;   &lt;attributeGroup ref="gco:ObjectReference"/&gt;   &lt;attribute ref="gco:nilReason" /&gt; &lt;/complexType&gt;  &lt;element name="ClassA" type="ClassA_Type"/&gt; </pre>
19139 comments	
XMI	<pre> &lt;xsd:element name="ClassA" type="ClassA"/&gt; &lt;xsd:complexType name="ClassA"&gt;   &lt;xsd:choice minOccurs="0" maxOccurs="unbounded"&gt;     &lt;xsd:element ref="xmi:Extension"/&gt;   &lt;/xsd:choice&gt;   &lt;xsd:attributeGroup ref="xmi:LinkAttribs"/&gt; </pre>

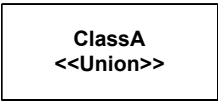
	<pre>&lt;xsd:attribute name="version" type="xsd:string" use="optional" form="qualified"/&gt; &lt;xsd:attribute name="type" type="xsd:QName" use="optional" form="qualified"/&gt; &lt;/xsd:complexType&gt;</pre>
XML comments	But a value of datatype (instance) is encoded as <xsd:string>!

### uml: class <<Enumeration>> (#10)

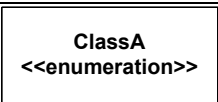
UML	<table border="1"> <tr> <td style="text-align: center;">EnumA &lt;&lt;Enumeration&gt;&gt;</td> </tr> <tr> <td>a = 1 b = 2 c = 3</td> </tr> </table>	EnumA <<Enumeration>>	a = 1 b = 2 c = 3
EnumA <<Enumeration>>			
a = 1 b = 2 c = 3			
Source specification	uml		
Comments			
ISO 19136	<pre>&lt;simpleType name="EnumA"&gt; &lt;restriction base="xsd:string"&gt; &lt;enumeration value="a"/&gt; &lt;enumeration value="b"/&gt; &lt;enumeration value="c"/&gt; &lt;/restriction&gt; &lt;/simpleType&gt;</pre>		
19136 comments			
ISO 19139	<pre>&lt;simpleType name="EnumA_Type"&gt; &lt;restriction base="xsd:string"&gt; &lt;enumeration value="a"/&gt; &lt;enumeration value="b"/&gt; &lt;enumeration value="c"/&gt; &lt;/restriction&gt; &lt;/simpleType&gt;  &lt;complexType name="EnumA_PropertyType"&gt; &lt;sequence minOccurs="0"&gt; &lt;element ref="EnumA"/&gt; &lt;/sequence&gt; &lt;attribute ref="gco:nilReason" /&gt; &lt;/complexType&gt;  &lt;element name="EnumA" type="EnumA_Type" substitutionGroup="gco:CharacterString"/&gt;</pre>		
19139 comments			
XMI	<pre>&lt;simpleType name="EnumA"&gt; &lt;restriction base="xsd:string"&gt; &lt;enumeration value="a"/&gt; &lt;enumeration value="b"/&gt; &lt;enumeration value="c"/&gt; &lt;/restriction&gt; &lt;/simpleType&gt;</pre>		

XMI comments	
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### 19103: class <<Union>> (#11)


UML	 <pre> classDiagram     class ClassA {         &lt;&lt;Union&gt;&gt;     } </pre>
Source specification	19103
Comments	
ISO 19136	<pre> &lt;complexType name="ClassAType"&gt;   &lt;choice&gt;   &lt;/choice&gt; &lt;/complexType&gt;  &lt;complexType name="ClassAPropertyType"&gt;   &lt;sequence&gt;     &lt;element ref="ClassA"/&gt;   &lt;/sequence&gt;   &lt;attributeGroup ref="gml:OwnershipAttributeGroup" /&gt; &lt;/complexType&gt;  &lt;element name="ClassA" type="ClassAType" substitutionGroup="gml:AbstractObject"/&gt; </pre>
19136 comments	
ISO 19139	<pre> &lt;complexType name="ClassA_Type"&gt;   &lt;choice&gt;   &lt;/choice&gt; &lt;/complexType&gt;  &lt;complexType name="ClassA_PropertyType"&gt;   &lt;sequence minOccurs="0"&gt;     &lt;element ref="ClassA"/&gt;   &lt;/sequence&gt;   &lt;attribute ref="gco:nilReason" /&gt; &lt;/complexType&gt;  &lt;element name="ClassA" type="ClassA_Type"/&gt; </pre>
19139 comments	
XMI	
XMI comments	

### uml: class <<enumeration>> (#12)

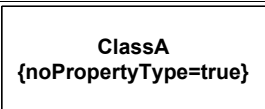
UML	 <pre> classDiagram     class ClassA {         &lt;&lt;enumeration&gt;&gt;     } </pre>
Source specification	uml
Comments	Often used but not defined by UML.
ISO 19136	

19136 comments	ignored (unknown stereotype to 19136)
ISO 19139	
19139 comments	no encoding rules specified
XMI	
XMI comments	no encoding rules specified

### 19136: class <<FeatureType>> (#13)


UML	
Source specification	19136
Comments	
ISO 19136	<pre> &lt;complexType name="ClassAType"&gt;   &lt;complexContent&gt;     &lt;extension base="gml:AbstractFeatureType"&gt;       &lt;sequence&gt;         &lt;/sequence&gt;     &lt;/extension&gt;   &lt;/complexContent&gt; &lt;/complexType&gt;  &lt;complexType name="ClassAPropertyType"&gt;   &lt;sequence minOccurs="0"&gt;     &lt;element ref="pcl:ClassA"/&gt;   &lt;/sequence&gt;   &lt;attributeGroup ref="gml:AssociationAttributeGroup"/&gt;   &lt;attributeGroup ref="gml:OwnershipAttributeGroup" /&gt; &lt;/complexType&gt;  &lt;element name="ClassA" type="pcl:ClassAType" substitutionGroup="gml:AbstractFeature"/&gt; </pre>
19136 comments	
ISO 19139	
19139 comments	
XMI	
XMI comments	

### 19136: class {noPropertyType} (#14)


UML	
Source specification	19136
Comments	
ISO 19136	<pre> &lt;complexType name="ClassAType"&gt;   &lt;complexContent&gt;     &lt;extension base="gml:AbstractGMLType"&gt; </pre>

	<pre> &lt;sequence&gt;   &lt;/sequence&gt; &lt;/extension&gt; &lt;/complexContent&gt; &lt;/complexType&gt;  &lt;element name="ClassA" type="pcl:ClassAType" substitutionGroup="gml:AbstractGML"/&gt; </pre>
19136 comments	
ISO 19139	
19139 comments	
XMI	
XMI comments	

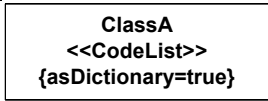
### 19136: class {isCollection} (#15)

UML	 <pre> classDiagram     class ClassA {         isCollection = true     } </pre>
Source specification	19136
Comments	
ISO 19136	<pre> &lt;complexType name="ClassAType"&gt;   &lt;complexContent&gt;     &lt;extension base="gml:AbstractGMLType"&gt;       &lt;sequence&gt;         &lt;/sequence&gt;     &lt;/extension&gt;   &lt;/complexContent&gt; &lt;/complexType&gt;  &lt;complexType name="ClassAPropertyType"&gt;   &lt;sequence minOccurs="0"&gt;     &lt;element ref="pcl:ClassA"/&gt;   &lt;/sequence&gt;   &lt;attributeGroup ref="gml:AssociationAttributeGroup"/&gt;   &lt;attributeGroup ref="gml:AggregationAttributeGroup"/&gt;   &lt;attributeGroup ref="gml:OwnershipAttributeGroup" /&gt; &lt;/complexType&gt;  &lt;element name="ClassA" type="pcl:ClassAType" substitutionGroup="gml:AbstractGML"/&gt; </pre>
19136 comments	
ISO 19139	
19139 comments	
XMI	
XMI comments	

### 19136: class {byValuePropertyType} (#16)

UML	
Source specification	19136
Comments	
ISO 19136	<pre> &lt;complexType name="ClassAType"&gt;   &lt;complexContent&gt;     &lt;extension base="gml:AbstractGMLType"&gt;       &lt;sequence&gt;       &lt;/sequence&gt;     &lt;/extension&gt;   &lt;/complexContent&gt; &lt;/complexType&gt;  &lt;complexType name="ClassAPropertyType"&gt;   &lt;sequence minOccurs="0"&gt;     &lt;element ref="pcl:ClassA"/&gt;   &lt;/sequence&gt;   &lt;attributeGroup ref="gml:AssociationAttributeGroup"/&gt;   &lt;attributeGroup ref="gml:OwnershipAttributeGroup" /&gt; &lt;/complexType&gt;  &lt;complexType name="ClassAPropertyByValueType"&gt;   &lt;sequence&gt;     &lt;element ref="pcl:ClassA"/&gt;   &lt;/sequence&gt;   &lt;attributeGroup ref="gml:OwnershipAttributeGroup" /&gt; &lt;/complexType&gt;  &lt;element name="ClassA" type="pcl:ClassAType" substitutionGroup="gml:AbstractGML"/&gt; </pre>
19136 comments	
ISO 19139	
19139 comments	
XMI	
XMI comments	

### 19136: class <<CodeList>> {asDictionary} (#17)

UML	
Source specification	19136
Comments	CodeWithAuthorityType cannot be generated. codeSpace can not be restricted gml:defaultCodeSpace can not be generated (no tagged value specified)
ISO 19136	FIXME update diagram

	<pre>&lt;element name="type" type="gml:CodeType"&gt;   &lt;annotation&gt;     &lt;appinfo&gt;       &lt;gml:defaultCodeSpace&gt;http://www.someorg.de/example/cl.xml#BuildingType&lt;/gml:     &lt;/appinfo&gt;   &lt;/annotation&gt; &lt;/element&gt;</pre>
19136 comments	no schema production, but changed attribute definitions
ISO 19139	
19139 comments	
XMI	
XMI comments	

### 19139: add new concept {class} (#18)

UML	<pre> classDiagram     class ImplementationModel {         ClassA     }   </pre>
Source specification	19139
Comments	
ISO 19136	
19136 comments	
ISO 19139	<pre>&lt;complexType name="ClassA_Type"&gt;   &lt;complexContent&gt;     &lt;extension base="gco:AbstractObject_Type"&gt;       &lt;sequence&gt;       &lt;/sequence&gt;     &lt;/extension&gt;   &lt;/complexContent&gt; &lt;/complexType&gt;  &lt;complexType name="ClassA_PropertyType"&gt;   &lt;sequence minOccurs="0"&gt;     &lt;element ref="ClassA"/&gt;   &lt;/sequence&gt;   &lt;attributeGroup ref="gco:ObjectReference"/&gt;   &lt;attribute ref="gco:nilReason" /&gt; &lt;/complexType&gt;  &lt;element name="ClassA" type="ClassA_Type"/&gt;</pre>
19139 comments	no special encoding rule, but the class is only present in the



	implementation model
XMI	
XMI comments	

### 19139: extended concept {class} (#19)


UML	<pre> classDiagram     class ClassA     class ClassB     ClassA &lt; -- ClassB     class ImplementationModel     class BBox     class BBox {         ClassB     }     ImplementationModel -- BBox     BBox -- ClassB </pre>
Source specification	19139
Comments	
ISO 19136	
19136 comments	
ISO 19139	<pre> &lt;complexType name="ClassA_Type"&gt;   &lt;complexContent&gt;     &lt;extension base="gco:AbstractObject_Type"&gt;       &lt;sequence&gt;       &lt;/sequence&gt;     &lt;/extension&gt;   &lt;/complexContent&gt; &lt;/complexType&gt;  &lt;complexType name="ClassA_PropertyType"&gt;   &lt;sequence minOccurs="0"&gt;     &lt;element ref="ClassA"/&gt;   &lt;/sequence&gt;   &lt;attributeGroup ref="gco:ObjectReference"/&gt;   &lt;attribute ref="gco:nilReason" /&gt; &lt;/complexType&gt;  &lt;element name="ClassA" type="ClassA_Type"/&gt;  &lt;complexType name="ClassB_Type"&gt;   &lt;complexContent&gt;     &lt;extension base="ClassA_Type"&gt;       &lt;sequence&gt;       &lt;/sequence&gt;     &lt;/extension&gt;   &lt;/complexContent&gt; &lt;/complexType&gt;  &lt;complexType name="ClassB_PropertyType"&gt;   &lt;sequence minOccurs="0"&gt;     &lt;element ref="ClassB"/&gt;   &lt;/sequence&gt; </pre>

	<pre> &lt;/sequence&gt; &lt;attributeGroup ref="gco:ObjectReference"/&gt; &lt;attribute ref="gco:nilReason" /&gt; &lt;/complexType&gt;  &lt;element name="ClassB" type="ClassB_Type" substitutionGroup="ClassA"/&gt; </pre>
19139 comments	no special encoding rule, but the class is only present in the implementation model
XMI	
XMI comments	

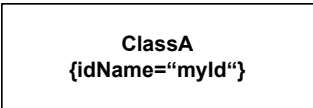
### 19139: extend codelist (#20)

UML	<pre> classDiagram     class ClassA["ClassA &lt;&lt;CodeList&gt;&gt;"]     class ClassB["ClassB &lt;&lt;CodeList&gt;&gt;"]     ClassA &lt; -- ClassB </pre>
Source specification	19139
Comments	
ISO 19136	
19136 comments	
ISO 19139	<pre> &lt;complexType name="CodeListA_PropertyType"&gt;   &lt;sequence minOccurs="0"&gt;     &lt;element ref="CodeListA"/&gt;   &lt;/sequence&gt;   &lt;attribute ref="gco:nilReason" /&gt; &lt;/complexType&gt;  &lt;element name="CodeListA" type="gco:CodeListValue_Type" substitutionGroup="gco:CharacterString"/&gt;  &lt;complexType name="CodeListB_PropertyType"&gt;   &lt;sequence minOccurs="0"&gt;     &lt;element ref="CodeListB"/&gt;   &lt;/sequence&gt;   &lt;attribute ref="gco:nilReason" /&gt; &lt;/complexType&gt;  &lt;element name="CodeListB" type="gco:CodeListValue_Type" substitutionGroup="gco:CharacterString"/&gt; </pre>
19139 comments	no special encoding rule, but the class is only present in the implementation model
XMI	
XMI comments	

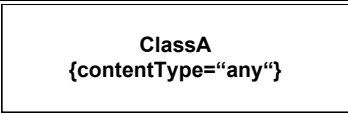
### xmi: class {xmiName} (#21)

UML	
Source specification	xmi
Comments	Provides an alternate name from the MOF name for writing to XMI. Useful in cases where the MOF name has characters that conflict with XML. This value is used rather than the MOF name.
ISO 19136	
19136 comments	
ISO 19139	
19139 comments	
XMI	<pre>&lt;xsd:element name="Class_A" type="Class_A"/&gt; &lt;xsd:complexType name="Class_A"&gt;   &lt;xsd:choice minOccurs="0" maxOccurs="unbounded"&gt;     &lt;xsd:element ref="xmi:Extension"/&gt;   &lt;/xsd:choice&gt;   &lt;xsd:attribute ref="xmi:id"/&gt;   &lt;xsd:attributeGroup ref="xmi:ObjectAttribs"/&gt; &lt;/xsd:complexType&gt;</pre>
XMI comments	

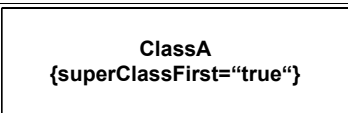
### xmi: class {idName} (#22)

UML	
Source specification	xmi
Comments	The value is the name of the id attribute.
ISO 19136	
19136 comments	
ISO 19139	
19139 comments	
XMI	<pre>&lt;xsd:element name="ClassA" type="ClassA"/&gt; &lt;xsd:complexType name="ClassA"&gt;   &lt;xsd:choice minOccurs="0" maxOccurs="unbounded"&gt;     &lt;xsd:element ref="xmi:Extension"/&gt;   &lt;/xsd:choice&gt;   &lt;xsd:attribute name="myId" type="xsd:ID" use="optional"/&gt;   &lt;xsd:attributeGroup ref="xmi:ObjectAttribs"/&gt; &lt;/xsd:complexType&gt;</pre>
XMI comments	

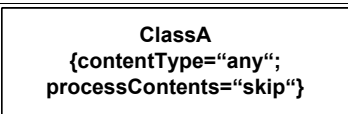
### xmi: class {contentType} (#23)

UML		
Source specification	xmi	
Comments	Defines the schema content type. Other valid values are: complex, any, mixed, complex, and simple.	
ISO 19136		
19136 comments		
ISO 19139		
19139 comments		
XMI	<pre>&lt;xsd:element name="ClassA" type="ClassA"/&gt; &lt;xsd:complexType name="ClassA"&gt;   &lt;xsd:choice minOccurs="0" maxOccurs="unbounded"&gt;     &lt;xsd:any minOccurs="0" maxOccurs="unbounded" processContents="strict"&gt;   &lt;/xsd:choice&gt;   &lt;xsd:attribute ref="xmi:id"/&gt;   &lt;xsd:attributeGroup ref="xmi:ObjectAttribs"/&gt; &lt;/xsd:complexType&gt;</pre>	
XMI comments		

### xmi: class {superClassFirst} (#24)

UML		
Source specification	xmi	
Comments	If true, serialize the super class content first.	
ISO 19136		
19136 comments		
ISO 19139		
19139 comments		
XMI		
XMI comments		

### xmi: class {processContents} (#25)

UML		
Source specification	xmi	
Comments	If the contentType is any, this tag is used to specify the value of the processContents attribute of the any element. Other valid values are: lax, skip.	
ISO 19136		
19136 comments		

ISO 19139	
19139 comments	
XMI	<pre>&lt;xsd:element name="ClassA" type="ClassA"/&gt; &lt;xsd:complexType name="ClassA"&gt;   &lt;xsd:choice minOccurs="0" maxOccurs="unbounded"&gt;     &lt;xsd:any minOccurs="0" maxOccurs="unbounded" processContents="skip"&gt;   &lt;/xsd:choice&gt;   &lt;xsd:attribute ref="xmi:id"/&gt;   &lt;xsd:attributeGroup ref="xmi:ObjectAttribs"/&gt; &lt;/xsd:complexType&gt;</pre>
XMI comments	

### xmi: class {ordered} (#26)

UML	<table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="text-align: center;"> <b>ClassA</b>  {ordered="true"} </td> </tr> <tr> <td style="text-align: center;"> attribA[0..1]  attribB[0..*] </td> </tr> </table>	<b>ClassA</b> {ordered="true"}	attribA[0..1] attribB[0..*]
<b>ClassA</b> {ordered="true"}			
attribA[0..1] attribB[0..*]			
Source specification	xmi		
Comments	If true, serialize object content in the order it is defined in a MOF model.		
ISO 19136			
19136 comments			
ISO 19139			
19139 comments			
XMI	<pre>&lt;xsd:element name="ClassA" type="ClassA"/&gt; &lt;xsd:complexType name="ClassA"&gt;   &lt;xsd:sequence&gt;     &lt;xsd:element name="attribA" type="xsd:string" minOccurs="0" maxOccurs="unbounded"/&gt;     &lt;xsd:element name="attribB" type="xsd:string" minOccurs="0" maxOccurs="unbounded"/&gt;     &lt;xsd:element ref="xmi:Extension" minOccurs="0" maxOccurs="unbounded"/&gt;   &lt;/xsd:sequence&gt;   &lt;xsd:attribute ref="xmi:id"/&gt;   &lt;xsd:attributeGroup ref="xmi:ObjectAttribs"/&gt;   &lt;xsd:attribute name="attribA" type="xsd:string" use="optional"/&gt; &lt;/xsd:complexType&gt;</pre>		
XMI comments			

## Abstraction

### uml: abstraction (#27)

UML	<pre> classDiagram     ClassB .. &gt; ClassA             </pre>
Source specification	uml
Comments	
ISO 19136	
19136 comments	ignored
ISO 19139	
19139 comments	no encoding rules specified
XMI	
XMI comments	no encoding rules specified

### 19139: abstraction <<XCPT>> (#28)

UML	<pre> classDiagram     ClassB_PropertyType .. &gt; ClassA : &lt;&lt;XCPT&gt;&gt;     ClassC "1" -- "1" ClassA : attrA             </pre>
Source specification	19139
Comments	
ISO 19136	
19136 comments	ignored
ISO 19139	<pre> &lt;complexType name="ClassC_Type"&gt;   &lt;complexContent&gt;     &lt;extension base="gco:AbstractObject_Type"&gt;       &lt;sequence&gt;         &lt;element name="attrA" type="ClassB_PropertyType"/&gt;       &lt;/sequence&gt;     &lt;/extension&gt;   &lt;/complexContent&gt; &lt;/complexType&gt;             </pre>
19139 comments	used to declare a externally defined PropertyType of a defined class
XMI	
XMI comments	

### 19139: abstraction <<XCGE>> (#29)

UML	<pre> classDiagram     class ClassA     class ClassB_GlobalElement     ClassB_GlobalElement .. &gt; ClassA : &lt;&lt;XCGE&gt;&gt;         </pre>
Source specification	19139
Comments	
ISO 19136	
19136 comments	ignored
ISO 19139	<pre> &lt;complexType name="ClassA_PropertyType"&gt;   &lt;sequence minOccurs="0"&gt;     &lt;element ref="ClassB_GlobalElement"/&gt;   &lt;/sequence&gt;   &lt;attributeGroup ref="gco:ObjectReference"/&gt;   &lt;attribute ref="gco:nilReason" /&gt; &lt;/complexType&gt;         </pre>
19139 comments	used to declare a externally defined Global Element of a defined class
XMI	
XMI comments	

### 19139: abstraction <<XCT>> simpleType (#30)

UML	<pre> classDiagram     class ClassA     class ClassB     ClassB .. &gt; ClassA : &lt;&lt;XCT&gt;&gt;     class ClassB {         &lt;&lt;xs:simpleType&gt;&gt;     }         </pre>
Source specification	19139
Comments	
ISO 19136	
19136 comments	ignored
ISO 19139	<pre> &lt;complexType name="ClassA_PropertyType"&gt;   &lt;sequence minOccurs="0"&gt;     &lt;element ref="ClassA"/&gt;   &lt;/sequence&gt;   &lt;attribute ref="gco:nilReason" /&gt; &lt;/complexType&gt;  &lt;element name="ClassA" type="ClassB"/&gt;         </pre>
19139 comments	
XMI	

XML comments	
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### 19139: abstraction <<XCT>> simpleContent (#31)

UML	<pre> classDiagram     class ClassA     class ClassB["&lt;&lt;xs:simpleContent&gt;&gt;"]     class XsString["xs:string &lt;&lt;xs:simpleType&gt;&gt;"]     ClassA .. &gt; ClassB : &lt;&lt;XCT&gt;&gt;     XsString .. &gt; ClassB : &lt;&lt;XCT&gt;&gt;     class ClassB {         &lt;&lt;xs:attribute&gt;&gt; codeSpace : xs:anyURI     } </pre>
Source specification	19139
Comments	
ISO 19136	
19136 comments	
ISO 19139	<pre> &lt;complexType name="ClassA_Type"&gt;   &lt;simpleContent&gt;     &lt;extension base="ClassB"&gt;       &lt;attribute name="codeSpace" type="xs:anyURI" /&gt;     &lt;/extension&gt;   &lt;/simpleContent&gt; &lt;/complexType&gt;  &lt;complexType name="ClassA_PropertyType"&gt;   &lt;sequence minOccurs="0"&gt;     &lt;element ref="ClassA"/&gt;   &lt;/sequence&gt;   &lt;attribute ref="gco:nilReason" /&gt; &lt;/complexType&gt;  &lt;element name="ClassA" type="ClassA_Type"/&gt; </pre>
19139 comments	
XMI	
XMI comments	

### 19139: abstraction <<XCT>> complexType (#32)

UML	<pre> classDiagram     class ClassA     class ClassB["&lt;&lt;xs:complexType&gt;&gt;"]     ClassA .. &gt; ClassB : &lt;&lt;XCT&gt;&gt; </pre>
Source specification	19139
Comments	
ISO 19136	



19136 comments	
ISO 19139	<pre> &lt;complexType name="ClassA_Type"&gt;   &lt;complexContent&gt;     &lt;extension base="ClassB"&gt;       &lt;sequence&gt;       &lt;/sequence&gt;     &lt;/extension&gt;   &lt;/complexContent&gt; &lt;/complexType&gt;  &lt;complexType name="ClassA_PropertyType"&gt;   &lt;sequence minOccurs="0"&gt;     &lt;element ref="ClassA"/&gt;   &lt;/sequence&gt;   &lt;attributeGroup ref="gco:ObjectReference"/&gt;   &lt;attribute ref="gco:nilReason" /&gt; &lt;/complexType&gt;  &lt;element name="ClassA" type="ClassA_Type"/&gt; </pre>
19139 comments	
XMI	
XMI comments	

### 19139: abstraction <<XCT>> union (#33)

UML	<pre> classDiagram     class ClassA     class ClassB {         &lt;&lt;xs:union&gt;&gt;         xs:date         xs:gYear     }     ClassA .. &gt; ClassB : &lt;&lt;XCT&gt;&gt; </pre>
Source specification	19139
Comments	
ISO 19136	
19136 comments	
ISO 19139	<pre> &lt;complexType name="ClassA_PropertyType"&gt;   &lt;sequence minOccurs="0"&gt;     &lt;element ref="ClassB"/&gt;   &lt;/sequence&gt;   &lt;attribute ref="gco:nilReason" /&gt; &lt;/complexType&gt;  &lt;simpleType name="ClassB_Type"&gt;   &lt;union memberTypes="xs:date xs:gYear"/&gt; &lt;/simpleType&gt;  &lt;element name="ClassB" type="ClassB_Type"/&gt; </pre>

19139 comments	
XMI	
XMI comments	

### 19139: abstraction <<XCT>> choice (#34)

UML	<pre> classDiagram     class ClassA     class ClassB["&lt;&lt;xs:choice&gt;&gt;"]     ClassB .. &gt; ClassA : &lt;&lt;XCT&gt;&gt;     ClassB "choiceC" --&gt; ClassC     ClassB "choiceD" --&gt; ClassD     </pre>
Source specification	19139
Comments	
ISO 19136	
19136 comments	
ISO 19139	<pre> &lt;complexType name="ClassA_PropertyType"&gt;   &lt;choice minOccurs="0"&gt;     &lt;element ref="ClassC"/&gt;     &lt;element ref="ClassD"/&gt;   &lt;/choice&gt;   &lt;attribute ref="gco:nilReason" /&gt; &lt;/complexType&gt;     </pre>
19139 comments	
XMI	
XMI comments	

## Inheritance

### uml: inheritance (#35)

UML	<pre> classDiagram     class ClassA     class ClassB     ClassB -- &gt; ClassA     </pre>
Source specification	uml
Comments	
ISO 19136	<pre> &lt;complexType name="ClassAType"&gt;   &lt;complexContent&gt;     &lt;extension base="gml:AbstractGMLType"&gt;       &lt;sequence&gt;       &lt;/sequence&gt;     &lt;/extension&gt;   &lt;/complexContent&gt; &lt;/complexType&gt;     </pre>

	<pre> &lt;/complexContent&gt; &lt;/complexType&gt;  &lt;complexType name="ClassAPropertyType"&gt;   &lt;sequence minOccurs="0"&gt;     &lt;element ref="ClassA"/&gt;   &lt;/sequence&gt;   &lt;attributeGroup ref="gml:AssociationAttributeGroup"/&gt;   &lt;attributeGroup ref="gml:OwnershipAttributeGroup" /&gt; &lt;/complexType&gt;  &lt;element name="ClassA" type="ClassAType" substitutionGroup="gml:AbstractGML"/&gt;  &lt;complexType name="ClassBType"&gt;   &lt;complexContent&gt;     &lt;extension base="ClassAType"&gt;       &lt;sequence&gt;         &lt;/sequence&gt;     &lt;/extension&gt;   &lt;/complexContent&gt; &lt;/complexType&gt;  &lt;complexType name="ClassBPropertyType"&gt;   &lt;sequence minOccurs="0"&gt;     &lt;element ref="ClassB"/&gt;   &lt;/sequence&gt;   &lt;attributeGroup ref="gml:AssociationAttributeGroup"/&gt;   &lt;attributeGroup ref="gml:OwnershipAttributeGroup" /&gt; &lt;/complexType&gt;  &lt;element name="ClassB" type="ClassBType" substitutionGroup="ClassA"/&gt; </pre>
19136 comments	A generalization relationship may be specified only between two classes that are either: both feature types, or both object types, or both data types.
ISO 19139	<pre> &lt;complexType name="ClassA_Type"&gt;   &lt;complexContent&gt;     &lt;extension base="gco:AbstractObject_Type"&gt;       &lt;sequence&gt;         &lt;/sequence&gt;     &lt;/extension&gt;   &lt;/complexContent&gt; &lt;/complexType&gt;  &lt;complexType name="ClassA_PropertyType"&gt;   &lt;sequence minOccurs="0"&gt;     &lt;element ref="ClassA"/&gt;   &lt;/sequence&gt;   &lt;attributeGroup ref="gco:ObjectReference"/&gt; </pre>

	<pre> &lt;attribute ref="gco:nilReason" /&gt; &lt;/complexType&gt;  &lt;element name="ClassA" type="ClassA_Type"/&gt;  &lt;complexType name="ClassB_Type"&gt;   &lt;complexContent&gt;     &lt;extension base="ClassA_Type"&gt;       &lt;sequence&gt;         &lt;/sequence&gt;     &lt;/extension&gt;   &lt;/complexContent&gt; &lt;/complexType&gt;  &lt;complexType name="ClassB_PropertyType"&gt;   &lt;sequence minOccurs="0"&gt;     &lt;element ref="ClassB"/&gt;   &lt;/sequence&gt;   &lt;attributeGroup ref="gco:ObjectReference"/&gt;   &lt;attribute ref="gco:nilReason" /&gt; &lt;/complexType&gt;  &lt;element name="ClassB" type="ClassB_Type" substitutionGroup="ClassA"/&gt; </pre>
19139 comments	
XMI	<pre> &lt;xsd:element name="ClassA" type="ClassA"/&gt; &lt;xsd:complexType name="ClassA"&gt;   &lt;xsd:choice minOccurs="0" maxOccurs="unbounded"&gt;     &lt;xsd:element ref="xmi:Extension"/&gt;   &lt;/xsd:choice&gt;   &lt;xsd:attribute ref="xmi:id"/&gt;   &lt;xsd:attributeGroup ref="xmi:ObjectAttribs"/&gt; &lt;/xsd:complexType&gt;  &lt;xsd:element name="ClassB" type="ClassB"/&gt; &lt;xsd:complexType name="ClassB"&gt;   &lt;xsd:choice minOccurs="0" maxOccurs="unbounded"&gt;     &lt;xsd:element ref="xmi:Extension"/&gt;   &lt;/xsd:choice&gt;   &lt;xsd:attribute ref="xmi:id"/&gt;   &lt;xsd:attributeGroup ref="xmi:ObjectAttribs"/&gt; &lt;/xsd:complexType&gt; </pre>
XMI comments	

## uml: multiple inheritance (#36)

UML	<pre> classDiagram     ClassB -- &gt; ClassA1     ClassB -- &gt; ClassA2         </pre>
Source specification	uml
Comments	not recommended by 19103, but not forbidden
ISO 19136	
19136 comments	forbidden
ISO 19139	
19139 comments	no encoding rules specified
XMI	<pre> &lt;xsd:element name="ClassA1" type="ClassA1"/&gt; &lt;xsd:complexType name="ClassA1"&gt;   &lt;xsd:choice minOccurs="0" maxOccurs="unbounded"&gt;     &lt;xsd:element ref="xmi:Extension"/&gt;   &lt;/xsd:choice&gt;   &lt;xsd:attribute ref="xmi:id"/&gt;   &lt;xsd:attributeGroup ref="xmi:ObjectAttribs"/&gt; &lt;/xsd:complexType&gt;  &lt;xsd:element name="ClassA2" type="ClassA2"/&gt; &lt;xsd:complexType name="ClassA2"&gt;   &lt;xsd:choice minOccurs="0" maxOccurs="unbounded"&gt;     &lt;xsd:element ref="xmi:Extension"/&gt;   &lt;/xsd:choice&gt;   &lt;xsd:attribute ref="xmi:id"/&gt;   &lt;xsd:attributeGroup ref="xmi:ObjectAttribs"/&gt; &lt;/xsd:complexType&gt;  &lt;xsd:element name="ClassB" type="ClassB"/&gt; &lt;xsd:complexType name="ClassB"&gt;   &lt;xsd:choice minOccurs="0" maxOccurs="unbounded"&gt;     &lt;xsd:element ref="xmi:Extension"/&gt;   &lt;/xsd:choice&gt;   &lt;xsd:attribute ref="xmi:id"/&gt;   &lt;xsd:attributeGroup ref="xmi:ObjectAttribs"/&gt; &lt;/xsd:complexType&gt;         </pre>
XMI comments	

## uml: multiple inheritance (diamond problem) (#37)

UML	 <pre> classDiagram     ClassB -- &gt; ClassA1     ClassB -- &gt; ClassA2     ClassA1 -- &gt; ClassC     ClassA2 -- &gt; ClassC     </pre>
Source specification	uml
Comments	
ISO 19136	
19136 comments	forbidden
ISO 19139	
19139 comments	no encoding rules specified
XMI	<pre> &lt;xsd:element name="ClassC" type="ClassC"/&gt; &lt;xsd:complexType name="ClassC"&gt;   &lt;xsd:choice minOccurs="0" maxOccurs="unbounded"&gt;     &lt;xsd:element ref="xmi:Extension"/&gt;   &lt;/xsd:choice&gt;   &lt;xsd:attribute ref="xmi:id"/&gt;   &lt;xsd:attributeGroup ref="xmi:ObjectAttribs"/&gt; &lt;/xsd:complexType&gt;  &lt;xsd:element name="ClassA1" type="ClassA1"/&gt; &lt;xsd:complexType name="ClassA1"&gt;   &lt;xsd:choice minOccurs="0" maxOccurs="unbounded"&gt;     &lt;xsd:element ref="xmi:Extension"/&gt;   &lt;/xsd:choice&gt;   &lt;xsd:attribute ref="xmi:id"/&gt;   &lt;xsd:attributeGroup ref="xmi:ObjectAttribs"/&gt; &lt;/xsd:complexType&gt;  &lt;xsd:element name="ClassA2" type="ClassA2"/&gt; &lt;xsd:complexType name="ClassA2"&gt;   &lt;xsd:choice minOccurs="0" maxOccurs="unbounded"&gt;     &lt;xsd:element ref="xmi:Extension"/&gt;   &lt;/xsd:choice&gt;   &lt;xsd:attribute ref="xmi:id"/&gt;   &lt;xsd:attributeGroup ref="xmi:ObjectAttribs"/&gt; &lt;/xsd:complexType&gt;  &lt;xsd:element name="ClassB" type="ClassB"/&gt; &lt;xsd:complexType name="ClassB"&gt;   &lt;xsd:choice minOccurs="0" maxOccurs="unbounded"&gt;     &lt;xsd:element ref="xmi:Extension"/&gt;   &lt;/xsd:choice&gt;   &lt;xsd:attribute ref="xmi:id"/&gt; </pre>

	<xsd:attributeGroup ref="xmi:ObjectAttribs"/> </xsd:complexType>
XMI comments	

### uml: multiple inheritance (property name conflict) (#38)

UML	<pre> classDiagram     class ClassA1 {         attributeA     }     class ClassA2 {         attributeA     }     class ClassB     ClassB -- &gt; ClassA1     ClassB -- &gt; ClassA2 </pre>
Source specification	uml
Comments	
ISO 19136	
19136 comments	forbidden
ISO 19139	
19139 comments	no encoding rules specified
XMI	<pre> &lt;xsd:element name="ClassA1" type="ClassA1"/&gt; &lt;xsd:complexType name="ClassA1"&gt;   &lt;xsd:choice minOccurs="0" maxOccurs="unbounded"&gt;     &lt;xsd:element name="attribA" type="xsd:string" minOccurs="0" maxOccurs="unbounded"/&gt;     &lt;xsd:element ref="xmi:Extension"/&gt;   &lt;/xsd:choice&gt;   &lt;xsd:attribute ref="xmi:id"/&gt;   &lt;xsd:attributeGroup ref="xmi:ObjectAttribs"/&gt;   &lt;xsd:attribute name="attribA" type="xsd:string" use="optional"/&gt; &lt;/xsd:complexType&gt;  &lt;xsd:element name="ClassA2" type="ClassA2"/&gt; &lt;xsd:complexType name="ClassA2"&gt;   &lt;xsd:choice minOccurs="0" maxOccurs="unbounded"&gt;     &lt;xsd:element name="attribA" type="xsd:string" minOccurs="0" maxOccurs="unbounded"/&gt;     &lt;xsd:element ref="xmi:Extension"/&gt;   &lt;/xsd:choice&gt;   &lt;xsd:attribute ref="xmi:id"/&gt;   &lt;xsd:attributeGroup ref="xmi:ObjectAttribs"/&gt;   &lt;xsd:attribute name="attribA" type="xsd:string" use="optional"/&gt; &lt;/xsd:complexType&gt;  &lt;xsd:element name="ClassB" type="ClassB"/&gt; &lt;xsd:complexType name="ClassB"&gt;   &lt;xsd:choice minOccurs="0" maxOccurs="unbounded"&gt; </pre>

	<pre> &lt;xsd:element name="attribA" type="xsd:string" minOccurs="0" maxOccurs="unbounded"/&gt; &lt;xsd:element ref="xmi:Extension"/&gt; &lt;/xsd:choice&gt; &lt;xsd:attribute ref="xmi:id"/&gt; &lt;xsd:attributeGroup ref="xmi:ObjectAttribs"/&gt; &lt;xsd:attribute name="attribA" type="xsd:string" use="optional"/&gt; &lt;/xsd:complexType&gt; </pre>
XML comments	

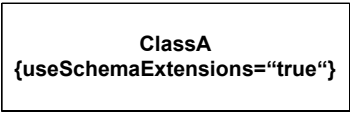
### uml: inheritance (attribute subtyped) (#39)

UML	<pre> classDiagram     class ClassA {         attributeA[0..*]     }     class ClassB {         attributeA[0..1] {subtyped}     }     ClassA &lt; -- ClassB </pre>
Source specification	uml
Comments	<p>Not allowed by UML!  (But see <a href="http://schemas.opengis.net/csw/2.0.1/record.xsd">http://schemas.opengis.net/csw/2.0.1/record.xsd</a> for an example)  UML ch. 4.5.2.10 Classifier: "Attributes of the parent are part of the full descriptor of the child and may not be declared again or overridden."</p>
ISO 19136	<pre> &lt;complexType name="ClassAType"&gt;   &lt;complexContent&gt;     &lt;extension base="gml:AbstractGMLType"&gt;       &lt;sequence&gt;         &lt;element name="attributeA" type="xsd:string" minOccurs="0" maxOccurs="unbounded"/&gt;       &lt;/sequence&gt;     &lt;/extension&gt;   &lt;/complexContent&gt; &lt;/complexType&gt;  &lt;complexType name="ClassAPropertyType"&gt;   &lt;sequence minOccurs="0"&gt;     &lt;element ref="ClassA"/&gt;   &lt;/sequence&gt;   &lt;attributeGroup ref="gml:AssociationAttributeGroup"/&gt;   &lt;attributeGroup ref="gml:OwnershipAttributeGroup" /&gt; &lt;/complexType&gt;  &lt;element name="ClassA" type="ClassAType" substitutionGroup="gml:AbstractGML"/&gt; </pre>



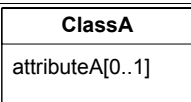
	<pre> &lt;complexType name="ClassBType"&gt;   &lt;complexContent&gt;     &lt;extension base="ClassAType"&gt;       &lt;sequence&gt;         &lt;/sequence&gt;       &lt;/extension&gt;     &lt;/complexContent&gt;   &lt;/complexType&gt;  &lt;complexType name="ClassBPropertyType"&gt;   &lt;sequence minOccurs="0"&gt;     &lt;element ref="ClassB"/&gt;   &lt;/sequence&gt;   &lt;attributeGroup ref="gml:AssociationAttributeGroup"/&gt;   &lt;attributeGroup ref="gml:OwnershipAttributeGroup" /&gt; &lt;/complexType&gt;  &lt;element name="ClassB" type="ClassBType" substitutionGroup="ClassA"/&gt; </pre>
19136 comments	subtyped attribute definitions are ignored
ISO 19139	
19139 comments	no encoding rules specified
XMI	
XMI comments	Not allowed by UML!

### xmi: class {useSchemaExtensions} (#40)

UML	 <pre> classDiagram     class ClassA {         useSchemaExtensions "true"     } </pre>
Source specification	xmi
Comments	If true, use schema extensions to represent inheritance in the MOF model.
ISO 19136	
19136 comments	
ISO 19139	
19139 comments	
XMI	
XMI comments	

### Attribute

#### uml: optional attribute (#41)

UML	 <pre> classDiagram     class ClassA {         attributeA[0..1]     } </pre>
Source specification	uml
Comments	

ISO 19136	<pre> &lt;complexType name="ClassAType"&gt;   &lt;complexContent&gt;     &lt;extension base="gml:AbstractGMLType"&gt;       &lt;sequence&gt;         &lt;element name="attributeA" type="xsd:string" minOccurs="0"/&gt;       &lt;/sequence&gt;     &lt;/extension&gt;   &lt;/complexContent&gt; &lt;/complexType&gt;  &lt;complexType name="ClassAPropertyType"&gt;   &lt;sequence minOccurs="0"&gt;     &lt;element ref="ClassA"/&gt;   &lt;/sequence&gt;   &lt;attributeGroup ref="gml:AssociationAttributeGroup"/&gt;   &lt;attributeGroup ref="gml:OwnershipAttributeGroup" /&gt; &lt;/complexType&gt;  &lt;element name="ClassA" type="ClassAType" substitutionGroup="gml:AbstractGML"/&gt; </pre>
19136 comments	The attribute name shall be a "NCName" as defined by W3C XML Namespaces:1999.
ISO 19139	<pre> &lt;complexType name="ClassA_Type"&gt;   &lt;complexContent&gt;     &lt;extension base="gco:AbstractObject_Type"&gt;       &lt;sequence&gt;         &lt;element name="attributeA" type="xsd:string" minOccurs="0"/&gt;       &lt;/sequence&gt;     &lt;/extension&gt;   &lt;/complexContent&gt; &lt;/complexType&gt;  &lt;complexType name="ClassA_PropertyType"&gt;   &lt;sequence minOccurs="0"&gt;     &lt;element ref="ClassA"/&gt;   &lt;/sequence&gt;   &lt;attributeGroup ref="gco:ObjectReference"/&gt;   &lt;attribute ref="gco:nilReason" /&gt; &lt;/complexType&gt;  &lt;element name="ClassA" type="ClassA_Type"/&gt; </pre>
19139 comments	
XMI	<pre> &lt;xsd:element name="ClassA" type="ClassA"/&gt; &lt;xsd:complexType name="ClassA"&gt;   &lt;xsd:choice minOccurs="0" maxOccurs="unbounded"&gt;     &lt;xsd:element name="attribA" type="xsd:string" minOccurs="0" maxOccurs="unbounded"/&gt;     &lt;xsd:element ref="xmi:Extension"/&gt;   &lt;/xsd:choice&gt; &lt;/xsd:complexType&gt; </pre>

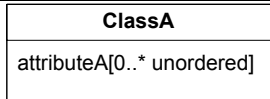
	<pre> &lt;/xsd:choice&gt; &lt;xsd:attribute ref="xmi:id"/&gt; &lt;xsd:attributeGroup ref="xmi:ObjectAttribs"/&gt; &lt;xsd:attribute name="attribA" type="xsd:string" use="optional"/&gt; &lt;/xsd:complexType&gt; </pre>
XMI comments	multiplicity not enforced by default

### uml: mandatory attribute (#42)

UML	<table border="1"> <tr> <td style="text-align: center;">ClassA</td> </tr> <tr> <td>attributeA[1]</td> </tr> </table>	ClassA	attributeA[1]
ClassA			
attributeA[1]			
Source specification	uml		
Comments			
ISO 19136	<pre> &lt;complexType name="ClassAType"&gt;   &lt;complexContent&gt;     &lt;extension base="gml:AbstractGMLType"&gt;       &lt;sequence&gt;         &lt;element name="attributeA" type="xsd:string"/&gt;       &lt;/sequence&gt;     &lt;/extension&gt;   &lt;/complexContent&gt; &lt;/complexType&gt;  &lt;complexType name="ClassAPropertyType"&gt;   &lt;sequence minOccurs="0"&gt;     &lt;element ref="ClassA"/&gt;   &lt;/sequence&gt;   &lt;attributeGroup ref="gml:AssociationAttributeGroup"/&gt;   &lt;attributeGroup ref="gml:OwnershipAttributeGroup" /&gt; &lt;/complexType&gt;  &lt;element name="ClassA" type="ClassAType" substitutionGroup="gml:AbstractGML"/&gt; </pre>		
19136 comments			
ISO 19139	<pre> &lt;complexType name="ClassA_Type"&gt;   &lt;complexContent&gt;     &lt;extension base="gco:AbstractObject_Type"&gt;       &lt;sequence&gt;         &lt;element name="attributeA" type="xsd:string"/&gt;       &lt;/sequence&gt;     &lt;/extension&gt;   &lt;/complexContent&gt; &lt;/complexType&gt;  &lt;complexType name="ClassA_PropertyType"&gt;   &lt;sequence minOccurs="0"&gt;     &lt;element ref="ClassA"/&gt;   &lt;/sequence&gt; </pre>		

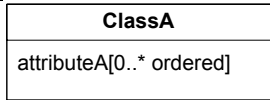
	<pre> &lt;/sequence&gt; &lt;attributeGroup ref="gco:ObjectReference"/&gt; &lt;attribute ref="gco:nilReason" /&gt; &lt;/complexType&gt;  &lt;element name="ClassA" type="ClassA_Type"/&gt; </pre>
19139 comments	
XMI	<pre> &lt;xsd:element name="ClassA" type="ClassA"/&gt; &lt;xsd:complexType name="ClassA"&gt;   &lt;xsd:choice minOccurs="0" maxOccurs="unbounded"&gt;     &lt;xsd:element name="attribA" type="xsd:string" minOccurs="0" maxOccurs="unbounded"/&gt;     &lt;xsd:element ref="xmi:Extension"/&gt;   &lt;/xsd:choice&gt;   &lt;xsd:attribute ref="xmi:id"/&gt;   &lt;xsd:attributeGroup ref="xmi:ObjectAttribs"/&gt;   &lt;xsd:attribute name="attribA" type="xsd:string" use="optional"/&gt; &lt;/xsd:complexType&gt; </pre>
XMI comments	

### uml: unordered multivalued attribute (#43)

UML	 <pre> classDiagram     class ClassA {         attributeA[0..* unordered]     } </pre>
Source specification	uml
Comments	It's unclear, how to read the no ordering of the attribute values from the XML schema (According to XML, there is an ordering).
ISO 19136	<pre> &lt;complexType name="ClassAType"&gt;   &lt;complexContent&gt;     &lt;extension base="gml:AbstractGMLType"&gt;       &lt;sequence&gt;         &lt;element name="attributeA" type="xsd:string" minOccurs="0" maxOccurs="unbounded"/&gt;       &lt;/sequence&gt;     &lt;/extension&gt;   &lt;/complexContent&gt; &lt;/complexType&gt;  &lt;complexType name="ClassAPropertyType"&gt;   &lt;sequence minOccurs="0"&gt;     &lt;element ref="ClassA"/&gt;   &lt;/sequence&gt;   &lt;attributeGroup ref="gml:AssociationAttributeGroup"/&gt;   &lt;attributeGroup ref="gml:OwnershipAttributeGroup" /&gt; &lt;/complexType&gt; </pre>

	<code>&lt;element name="ClassA" type="ClassAType" substitutionGroup="gml:AbstractGML"/&gt;</code>
19136 comments	
ISO 19139	<pre> &lt;complexType name="ClassA_Type"&gt;   &lt;complexContent&gt;     &lt;extension base="gco:AbstractObject_Type"&gt;       &lt;sequence&gt;         &lt;element name="attributeA" type="xsd:string" minOccurs="0" maxOccurs="unbounded"/&gt;       &lt;/sequence&gt;     &lt;/extension&gt;   &lt;/complexContent&gt; &lt;/complexType&gt;  &lt;complexType name="ClassA_PropertyType"&gt;   &lt;sequence minOccurs="0"&gt;     &lt;element ref="ClassA"/&gt;   &lt;/sequence&gt;   &lt;attributeGroup ref="gco:ObjectReference"/&gt;   &lt;attribute ref="gco:nilReason" /&gt; &lt;/complexType&gt;  &lt;element name="ClassA" type="ClassA_Type"/&gt; </pre>
19139 comments	
XMI	<pre> &lt;xsd:element name="ClassA" type="ClassA"/&gt; &lt;xsd:complexType name="ClassA"&gt;   &lt;xsd:choice minOccurs="0" maxOccurs="unbounded"&gt;     &lt;xsd:element name="attribA" type="xsd:string" minOccurs="0" maxOccurs="unbounded"/&gt;     &lt;xsd:element ref="xmi:Extension"/&gt;   &lt;/xsd:choice&gt;   &lt;xsd:attribute ref="xmi:id"/&gt;   &lt;xsd:attributeGroup ref="xmi:ObjectAttribs"/&gt; &lt;/xsd:complexType&gt; </pre>
XMI comments	if multiplicity>1 only encoded as element

### uml: ordered multivalue attribute (#44)

UML	 <pre> classDiagram     class ClassA {         attributeA[0..* ordered]     } </pre>
Source specification	uml
Comments	It's unclear, if the generated XML schema, implies ordering of the attribute values (According to XML, there is an ordering).
ISO 19136	<pre> &lt;complexType name="ClassAType"&gt;   &lt;complexContent&gt;     &lt;extension base="gml:AbstractGMLType"&gt;       &lt;sequence&gt;         &lt;element name="attributeA" type="xsd:string" </pre>

	<pre> minOccurs="0" maxOccurs="unbounded"/&gt;   &lt;/sequence&gt; &lt;/extension&gt; &lt;/complexContent&gt; &lt;/complexType&gt;  &lt;complexType name="ClassAPropertyType"&gt;   &lt;sequence minOccurs="0"&gt;     &lt;element ref="ClassA"/&gt;   &lt;/sequence&gt;   &lt;attributeGroup ref="gml:AssociationAttributeGroup"/&gt;   &lt;attributeGroup ref="gml:OwnershipAttributeGroup" /&gt; &lt;/complexType&gt;  &lt;element name="ClassA" type="ClassAType" substitutionGroup="gml:AbstractGML"/&gt; </pre>
19136 comments	
ISO 19139	<pre> &lt;complexType name="ClassA_Type"&gt;   &lt;complexContent&gt;     &lt;extension base="gco:AbstractObject_Type"&gt;       &lt;sequence&gt;         &lt;element name="attributeA" type="xsd:string" minOccurs="0" maxOccurs="unbounded"/&gt;       &lt;/sequence&gt;     &lt;/extension&gt;   &lt;/complexContent&gt; &lt;/complexType&gt;  &lt;complexType name="ClassA_PropertyType"&gt;   &lt;sequence minOccurs="0"&gt;     &lt;element ref="ClassA"/&gt;   &lt;/sequence&gt;   &lt;attributeGroup ref="gco:ObjectReference"/&gt;   &lt;attribute ref="gco:nilReason" /&gt; &lt;/complexType&gt;  &lt;element name="ClassA" type="ClassA_Type"/&gt; </pre>
19139 comments	
XMI	<pre> &lt;xsd:element name="ClassA" type="ClassA"/&gt; &lt;xsd:complexType name="ClassA"&gt;   &lt;xsd:choice minOccurs="0" maxOccurs="unbounded"&gt;     &lt;xsd:element name="attribA" type="xsd:string" minOccurs="0" maxOccurs="unbounded"/&gt;     &lt;xsd:element ref="xmi:Extension"/&gt;   &lt;/xsd:choice&gt;   &lt;xsd:attribute ref="xmi:id"/&gt;   &lt;xsd:attributeGroup ref="xmi:ObjectAttribs"/&gt; &lt;/xsd:complexType&gt; </pre>
XMI comments	if multiplicity>1 only encoded as element

### uml: attribute {documentation} (#45)

UML	<pre> classDiagram     class ClassA {         attributeA[0..*] {documentation="This attr ..."}     }         </pre>
Source specification	uml
Comments	
ISO 19136	<pre> &lt;complexType name="ClassAType"&gt;   &lt;complexContent&gt;     &lt;extension base="gml:AbstractGMLType"&gt;       &lt;sequence&gt;         &lt;element name="attributeA" type="xsd:string" minOccurs="0" maxOccurs="unbounded"&gt;           &lt;annotation&gt;             &lt;documentation&gt;This attr ...&lt;/documentation&gt;           &lt;/annotation&gt;         &lt;/element&gt;       &lt;/sequence&gt;     &lt;/extension&gt;   &lt;/complexContent&gt; &lt;/complexType&gt;  &lt;complexType name="ClassAPropertyType"&gt;   &lt;sequence minOccurs="0"&gt;     &lt;element ref="ClassA"/&gt;   &lt;/sequence&gt;   &lt;attributeGroup ref="gml:AssociationAttributeGroup"/&gt;   &lt;attributeGroup ref="gml:OwnershipAttributeGroup" /&gt; &lt;/complexType&gt;  &lt;element name="ClassA" type="ClassAType" substitutionGroup="gml:AbstractGML"/&gt;         </pre>
19136 comments	
ISO 19139	
19139 comments	same as attribute without documentation
XMI	
XMI comments	same as attribute without documentation

### 19136: attribute {sequenceNumber} (#46)

UML	<pre> classDiagram     class ClassA {         attributeA[1] {sequenceNumber=1}         attributeB[1] {sequenceNumber=3}     }     class ClassB {         classB {sequenceNumber=2}     }     ClassA --&gt; ClassB         </pre>
Source specification	19136

Comments	To support the consistent ordering of the properties from the UML model in the conversion to XML Schema, a tagged value <code>sequenceNumber</code> (value domain: integer) shall be specified for every attribute. The value shall be unique for all attributes and association ends of a class.
ISO 19136	<pre>&lt;complexType name="ClassAType"&gt;   &lt;complexContent&gt;     &lt;extension base="gml:AbstractGMLType"&gt;       &lt;sequence&gt;         &lt;element name="attributeA" type="xsd:string"/&gt;         &lt;element name="classB" type="ClassBPropertyType"/&gt;         &lt;element name="attributeB" type="xsd:string"/&gt;       &lt;/sequence&gt;     &lt;/extension&gt;   &lt;/complexContent&gt; &lt;/complexType&gt;  &lt;complexType name="ClassAPropertyType"&gt;   &lt;sequence minOccurs="0"&gt;     &lt;element ref="ClassA"/&gt;   &lt;/sequence&gt;   &lt;attributeGroup ref="gml:AssociationAttributeGroup"/&gt;   &lt;attributeGroup ref="gml:OwnershipAttributeGroup" /&gt; &lt;/complexType&gt;  &lt;element name="ClassA" type="ClassAType" substitutionGroup="gml:AbstractGML"/&gt;</pre>
19136 comments	<code>sequenceNumber</code> is a mandatory tagged value
ISO 19139	
19139 comments	
XMI	
XMI comments	

### 19136: attribute `{inlineOrByReference}` (#47)

UML	<pre>classDiagram     class ClassA {         attrC : ClassC {inlineOrByReference=inline}     }     class ClassB     ClassA --&gt; ClassB : classB {inlineOrByReference=byReference}</pre>
Source specification	19136
Comments	
ISO 19136	<pre>&lt;complexType name="ClassAType"&gt;   &lt;complexContent&gt;     &lt;extension base="gml:AbstractGMLType"&gt;       &lt;sequence&gt;</pre>



	<pre> &lt;element name="attrC" type="ClassCPropertyByValueType"/&gt;   &lt;element name="classB" type="gml:ReferenceType" minOccurs="0"&gt;     &lt;annotation&gt;       &lt;appinfo&gt;         &lt;gml:targetElement&gt;ClassB&lt;/gml:targetElement&gt;       &lt;/appinfo&gt;     &lt;/annotation&gt;   &lt;/element&gt; &lt;/sequence&gt; &lt;/extension&gt; &lt;/complexContent&gt; &lt;/complexType&gt;  &lt;complexType name="ClassAPropertyType"&gt;   &lt;sequence minOccurs="0"&gt;     &lt;element ref="ClassA"/&gt;   &lt;/sequence&gt;   &lt;attributeGroup ref="gml:AssociationAttributeGroup"/&gt;   &lt;attributeGroup ref="gml:OwnershipAttributeGroup" /&gt; &lt;/complexType&gt;  &lt;element name="ClassA" type="ClassAType" substitutionGroup="gml:AbstractGML"/&gt; </pre>
19136 comments	
ISO 19139	
19139 comments	
XMI	
XMI comments	

### 19136: attribute {isMetadata} (#48)

UML	<pre> classDiagram     class ClassA {         attrC : ClassC {isMetadata=true}     }     class ClassB     ClassA --&gt; ClassB : classB {isMetadata=true} </pre>
Source specification	19136
Comments	
ISO 19136	<pre> &lt;complexType name="ClassAType"&gt;   &lt;complexContent&gt;     &lt;extension base="gml:AbstractGMLType"&gt;       &lt;sequence&gt;         &lt;element name="attrC"&gt;           &lt;complexType&gt; </pre>

	<pre> &lt;complexContent&gt;   &lt;extension base="gml:AbstractMetadataPropertyType"&gt;     &lt;sequence minOccurs="0"&gt;       &lt;element ref="ClassC"/&gt;     &lt;/sequence&gt;   &lt;/extension&gt; &lt;/complexContent&gt; &lt;attributeGroup ref="gml:AssociationAttributeGroup"/&gt; &lt;/complexType&gt; &lt;/element&gt; &lt;element name="classB" type="gml:ReferenceType" minOccurs="0"&gt;   &lt;complexType&gt;     &lt;complexContent&gt;       &lt;extension base="gml:AbstractMetadataPropertyType"&gt;         &lt;sequence minOccurs="0"&gt;           &lt;element ref="ClassB"/&gt;         &lt;/sequence&gt;       &lt;/extension&gt;     &lt;/complexContent&gt;     &lt;attributeGroup ref="gml:AssociationAttributeGroup"/&gt;   &lt;/complexType&gt; &lt;/element&gt; &lt;/sequence&gt; &lt;/extension&gt; &lt;/complexContent&gt; &lt;/complexType&gt;  &lt;complexType name="ClassAPropertyType"&gt;   &lt;sequence minOccurs="0"&gt;     &lt;element ref="ClassA"/&gt;   &lt;/sequence&gt;   &lt;attributeGroup ref="gml:AssociationAttributeGroup"/&gt;   &lt;attributeGroup ref="gml:OwnershipAttributeGroup" /&gt; &lt;/complexType&gt;  &lt;element name="ClassA" type="ClassAType" substitutionGroup="gml:AbstractGML"/&gt; </pre>
19136 comments	
ISO 19139	
19139 comments	
XMI	
XMI comments	

### xmi: attribute {serialize} (#49)

UML	<table border="1"> <thead> <tr> <th>ClassA</th> </tr> </thead> <tbody> <tr> <td>/attribA[0..1] {serialize="true"}</td> </tr> </tbody> </table>	ClassA	/attribA[0..1] {serialize="true"}
ClassA			
/attribA[0..1] {serialize="true"}			
Source specification	xmi		
Comments	If non-derived, then the MOF construct is serialized unless it is derived. 'true' forces the construct to be serialized regardless of whether it is derived; and 'false' suppresses it regardless.		
ISO 19136			
19136 comments			
ISO 19139			
19139 comments			
XMI	<pre>&lt;xsd:element name="ClassA" type="ClassA"/&gt; &lt;xsd:complexType name="ClassA"&gt;   &lt;xsd:choice minOccurs="0" maxOccurs="unbounded"&gt;     &lt;xsd:element name="attribA" type="xsd:string" minOccurs="0" maxOccurs="unbounded"/&gt;     &lt;xsd:element ref="xmi:Extension"/&gt;   &lt;/xsd:choice&gt;   &lt;xsd:attribute ref="xmi:id"/&gt;   &lt;xsd:attributeGroup ref="xmi:ObjectAttribs"/&gt;   &lt;xsd:attribute name="attribA" type="xsd:string" use="optional"/&gt; &lt;/xsd:complexType&gt;</pre>		
XMI comments			

### xmi: attribute {element} (#50)

UML	<table border="1"> <thead> <tr> <th>ClassA</th> </tr> </thead> <tbody> <tr> <td>attribA[1] {element=true}</td> </tr> </tbody> </table>	ClassA	attribA[1] {element=true}
ClassA			
attribA[1] {element=true}			
Source specification	xmi		
Comments	If true, serializes the MOF construct as an XML element.		
ISO 19136			
19136 comments			
ISO 19139			
19139 comments			
XMI	<pre>&lt;xsd:element name="ClassA" type="ClassA"/&gt; &lt;xsd:complexType name="ClassA"&gt;   &lt;xsd:choice minOccurs="0" maxOccurs="unbounded"&gt;     &lt;xsd:element name="attribA" type="xsd:string" minOccurs="0" maxOccurs="unbounded"/&gt;     &lt;xsd:element ref="xmi:Extension"/&gt;   &lt;/xsd:choice&gt;   &lt;xsd:attribute ref="xmi:id"/&gt;   &lt;xsd:attributeGroup ref="xmi:ObjectAttribs"/&gt; &lt;/xsd:complexType&gt;</pre>		

XMI comments	
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### xmi: attribute {attribute} (#51)

UML	<table border="1"> <tr> <th>ClassA</th> </tr> <tr> <td>attribA[1] {attribute="true"}</td> </tr> </table>	ClassA	attribA[1] {attribute="true"}
ClassA			
attribA[1] {attribute="true"}			
Source specification	xmi		
Comments	If true, serializes the MOF construct as an XML attribute.		
ISO 19136			
19136 comments			
ISO 19139			
19139 comments			
XMI	<pre>&lt;xsd:element name="ClassA" type="ClassA"/&gt; &lt;xsd:complexType name="ClassA"&gt;   &lt;xsd:choice minOccurs="0" maxOccurs="unbounded"&gt;     &lt;xsd:element ref="xmi:Extension"/&gt;   &lt;/xsd:choice&gt;   &lt;xsd:attribute ref="xmi:id"/&gt;   &lt;xsd:attributeGroup ref="xmi:ObjectAttribs"/&gt;   &lt;xsd:attribute name="attribA" type="xsd:string" use="optional"/&gt; &lt;/xsd:complexType&gt;</pre>		
XMI comments			

### xmi: attribute {enforceMaximumMultiplicity} (#52)

UML	<table border="1"> <tr> <th>ClassA</th> </tr> <tr> <td>attribA[1..4] {enforceMaximumMultiplicity=true}</td> </tr> </table>	ClassA	attribA[1..4] {enforceMaximumMultiplicity=true}
ClassA			
attribA[1..4] {enforceMaximumMultiplicity=true}			
Source specification	xmi		
Comments	If true, enforce maximum multiplicities; otherwise, they are "unbounded".		
ISO 19136			
19136 comments			
ISO 19139			
19139 comments			
XMI	<pre>&lt;xsd:element name="ClassA" type="ClassA"/&gt; &lt;xsd:complexType name="ClassA"&gt;   &lt;xsd:choice minOccurs="0" maxOccurs="unbounded"&gt;     &lt;xsd:element name="attribA" type="xsd:string" minOccurs="0" maxOccurs="4"/&gt;     &lt;xsd:element ref="xmi:Extension"/&gt;   &lt;/xsd:choice&gt;   &lt;xsd:attribute ref="xmi:id"/&gt;   &lt;xsd:attributeGroup ref="xmi:ObjectAttribs"/&gt; &lt;/xsd:complexType&gt;</pre>		
XMI comments			

### xmi: attribute {enforceMinimumMultiplicity} (#53)

UML	<table border="1"> <tr> <th>ClassA</th> </tr> <tr> <td>attribA[1..4] {enforceMinimumMultiplicity=true}</td> </tr> </table>	ClassA	attribA[1..4] {enforceMinimumMultiplicity=true}
ClassA			
attribA[1..4] {enforceMinimumMultiplicity=true}			
Source specification	xmi		
Comments	If true, enforce minimum multiplicities; otherwise, they are "0".		
ISO 19136			
19136 comments			
ISO 19139			
19139 comments			
XMI	<pre>&lt;xsd:element name="ClassA" type="ClassA"/&gt; &lt;xsd:complexType name="ClassA"&gt;   &lt;xsd:choice minOccurs="0" maxOccurs="unbounded"&gt;     &lt;xsd:element name="attribA" type="xsd:string" minOccurs="1" maxOccurs="unbounded"/&gt;     &lt;xsd:element ref="xmi:Extension"/&gt;   &lt;/xsd:choice&gt;   &lt;xsd:attribute ref="xmi:id"/&gt;   &lt;xsd:attributeGroup ref="xmi:ObjectAttribs"/&gt; &lt;/xsd:complexType&gt;</pre>		
XMI comments			

### xmi: attribute {form} (#54)

UML	<table border="1"> <tr> <th>ClassA</th> </tr> <tr> <td>attribA[1] {form=qualified}</td> </tr> </table>	ClassA	attribA[1] {form=qualified}
ClassA			
attribA[1] {form=qualified}			
Source specification	xmi		
Comments	Specifies the value of the form attribute for attributes. Other valid values are qualified and unqualified.		
ISO 19136			
19136 comments			
ISO 19139			
19139 comments			
XMI	<pre>&lt;xsd:element name="ClassA" type="ClassA"/&gt; &lt;xsd:complexType name="ClassA"&gt;   &lt;xsd:choice minOccurs="0" maxOccurs="unbounded"&gt;     &lt;xsd:element name="attribA" type="xsd:string" minOccurs="0" maxOccurs="unbounded"/&gt;     &lt;xsd:element ref="xmi:Extension"/&gt;   &lt;/xsd:choice&gt;   &lt;xsd:attribute ref="xmi:id"/&gt;   &lt;xsd:attributeGroup ref="xmi:ObjectAttribs"/&gt;   &lt;xsd:attribute name="attribA" type="xsd:string" use="optional" form="qualified"/&gt; &lt;/xsd:complexType&gt;</pre>		
XMI comments			

### xmi: attribute {includeNils} (#55)

UML	<table border="1"> <tr> <th>ClassA</th> </tr> <tr> <td>attribA[1] {includeNils=true}</td> </tr> </table>	ClassA	attribA[1] {includeNils=true}
ClassA			
attribA[1] {includeNils=true}			
Source specification	xmi		
Comments	If false, do not serialize nil values.		
ISO 19136			
19136 comments			
ISO 19139			
19139 comments			
XMI	<pre>&lt;xsd:element name="ClassA" type="ClassA"/&gt; &lt;xsd:complexType name="ClassA"&gt;   &lt;xsd:choice minOccurs="0" maxOccurs="unbounded"&gt;     &lt;xsd:element name="attribA" type="xsd:string" minOccurs="0" maxOccurs="unbounded" nillable="true"/&gt;     &lt;xsd:element ref="xmi:Extension"/&gt;   &lt;/xsd:choice&gt;   &lt;xsd:attribute ref="xmi:id"/&gt;   &lt;xsd:attributeGroup ref="xmi:ObjectAttribs"/&gt;   &lt;xsd:attribute name="attribA" type="xsd:string" use="optional"/&gt; &lt;/xsd:complexType&gt;</pre>		
XMI comments			

### xmi: attribute {schemaType} (#56)

UML	<table border="1"> <tr> <th>ClassA</th> </tr> <tr> <td>attribA[1] {schemaType=xsd:gYear}</td> </tr> </table>	ClassA	attribA[1] {schemaType=xsd:gYear}
ClassA			
attribA[1] {schemaType=xsd:gYear}			
Source specification	xmi		
Comments	The name of a datatype defined in the XML Schema Datatype specification.		
ISO 19136			
19136 comments			
ISO 19139			
19139 comments			
XMI	<pre>&lt;xsd:element name="ClassA" type="ClassA"/&gt; &lt;xsd:complexType name="ClassA"&gt;   &lt;xsd:choice minOccurs="0" maxOccurs="unbounded"&gt;     &lt;xsd:element name="attribA" type="xsd:gYear" minOccurs="0" maxOccurs="unbounded"/&gt;     &lt;xsd:element ref="xmi:Extension"/&gt;   &lt;/xsd:choice&gt;   &lt;xsd:attribute ref="xmi:id"/&gt;   &lt;xsd:attributeGroup ref="xmi:ObjectAttribs"/&gt;   &lt;xsd:attribute name="attribA" type="xsd:gYear" use="optional"/&gt; &lt;/xsd:complexType&gt;</pre>		

	</xsd:complexType>
XMI comments	

### xmi: attribute {defaultValue} (#57)

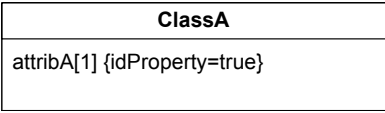
UML	<table border="1"> <thead> <tr> <th>ClassA</th> </tr> </thead> <tbody> <tr> <td>attribA[1] {defaultValue="123"}</td> </tr> </tbody> </table>	ClassA	attribA[1] {defaultValue="123"}
ClassA			
attribA[1] {defaultValue="123"}			
Source specification	xmi		
Comments	Specifies the default value for attributes.		
ISO 19136			
19136 comments			
ISO 19139			
19139 comments			
XMI	<pre>&lt;xsd:element name="ClassA" type="ClassA"/&gt; &lt;xsd:complexType name="ClassA"&gt;   &lt;xsd:choice minOccurs="0" maxOccurs="unbounded"&gt;     &lt;xsd:element name="attribA" type="xsd:string" minOccurs="0" maxOccurs="unbounded"/&gt;     &lt;xsd:element ref="xmi:Extension"/&gt;   &lt;/xsd:choice&gt;   &lt;xsd:attribute ref="xmi:id"/&gt;   &lt;xsd:attributeGroup ref="xmi:ObjectAttribs"/&gt;   &lt;xsd:attribute name="attribA" type="xsd:string" use="optional" default="123"/&gt; &lt;/xsd:complexType&gt;</pre>		
XMI comments			

### xmi: attribute {fixedValue} (#58)

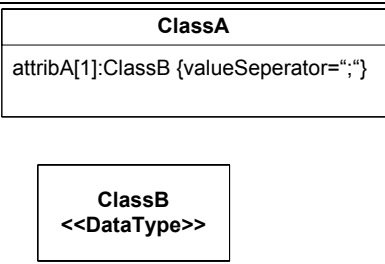
UML	<table border="1"> <thead> <tr> <th>ClassA</th> </tr> </thead> <tbody> <tr> <td>attribA[1] {fixedValue="123"}</td> </tr> </tbody> </table>	ClassA	attribA[1] {fixedValue="123"}
ClassA			
attribA[1] {fixedValue="123"}			
Source specification	xmi		
Comments	Specifies the fixed value for attributes.		
ISO 19136			
19136 comments			
ISO 19139			
19139 comments			
XMI	<pre>&lt;xsd:element name="ClassA" type="ClassA"/&gt; &lt;xsd:complexType name="ClassA"&gt;   &lt;xsd:choice minOccurs="0" maxOccurs="unbounded"&gt;     &lt;xsd:element name="attribA" type="xsd:string" minOccurs="0" maxOccurs="unbounded"/&gt;     &lt;xsd:element ref="xmi:Extension"/&gt;   &lt;/xsd:choice&gt;   &lt;xsd:attribute ref="xmi:id"/&gt;   &lt;xsd:attributeGroup ref="xmi:ObjectAttribs"/&gt;</pre>		

	<pre>&lt;xsd:attribute name="attribA" type="xsd:string" use="optional" fixed="123"/&gt; &lt;/xsd:complexType&gt;</pre>
XMI comments	

### xmi: attribute {idProperty} (#59)

UML	 <pre> classDiagram     class ClassA {         attribA[1] {idProperty=true}     } </pre>
Source specification	xmi
Comments	If true, use this property as the id for the object instead of the default XMI id.
ISO 19136	
19136 comments	
ISO 19139	
19139 comments	
XMI	<pre>&lt;xsd:element name="ClassA" type="ClassA"/&gt; &lt;xsd:complexType name="ClassA"&gt;   &lt;xsd:choice minOccurs="0" maxOccurs="unbounded"&gt;     &lt;xsd:element name="attribA" type="xsd:string" minOccurs="0" maxOccurs="unbounded"/&gt;     &lt;xsd:element ref="xmi:Extension"/&gt;   &lt;/xsd:choice&gt;   &lt;xsd:attributeGroup ref="xmi:ObjectAttribs"/&gt; &lt;/xsd:complexType&gt;</pre>
XMI comments	Not recognizable in the xsd!

### xmi: attribute {valueSeperator} (#60)


UML	 <pre> classDiagram     class ClassA {         attribA[1]:ClassB {valueSeperator=','}     }     class ClassB {         &lt;&lt;DataType&gt;&gt;     } </pre>
Source specification	xmi
Comments	The value of a structured datatype (i.e. a datatype that has properties) is represented as the values of the properties separated (by default) by a comma. This tag allows the specification of a different separator.
ISO 19136	
19136 comments	
ISO 19139	
19139 comments	
XMI	<pre>&lt;xsd:element name="ClassA" type="ClassA"/&gt; &lt;xsd:complexType name="ClassA"&gt;</pre>



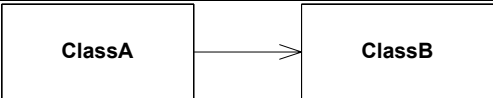
	<pre>&lt;xsd:choice minOccurs="0" maxOccurs="unbounded"&gt;   &lt;xsd:element name="attribA" type="xsd:string" minOccurs="0" maxOccurs="unbounded"/&gt;   &lt;xsd:element ref="xmi:Extension"/&gt; &lt;/xsd:choice&gt; &lt;xsd:attributeGroup ref="xmi:ObjectAttribs"/&gt; &lt;/xsd:complexType&gt;</pre>
XMI comments	Only affects instance. Not recognizable from the schema.

## Association

### uml: un navigable association end (#61)

UML	
Source specification	uml
Comments	
ISO 19136	
19136 comments	association ignored, because un-navigable
ISO 19139	
19139 comments	association ignored, because un-navigable
XMI	<pre>&lt;xsd:element name="ClassA" type="ClassA"/&gt; &lt;xsd:complexType name="ClassA"&gt;   &lt;xsd:choice minOccurs="0" maxOccurs="unbounded"&gt;     &lt;xsd:element name="classB" type="xmi:Any" minOccurs="0" maxOccurs="unbounded"/&gt;     &lt;xsd:element ref="xmi:Extension"/&gt;   &lt;/xsd:choice&gt;   &lt;xsd:attribute ref="xmi:id"/&gt;   &lt;xsd:attributeGroup ref="xmi:ObjectAttribs"/&gt; &lt;/xsd:complexType&gt;  &lt;xsd:element name="ClassB" type="ClassB"/&gt; &lt;xsd:complexType name="ClassB"&gt;   &lt;xsd:choice minOccurs="0" maxOccurs="unbounded"&gt;     &lt;xsd:element name="classA" type="xmi:Any" minOccurs="0" maxOccurs="unbounded"/&gt;     &lt;xsd:element ref="xmi:Extension"/&gt;   &lt;/xsd:choice&gt;   &lt;xsd:attribute ref="xmi:id"/&gt;   &lt;xsd:attributeGroup ref="xmi:ObjectAttribs"/&gt; &lt;/xsd:complexType&gt;</pre>
XMI comments	encoding rules ignore navigability.

### uml: navigable association end (#62)

UML	
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Source specification	uml
Comments	
ISO 19136	<pre> &lt;complexType name="ClassAType"&gt;   &lt;complexContent&gt;     &lt;extension base="gml:AbstractGMLType"&gt;       &lt;sequence&gt;         &lt;element name="classB" type="ClassBPropertyType" minOccurs="0" maxOccurs="unbounded"/&gt;       &lt;/sequence&gt;     &lt;/extension&gt;   &lt;/complexContent&gt; &lt;/complexType&gt;  &lt;complexType name="ClassAPropertyType"&gt;   &lt;sequence minOccurs="0"&gt;     &lt;element ref="ClassA"/&gt;   &lt;/sequence&gt;   &lt;attributeGroup ref="gml:AssociationAttributeGroup"/&gt;   &lt;attributeGroup ref="gml:OwnershipAttributeGroup" /&gt; &lt;/complexType&gt;  &lt;element name="ClassA" type="ClassAType" substitutionGroup="gml:AbstractGML"/&gt;  &lt;complexType name="ClassBType"&gt;   &lt;complexContent&gt;     &lt;extension base="gml:AbstractGMLType"&gt;     &lt;/extension&gt;   &lt;/complexContent&gt; &lt;/complexType&gt;  &lt;complexType name="ClassBPropertyType"&gt;   &lt;sequence minOccurs="0"&gt;     &lt;element ref="ClassB"/&gt;   &lt;/sequence&gt;   &lt;attributeGroup ref="gml:AssociationAttributeGroup"/&gt;   &lt;attributeGroup ref="gml:OwnershipAttributeGroup" /&gt; &lt;/complexType&gt;  &lt;element name="ClassB" type="ClassBType" substitutionGroup="gml:AbstractGML"/&gt; </pre>
19136 comments	An association end with no name shall be ignored, even if it marked as navigable. If a name is provided, it shall be a "NCName" as defined by W3C XML Namespaces:1999.
ISO 19139	<pre> &lt;complexType name="ClassA_Type"&gt;   &lt;complexContent&gt;     &lt;extension base="gco:AbstractObject_Type"&gt;       &lt;sequence&gt; </pre>

	<pre>         &lt;element name="classB" type="ClassB_PropertyType" minOccurs="0" maxOccurs="unbounded"/&gt;       &lt;/sequence&gt;     &lt;/extension&gt;   &lt;/complexContent&gt; &lt;/complexType&gt;  &lt;complexType name="ClassA_PropertyType"&gt;   &lt;sequence minOccurs="0"&gt;     &lt;element ref="ClassA"/&gt;   &lt;/sequence&gt;   &lt;attributeGroup ref="gco:ObjectReference"/&gt;   &lt;attribute ref="gco:nilReason" /&gt; &lt;/complexType&gt;  &lt;element name="ClassA" type="ClassA_Type"/&gt;  &lt;complexType name="ClassB_Type"&gt;   &lt;complexContent&gt;     &lt;extension base="gco:AbstractObject_Type"&gt;       &lt;sequence&gt;         &lt;/sequence&gt;       &lt;/extension&gt;     &lt;/complexContent&gt;   &lt;/complexType&gt;  &lt;complexType name="ClassB_PropertyType"&gt;   &lt;sequence minOccurs="0"&gt;     &lt;element ref="ClassB"/&gt;   &lt;/sequence&gt;   &lt;attributeGroup ref="gco:ObjectReference"/&gt;   &lt;attribute ref="gco:nilReason" /&gt; &lt;/complexType&gt;  &lt;element name="ClassB" type="ClassB_Type"/&gt; </pre>
19139 comments	
XMI	<pre> &lt;xsd:element name="ClassA" type="ClassA"/&gt; &lt;xsd:complexType name="ClassA"&gt;   &lt;xsd:choice minOccurs="0" maxOccurs="unbounded"&gt;     &lt;xsd:element name="classB" type="xmi:Any" minOccurs="0" maxOccurs="unbounded"/&gt;     &lt;xsd:element ref="xmi:Extension"/&gt;   &lt;/xsd:choice&gt;   &lt;xsd:attribute ref="xmi:id"/&gt;   &lt;xsd:attributeGroup ref="xmi:ObjectAttribs"/&gt; &lt;/xsd:complexType&gt;  &lt;xsd:element name="ClassB" type="ClassB"/&gt; &lt;xsd:complexType name="ClassB"&gt;   &lt;xsd:choice minOccurs="0" maxOccurs="unbounded"&gt; </pre>

	<pre> &lt;xsd:element name="classA" type="xmi:Any" minOccurs="0" maxOccurs="unbounded"/&gt; &lt;xsd:element ref="xmi:Extension"/&gt; &lt;/xsd:choice&gt; &lt;xsd:attribute ref="xmi:id"/&gt; &lt;xsd:attributeGroup ref="xmi:ObjectAttribs"/&gt; &lt;/xsd:complexType&gt; </pre>
XML comments	

### uml: navigable association end (bodth ends) (#63)

UML	<pre> classDiagram     class ClassA     class ClassB     ClassA &lt;--&gt; ClassB </pre>
Source specification	uml
Comments	
ISO 19136	<pre> &lt;complexType name="ClassAType"&gt;   &lt;complexContent&gt;     &lt;extension base="gml:AbstractGMLType"&gt;       &lt;sequence&gt;         &lt;element name="classB" type="ClassBPropertyType" minOccurs="0" maxOccurs="unbounded"&gt;           &lt;annotation&gt;             &lt;appinfo&gt;               &lt;gml:reversePropertyName&gt;classA&lt;/gml:reversePropertyName&gt;             &lt;/appinfo&gt;           &lt;/annotation&gt;         &lt;/element&gt;       &lt;/sequence&gt;     &lt;/extension&gt;   &lt;/complexContent&gt; &lt;/complexType&gt;  &lt;complexType name="ClassAPropertyType"&gt;   &lt;sequence minOccurs="0"&gt;     &lt;element ref="ClassA"/&gt;   &lt;/sequence&gt;   &lt;attributeGroup ref="gml:AssociationAttributeGroup"/&gt;   &lt;attributeGroup ref="gml:OwnershipAttributeGroup" /&gt; &lt;/complexType&gt;  &lt;element name="ClassA" type="ClassAType" substitutionGroup="gml:AbstractGML"/&gt;  &lt;complexType name="ClassBType"&gt;   &lt;complexContent&gt;     &lt;extension base="gml:AbstractGMLType"&gt;       &lt;sequence&gt;         &lt;element name="classA" type="ClassAPropertyType" </pre>

	<pre> minOccurs="0" maxOccurs="unbounded"&gt;   &lt;annotation&gt;     &lt;appinfo&gt;  &lt;gml:reversePropertyName&gt;classB&lt;/gml:reversePropertyName&gt;   &lt;/appinfo&gt;   &lt;/annotation&gt; &lt;/element&gt; &lt;/sequence&gt; &lt;/extension&gt; &lt;/complexContent&gt; &lt;/complexType&gt;  &lt;complexType name="ClassBPropertyType"&gt;   &lt;sequence minOccurs="0"&gt;     &lt;element ref="ClassB"/&gt;   &lt;/sequence&gt;   &lt;attributeGroup ref="gml:AssociationAttributeGroup"/&gt;   &lt;attributeGroup ref="gml:OwnershipAttributeGroup" /&gt; &lt;/complexType&gt;  &lt;element name="ClassB" type="ClassBType" substitutionGroup="gml:AbstractGML"/&gt; </pre>
19136 comments	
ISO 19139	<pre> &lt;complexType name="ClassA_Type"&gt;   &lt;complexContent&gt;     &lt;extension base="gco:AbstractObject_Type"&gt;       &lt;sequence&gt;         &lt;element name="classB" type="ClassB_PropertyType" minOccurs="0" maxOccurs="unbounded"/&gt;       &lt;/sequence&gt;     &lt;/extension&gt;   &lt;/complexContent&gt; &lt;/complexType&gt;  &lt;complexType name="ClassA_PropertyType"&gt;   &lt;sequence minOccurs="0"&gt;     &lt;element ref="ClassA"/&gt;   &lt;/sequence&gt;   &lt;attributeGroup ref="gco:ObjectReference"/&gt;   &lt;attribute ref="gco:nilReason" /&gt; &lt;/complexType&gt;  &lt;element name="ClassA" type="ClassA_Type"/&gt;  &lt;complexType name="ClassB_Type"&gt;   &lt;complexContent&gt;     &lt;extension base="gco:AbstractObject_Type"&gt;       &lt;sequence&gt;         &lt;element name="classA" type="ClassA_PropertyType" </pre>

	<pre> minOccurs="0" maxOccurs="unbounded"/&gt;   &lt;/sequence&gt; &lt;/extension&gt; &lt;/complexContent&gt; &lt;/complexType&gt;  &lt;complexType name="ClassB_PropertyType"&gt;   &lt;sequence minOccurs="0"&gt;     &lt;element ref="ClassB"/&gt;   &lt;/sequence&gt;   &lt;attributeGroup ref="gco:ObjectReference"/&gt;   &lt;attribute ref="gco:nilReason" /&gt; &lt;/complexType&gt;  &lt;element name="ClassB" type="ClassB_Type"/&gt; </pre>
19139 comments	
XMI	<pre> &lt;xsd:element name="ClassA" type="ClassA"/&gt; &lt;xsd:complexType name="ClassA"&gt;   &lt;xsd:choice minOccurs="0" maxOccurs="unbounded"&gt;     &lt;xsd:element name="classB" type="xmi:Any" minOccurs="0" maxOccurs="unbounded"/&gt;     &lt;xsd:element ref="xmi:Extension"/&gt;   &lt;/xsd:choice&gt;   &lt;xsd:attribute ref="xmi:id"/&gt;   &lt;xsd:attributeGroup ref="xmi:ObjectAttribs"/&gt; &lt;/xsd:complexType&gt;  &lt;xsd:element name="ClassB" type="ClassB"/&gt; &lt;xsd:complexType name="ClassB"&gt;   &lt;xsd:choice minOccurs="0" maxOccurs="unbounded"&gt;     &lt;xsd:element name="classA" type="xmi:Any" minOccurs="0" maxOccurs="unbounded"/&gt;     &lt;xsd:element ref="xmi:Extension"/&gt;   &lt;/xsd:choice&gt;   &lt;xsd:attribute ref="xmi:id"/&gt;   &lt;xsd:attributeGroup ref="xmi:ObjectAttribs"/&gt; &lt;/xsd:complexType&gt; </pre>
XML comments	

### uml: association end {documentation} (#64)

UML	<pre> {documentation="This assoc ..."} </pre>
Source specification	uml
Comments	
ISO 19136	<pre> &lt;complexType name="ClassAType"&gt;   &lt;complexContent&gt; </pre>

	<pre> &lt;extension base="gml:AbstractGMLType"&gt;   &lt;sequence&gt;     &lt;element name="classB" type="ClassBPropertyType" minOccurs="0" maxOccurs="unbounded"&gt;       &lt;annotation&gt;         &lt;documentation&gt;This assoc ...&lt;/documentation&gt;       &lt;/annotation&gt;     &lt;/element&gt;   &lt;/sequence&gt; &lt;/extension&gt; &lt;/complexContent&gt; &lt;/complexType&gt;  &lt;complexType name="ClassAPropertyType"&gt;   &lt;sequence minOccurs="0"&gt;     &lt;element ref="ClassA"/&gt;   &lt;/sequence&gt;   &lt;attributeGroup ref="gml:AssociationAttributeGroup"/&gt;   &lt;attributeGroup ref="gml:OwnershipAttributeGroup" /&gt; &lt;/complexType&gt;  &lt;element name="ClassA" type="ClassAType" substitutionGroup="gml:AbstractGML"/&gt;  &lt;complexType name="ClassBType"&gt;   &lt;complexContent&gt;     &lt;extension base="gml:AbstractGMLType"&gt;     &lt;/extension&gt;   &lt;/complexContent&gt; &lt;/complexType&gt;  &lt;complexType name="ClassBPropertyType"&gt;   &lt;sequence minOccurs="0"&gt;     &lt;element ref="ClassB"/&gt;   &lt;/sequence&gt;   &lt;attributeGroup ref="gml:AssociationAttributeGroup"/&gt;   &lt;attributeGroup ref="gml:OwnershipAttributeGroup" /&gt; &lt;/complexType&gt;  &lt;element name="ClassB" type="ClassBType" substitutionGroup="gml:AbstractGML"/&gt; </pre>
19136 comments	
ISO 19139	
19139 comments	same as association end without documentation
XMI	
XMI comments	same as association end without documentation

## uml: 1:1 association (#65)

UML	
Source specification	uml
Comments	
ISO 19136	<pre> &lt;complexType name="ClassAType"&gt;   &lt;complexContent&gt;     &lt;extension base="gml:AbstractGMLType"&gt;       &lt;sequence&gt;         &lt;element name="classB" type="ClassBPropertyType"/&gt;       &lt;/sequence&gt;     &lt;/extension&gt;   &lt;/complexContent&gt; &lt;/complexType&gt;  &lt;complexType name="ClassAPropertyType"&gt;   &lt;sequence minOccurs="0"&gt;     &lt;element ref="ClassA"/&gt;   &lt;/sequence&gt;   &lt;attributeGroup ref="gml:AssociationAttributeGroup"/&gt;   &lt;attributeGroup ref="gml:OwnershipAttributeGroup" /&gt; &lt;/complexType&gt;  &lt;element name="ClassA" type="ClassAType" substitutionGroup="gml:AbstractGML"/&gt;  &lt;complexType name="ClassBType"&gt;   &lt;complexContent&gt;     &lt;extension base="gml:AbstractGMLType"&gt;       &lt;/extension&gt;     &lt;/complexContent&gt;   &lt;/complexType&gt;  &lt;complexType name="ClassBPropertyType"&gt;   &lt;sequence minOccurs="0"&gt;     &lt;element ref="ClassB"/&gt;   &lt;/sequence&gt;   &lt;attributeGroup ref="gml:AssociationAttributeGroup"/&gt;   &lt;attributeGroup ref="gml:OwnershipAttributeGroup" /&gt; &lt;/complexType&gt;  &lt;element name="ClassB" type="ClassBType" substitutionGroup="gml:AbstractGML"/&gt; </pre>
19136 comments	
ISO 19139	<pre> &lt;complexType name="ClassA_Type"&gt;   &lt;complexContent&gt;     &lt;extension base="gco:AbstractObject_Type"&gt; </pre>



	<pre> &lt;sequence&gt;   &lt;element name="classB" type="ClassB_PropertyType"/&gt; &lt;/sequence&gt; &lt;/extension&gt; &lt;/complexContent&gt; &lt;/complexType&gt;  &lt;complexType name="ClassA_PropertyType"&gt;   &lt;sequence minOccurs="0"&gt;     &lt;element ref="ClassA"/&gt;   &lt;/sequence&gt;   &lt;attributeGroup ref="gco:ObjectReference"/&gt;   &lt;attribute ref="gco:NilReason" /&gt; &lt;/complexType&gt;  &lt;element name="ClassA" type="ClassA_Type"/&gt;  &lt;complexType name="ClassB_Type"&gt;   &lt;complexContent&gt;     &lt;extension base="gco:AbstractObject_Type"&gt;       &lt;sequence&gt;         &lt;/sequence&gt;     &lt;/extension&gt;   &lt;/complexContent&gt; &lt;/complexType&gt;  &lt;complexType name="ClassB_PropertyType"&gt;   &lt;sequence minOccurs="0"&gt;     &lt;element ref="ClassB"/&gt;   &lt;/sequence&gt;   &lt;attributeGroup ref="gco:ObjectReference"/&gt;   &lt;attribute ref="gco:NilReason" /&gt; &lt;/complexType&gt;  &lt;element name="ClassB" type="ClassB_Type"/&gt; </pre>
19139 comments	
XMI	<pre> &lt;xsd:element name="ClassA" type="ClassA"/&gt; &lt;xsd:complexType name="ClassA"&gt;   &lt;xsd:choice minOccurs="0" maxOccurs="unbounded"&gt;     &lt;xsd:element name="classB" type="xmi:Any" minOccurs="0" maxOccurs="unbounded"/&gt;     &lt;xsd:element ref="xmi:Extension"/&gt;   &lt;/xsd:choice&gt;   &lt;xsd:attribute ref="xmi:id"/&gt;   &lt;xsd:attributeGroup ref="xmi:ObjectAttribs"/&gt;   &lt;xsd:attribute name="classB" type="xsd:IDREFS" use="optional"/&gt; &lt;/xsd:complexType&gt;  &lt;xsd:element name="ClassB" type="ClassB"/&gt; </pre>

	<pre> &lt;xsd:complexType name="ClassB"&gt;   &lt;xsd:choice minOccurs="0" maxOccurs="unbounded"&gt;     &lt;xsd:element name="classA" type="xmi:Any" minOccurs="0" maxOccurs="unbounded"/&gt;     &lt;xsd:element ref="xmi:Extension"/&gt;   &lt;/xsd:choice&gt;   &lt;xsd:attribute ref="xmi:id"/&gt;   &lt;xsd:attributeGroup ref="xmi:ObjectAttribs"/&gt;   &lt;xsd:attribute name="classA" type="xsd:IDREFS" use="optional"/&gt; &lt;/xsd:complexType&gt; </pre>
XMI comments	

### uml: 1:n association (#66)

UML	<pre> classDiagram     ClassA "1" -- "0..*" ClassB </pre>
Source specification	uml
Comments	
ISO 19136	<pre> &lt;complexType name="ClassAType"&gt;   &lt;complexContent&gt;     &lt;extension base="gml:AbstractGMLType"&gt;       &lt;sequence&gt;         &lt;element name="classB" type="ClassBPropertyType" minOccurs="0" maxOccurs="unbounded"/&gt;       &lt;/sequence&gt;     &lt;/extension&gt;   &lt;/complexContent&gt; &lt;/complexType&gt;  &lt;complexType name="ClassAPropertyType"&gt;   &lt;sequence minOccurs="0"&gt;     &lt;element ref="ClassA"/&gt;   &lt;/sequence&gt;   &lt;attributeGroup ref="gml:AssociationAttributeGroup"/&gt;   &lt;attributeGroup ref="gml:OwnershipAttributeGroup" /&gt; &lt;/complexType&gt;  &lt;element name="ClassA" type="ClassAType" substitutionGroup="gml:AbstractGML"/&gt;  &lt;complexType name="ClassBType"&gt;   &lt;complexContent&gt;     &lt;extension base="gml:AbstractGMLType"&gt;     &lt;/extension&gt;   &lt;/complexContent&gt; &lt;/complexType&gt;  &lt;complexType name="ClassBPropertyType"&gt; </pre>

	<pre> &lt;sequence minOccurs="0"&gt;   &lt;element ref="ClassB"/&gt; &lt;/sequence&gt; &lt;attributeGroup ref="gml:AssociationAttributeGroup"/&gt; &lt;attributeGroup ref="gml:OwnershipAttributeGroup" /&gt; &lt;/complexType&gt;  &lt;element name="ClassB" type="ClassBType" substitutionGroup="gml:AbstractGML"/&gt; </pre>
19136 comments	
ISO 19139	<pre> &lt;complexType name="ClassA_Type"&gt;   &lt;complexContent&gt;     &lt;extension base="gco:AbstractObject_Type"&gt;       &lt;sequence&gt;         &lt;element name="classB" type="ClassB_PropertyType" minOccurs="0" maxOccurs="unbounded"/&gt;       &lt;/sequence&gt;     &lt;/extension&gt;   &lt;/complexContent&gt; &lt;/complexType&gt;  &lt;complexType name="ClassA_PropertyType"&gt;   &lt;sequence minOccurs="0"&gt;     &lt;element ref="ClassA"/&gt;   &lt;/sequence&gt;   &lt;attributeGroup ref="gco:ObjectReference"/&gt;   &lt;attribute ref="gco:nilReason" /&gt; &lt;/complexType&gt;  &lt;element name="ClassA" type="ClassA_Type"/&gt;  &lt;complexType name="ClassB_Type"&gt;   &lt;complexContent&gt;     &lt;extension base="gco:AbstractObject_Type"&gt;       &lt;sequence&gt;       &lt;/sequence&gt;     &lt;/extension&gt;   &lt;/complexContent&gt; &lt;/complexType&gt;  &lt;complexType name="ClassB_PropertyType"&gt;   &lt;sequence minOccurs="0"&gt;     &lt;element ref="ClassB"/&gt;   &lt;/sequence&gt;   &lt;attributeGroup ref="gco:ObjectReference"/&gt;   &lt;attribute ref="gco:nilReason" /&gt; &lt;/complexType&gt;  &lt;element name="ClassB" type="ClassB_Type"/&gt; </pre>
19139 comments	

XMI	<pre> &lt;xsd:element name="ClassA" type="ClassA"/&gt; &lt;xsd:complexType name="ClassA"&gt;   &lt;xsd:choice minOccurs="0" maxOccurs="unbounded"&gt;     &lt;xsd:element name="classB" type="xmi:Any" minOccurs="0" maxOccurs="unbounded"/&gt;     &lt;xsd:element ref="xmi:Extension"/&gt;   &lt;/xsd:choice&gt;   &lt;xsd:attribute ref="xmi:id"/&gt;   &lt;xsd:attributeGroup ref="xmi:ObjectAttribs"/&gt; &lt;/xsd:complexType&gt;  &lt;xsd:element name="ClassB" type="ClassB"/&gt; &lt;xsd:complexType name="ClassB"&gt;   &lt;xsd:choice minOccurs="0" maxOccurs="unbounded"&gt;     &lt;xsd:element name="classA" type="xmi:Any" minOccurs="0" maxOccurs="unbounded"/&gt;     &lt;xsd:element ref="xmi:Extension"/&gt;   &lt;/xsd:choice&gt;   &lt;xsd:attribute ref="xmi:id"/&gt;   &lt;xsd:attributeGroup ref="xmi:ObjectAttribs"/&gt;   &lt;xsd:attribute name="classA" type="xsd:IDREFS" use="optional"/&gt; &lt;/xsd:complexType&gt; </pre>
XMI comments	

### uml: n:n association (#67)

UML	<pre> classDiagram     class ClassA     class ClassB     ClassA "0..*" --&gt; "0..*" ClassB </pre>
Source specification	uml
Comments	
ISO 19136	<pre> &lt;complexType name="ClassAType"&gt;   &lt;complexContent&gt;     &lt;extension base="gml:AbstractGMLType"&gt;       &lt;sequence&gt;         &lt;element name="classB" type="ClassBPropertyType" minOccurs="0" maxOccurs="unbounded"/&gt;       &lt;/sequence&gt;     &lt;/extension&gt;   &lt;/complexContent&gt; &lt;/complexType&gt;  &lt;complexType name="ClassAPropertyType"&gt;   &lt;sequence minOccurs="0"&gt;     &lt;element ref="ClassA"/&gt;   &lt;/sequence&gt;   &lt;attributeGroup ref="gml:AssociationAttributeGroup"/&gt;   &lt;attributeGroup ref="gml:OwnershipAttributeGroup" /&gt; &lt;/complexType&gt; </pre>

	<pre> &lt;element name="ClassA" type="ClassAType" substitutionGroup="gml:AbstractGML"/&gt;  &lt;complexType name="ClassBType"&gt;   &lt;complexContent&gt;     &lt;extension base="gml:AbstractGMLType"&gt;       &lt;/extension&gt;     &lt;/complexContent&gt;   &lt;/complexType&gt;  &lt;complexType name="ClassBPropertyType"&gt;   &lt;sequence minOccurs="0"&gt;     &lt;element ref="ClassB"/&gt;   &lt;/sequence&gt;   &lt;attributeGroup ref="gml:AssociationAttributeGroup"/&gt;   &lt;attributeGroup ref="gml:OwnershipAttributeGroup" /&gt; &lt;/complexType&gt;  &lt;element name="ClassB" type="ClassBType" substitutionGroup="gml:AbstractGML"/&gt; </pre>
19136 comments	
ISO 19139	<pre> &lt;complexType name="ClassA_Type"&gt;   &lt;complexContent&gt;     &lt;extension base="gco:AbstractObject_Type"&gt;       &lt;sequence&gt;         &lt;element name="classB" type="ClassB_PropertyType" minOccurs="0" maxOccurs="unbounded"/&gt;       &lt;/sequence&gt;     &lt;/extension&gt;   &lt;/complexContent&gt; &lt;/complexType&gt;  &lt;complexType name="ClassA_PropertyType"&gt;   &lt;sequence minOccurs="0"&gt;     &lt;element ref="ClassA"/&gt;   &lt;/sequence&gt;   &lt;attributeGroup ref="gco:ObjectReference"/&gt;   &lt;attribute ref="gco:nilReason" /&gt; &lt;/complexType&gt;  &lt;element name="ClassA" type="ClassA_Type"/&gt;  &lt;complexType name="ClassB_Type"&gt;   &lt;complexContent&gt;     &lt;extension base="gco:AbstractObject_Type"&gt;       &lt;sequence&gt;         &lt;/sequence&gt;       &lt;/extension&gt;     &lt;/complexContent&gt;   &lt;/complexType&gt; </pre>

	<pre> &lt;/complexType&gt;  &lt;complexType name="ClassB_PropertyType"&gt;   &lt;sequence minOccurs="0"&gt;     &lt;element ref="ClassB"/&gt;   &lt;/sequence&gt;   &lt;attributeGroup ref="gco:ObjectReference"/&gt;   &lt;attribute ref="gco:NilReason" /&gt; &lt;/complexType&gt;  &lt;element name="ClassB" type="ClassB_Type"/&gt; </pre>
19139 comments	
XMI	<pre> &lt;xsd:element name="ClassA" type="ClassA"/&gt; &lt;xsd:complexType name="ClassA"&gt;   &lt;xsd:choice minOccurs="0" maxOccurs="unbounded"&gt;     &lt;xsd:element name="classB" type="xmi:Any" minOccurs="0" maxOccurs="unbounded"/&gt;     &lt;xsd:element ref="xmi:Extension"/&gt;   &lt;/xsd:choice&gt;   &lt;xsd:attribute ref="xmi:id"/&gt;   &lt;xsd:attributeGroup ref="xmi:ObjectAttribs"/&gt; &lt;/xsd:complexType&gt;  &lt;xsd:element name="ClassB" type="ClassB"/&gt; &lt;xsd:complexType name="ClassB"&gt;   &lt;xsd:choice minOccurs="0" maxOccurs="unbounded"&gt;     &lt;xsd:element name="classA" type="xmi:Any" minOccurs="0" maxOccurs="unbounded"/&gt;     &lt;xsd:element ref="xmi:Extension"/&gt;   &lt;/xsd:choice&gt;   &lt;xsd:attribute ref="xmi:id"/&gt;   &lt;xsd:attributeGroup ref="xmi:ObjectAttribs"/&gt; &lt;/xsd:complexType&gt; </pre>
XMI comments	

### uml: association (assoc) (#68)

UML	<pre> classDiagram     class ClassA     class ClassB     ClassA --&gt; ClassB : {kind=association}     ClassA --&gt; ClassB : &lt;&lt;association&gt;&gt; </pre>
Source specification	uml
Comments	An association end with stereotype <<association>> specifies a real association (default and redundant, but may be included for emphasis).
ISO 19136	<pre> &lt;complexType name="ClassAType"&gt;   &lt;complexContent&gt; </pre>

	<pre> &lt;extension base="gml:AbstractGMLType"&gt;   &lt;sequence&gt;     &lt;element name="classB" type="ClassBPropertyType" minOccurs="0" maxOccurs="unbounded"/&gt;   &lt;/sequence&gt; &lt;/extension&gt; &lt;/complexContent&gt; &lt;/complexType&gt;  &lt;complexType name="ClassAPropertyType"&gt;   &lt;sequence minOccurs="0"&gt;     &lt;element ref="ClassA"/&gt;   &lt;/sequence&gt;   &lt;attributeGroup ref="gml:AssociationAttributeGroup"/&gt;   &lt;attributeGroup ref="gml:OwnershipAttributeGroup" /&gt; &lt;/complexType&gt;  &lt;element name="ClassA" type="ClassAType" substitutionGroup="gml:AbstractGML"/&gt;  &lt;complexType name="ClassBType"&gt;   &lt;complexContent&gt;     &lt;extension base="gml:AbstractGMLType"&gt;     &lt;/extension&gt;   &lt;/complexContent&gt; &lt;/complexType&gt;  &lt;complexType name="ClassBPropertyType"&gt;   &lt;sequence minOccurs="0"&gt;     &lt;element ref="ClassB"/&gt;   &lt;/sequence&gt;   &lt;attributeGroup ref="gml:AssociationAttributeGroup"/&gt;   &lt;attributeGroup ref="gml:OwnershipAttributeGroup" /&gt; &lt;/complexType&gt;  &lt;element name="ClassB" type="ClassBType" substitutionGroup="gml:AbstractGML"/&gt; </pre>
19136 comments	
ISO 19139	<pre> &lt;complexType name="ClassA_Type"&gt;   &lt;complexContent&gt;     &lt;extension base="gco:AbstractObject_Type"&gt;       &lt;sequence&gt;         &lt;element name="classB" type="ClassB_PropertyType" minOccurs="0" maxOccurs="unbounded"/&gt;       &lt;/sequence&gt;     &lt;/extension&gt;   &lt;/complexContent&gt; &lt;/complexType&gt;  &lt;complexType name="ClassA_PropertyType"&gt; </pre>

	<pre> &lt;sequence minOccurs="0"&gt;   &lt;element ref="ClassA"/&gt; &lt;/sequence&gt; &lt;attributeGroup ref="gco:ObjectReference"/&gt; &lt;attribute ref="gco:NilReason" /&gt; &lt;/complexType&gt;  &lt;element name="ClassA" type="ClassA_Type"/&gt;  &lt;complexType name="ClassB_Type"&gt;   &lt;complexContent&gt;     &lt;extension base="gco:AbstractObject_Type"&gt;       &lt;sequence&gt;         &lt;/sequence&gt;     &lt;/extension&gt;   &lt;/complexContent&gt; &lt;/complexType&gt;  &lt;complexType name="ClassB_PropertyType"&gt;   &lt;sequence minOccurs="0"&gt;     &lt;element ref="ClassB"/&gt;   &lt;/sequence&gt;   &lt;attributeGroup ref="gco:ObjectReference"/&gt;   &lt;attribute ref="gco:NilReason" /&gt; &lt;/complexType&gt;  &lt;element name="ClassB" type="ClassB_Type"/&gt; </pre>
19139 comments	
XMI	<pre> &lt;xsd:element name="ClassA" type="ClassA"/&gt; &lt;xsd:complexType name="ClassA"&gt;   &lt;xsd:choice minOccurs="0" maxOccurs="unbounded"&gt;     &lt;xsd:element name="classB" type="xmi:Any" minOccurs="0" maxOccurs="unbounded"/&gt;     &lt;xsd:element ref="xmi:Extension"/&gt;   &lt;/xsd:choice&gt;   &lt;xsd:attribute ref="xmi:id"/&gt;   &lt;xsd:attributeGroup ref="xmi:ObjectAttribs"/&gt; &lt;/xsd:complexType&gt;  &lt;xsd:element name="ClassB" type="ClassB"/&gt; &lt;xsd:complexType name="ClassB"&gt;   &lt;xsd:choice minOccurs="0" maxOccurs="unbounded"&gt;     &lt;xsd:element name="classA" type="xmi:Any" minOccurs="0" maxOccurs="unbounded"/&gt;     &lt;xsd:element ref="xmi:Extension"/&gt;   &lt;/xsd:choice&gt;   &lt;xsd:attribute ref="xmi:id"/&gt;   &lt;xsd:attributeGroup ref="xmi:ObjectAttribs"/&gt; &lt;/xsd:complexType&gt; </pre>
XMI comments	



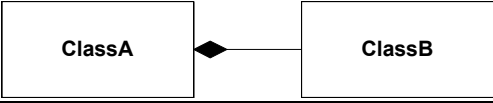
## uml: aggregation (#69)

UML	
Source specification	uml
Comments	
ISO 19136	<pre> &lt;complexType name="ClassAType"&gt;   &lt;complexContent&gt;     &lt;extension base="gml:AbstractGMLType"&gt;       &lt;sequence&gt;         &lt;element name="classB" minOccurs="0" maxOccurs="unbounded"&gt;           &lt;complexType&gt;             &lt;complexContent&gt;               &lt;extension base="gml:AbstractMemberType"&gt;                 &lt;sequence minOccurs="0"&gt;                   &lt;element ref="ClassB"/&gt;                 &lt;/sequence&gt;               &lt;/extension&gt;             &lt;/complexContent&gt;             &lt;attributeGroup ref="gml:AssociationAttributeGroup"/&gt;           &lt;/complexType&gt;         &lt;/element&gt;       &lt;/sequence&gt;     &lt;/extension&gt;   &lt;/complexContent&gt;   &lt;attributeGroup ref="gml:AssociationAttributeGroup"/&gt; &lt;/complexType&gt;  &lt;complexType name="ClassAPropertyType"&gt;   &lt;sequence minOccurs="0"&gt;     &lt;element ref="ClassA"/&gt;   &lt;/sequence&gt;   &lt;attributeGroup ref="gml:AssociationAttributeGroup"/&gt;   &lt;attributeGroup ref="gml:OwnershipAttributeGroup" /&gt; &lt;/complexType&gt;  &lt;element name="ClassA" type="ClassAType" substitutionGroup="gml:AbstractGML"/&gt;  &lt;complexType name="ClassBType"&gt;   &lt;complexContent&gt;     &lt;extension base="gml:AbstractGMLType"&gt;       &lt;/extension&gt;     &lt;/complexContent&gt;   &lt;/complexType&gt;  &lt;complexType name="ClassBPropertyType"&gt;   &lt;sequence minOccurs="0"&gt;     &lt;element ref="ClassB"/&gt;   &lt;/sequence&gt; </pre>

	<pre> &lt;/sequence&gt; &lt;attributeGroup ref="gml:AssociationAttributeGroup"/&gt; &lt;attributeGroup ref="gml:OwnershipAttributeGroup" /&gt; &lt;/complexType&gt;  &lt;element name="ClassB" type="ClassBType" substitutionGroup="gml:AbstractGML"/&gt; </pre>
19136 comments	
ISO 19139	<pre> &lt;complexType name="ClassA_Type"&gt; &lt;complexContent&gt; &lt;extension base="gco:AbstractObject_Type"&gt; &lt;sequence&gt; &lt;element name="classB" type="ClassB_PropertyType" minOccurs="0" maxOccurs="unbounded"/&gt; &lt;/sequence&gt; &lt;/extension&gt; &lt;/complexContent&gt; &lt;/complexType&gt;  &lt;complexType name="ClassA_PropertyType"&gt; &lt;sequence minOccurs="0"&gt; &lt;element ref="ClassA"/&gt; &lt;/sequence&gt; &lt;attributeGroup ref="gco:ObjectReference"/&gt; &lt;attribute ref="gco:nilReason" /&gt; &lt;/complexType&gt;  &lt;element name="ClassA" type="ClassA_Type"/&gt;  &lt;complexType name="ClassB_Type"&gt; &lt;complexContent&gt; &lt;extension base="gco:AbstractObject_Type"&gt; &lt;sequence&gt; &lt;/sequence&gt; &lt;/extension&gt; &lt;/complexContent&gt; &lt;/complexType&gt;  &lt;complexType name="ClassB_PropertyType"&gt; &lt;sequence minOccurs="0"&gt; &lt;element ref="ClassB"/&gt; &lt;/sequence&gt; &lt;attributeGroup ref="gco:ObjectReference"/&gt; &lt;attribute ref="gco:nilReason" /&gt; &lt;/complexType&gt;  &lt;element name="ClassB" type="ClassB_Type"/&gt; </pre>
19139 comments	
XMI	<pre> &lt;xsd:element name="ClassA" type="ClassA"/&gt; &lt;xsd:complexType name="ClassA"&gt; </pre>

	<pre> &lt;xsd:choice minOccurs="0" maxOccurs="unbounded"&gt;   &lt;xsd:element name="classB" type="xmi:Any" minOccurs="0" maxOccurs="unbounded"/&gt;   &lt;xsd:element ref="xmi:Extension"/&gt; &lt;/xsd:choice&gt; &lt;xsd:attribute ref="xmi:id"/&gt; &lt;xsd:attributeGroup ref="xmi:ObjectAttribs"/&gt; &lt;/xsd:complexType&gt;  &lt;xsd:element name="ClassB" type="ClassB"/&gt; &lt;xsd:complexType name="ClassB"&gt;   &lt;xsd:choice minOccurs="0" maxOccurs="unbounded"&gt;     &lt;xsd:element name="classA" type="xmi:Any" minOccurs="0" maxOccurs="unbounded"/&gt;     &lt;xsd:element ref="xmi:Extension"/&gt;   &lt;/xsd:choice&gt;   &lt;xsd:attribute ref="xmi:id"/&gt;   &lt;xsd:attributeGroup ref="xmi:ObjectAttribs"/&gt; &lt;/xsd:complexType&gt; </pre>
XML comments	

### uml: composition (#70)

UML	 <pre> classDiagram     ClassA "1" *-- "*" ClassB </pre>
Source specification	uml
Comments	
ISO 19136	<pre> &lt;complexType name="ClassAType"&gt;   &lt;complexContent&gt;     &lt;extension base="gml:AbstractGMLType"&gt;       &lt;sequence&gt;         &lt;element name="classB" minOccurs="0" maxOccurs="unbounded"&gt;           &lt;annotation&gt;             &lt;appinfo&gt;               &lt;sch:pattern name="composition"&gt;                 &lt;sch:rule context="classB"&gt;                   &lt;sch:report test="@owns="true"&gt;This property is a composition,                     values must be owned&lt;/sch:report&gt;                 &lt;/sch:rule&gt;               &lt;/sch:pattern&gt;             &lt;/appinfo&gt;           &lt;/annotation&gt;         &lt;/complexType&gt;         &lt;complexContent&gt;           &lt;extension base="gml:AbstractMemberType"&gt;             &lt;sequence minOccurs="0"&gt;               &lt;element ref="ClassB"/&gt;             &lt;/sequence&gt;           &lt;/extension&gt;         &lt;/complexContent&gt;       &lt;/sequence&gt;     &lt;/extension&gt;   &lt;/complexContent&gt; </pre>

	<pre> &lt;/sequence&gt; &lt;/extension&gt; &lt;/complexContent&gt; &lt;attributeGroup ref="gml:AssociationAttributeGroup"/&gt; &lt;/complexType&gt; &lt;/element&gt; &lt;/sequence&gt; &lt;/extension&gt; &lt;/complexContent&gt; &lt;/complexType&gt;  &lt;complexType name="ClassAPropertyType"&gt; &lt;sequence minOccurs="0"&gt; &lt;element ref="ClassA"/&gt; &lt;/sequence&gt; &lt;attributeGroup ref="gml:AssociationAttributeGroup"/&gt; &lt;attributeGroup ref="gml:OwnershipAttributeGroup" /&gt; &lt;/complexType&gt;  &lt;element name="ClassA" type="ClassAType" substitutionGroup="gml:AbstractGML"/&gt;  &lt;complexType name="ClassBType"&gt; &lt;complexContent&gt; &lt;extension base="gml:AbstractGMLType"&gt; &lt;/extension&gt; &lt;/complexContent&gt; &lt;/complexType&gt;  &lt;complexType name="ClassBPropertyType"&gt; &lt;sequence minOccurs="0"&gt; &lt;element ref="ClassB"/&gt; &lt;/sequence&gt; &lt;attributeGroup ref="gml:AssociationAttributeGroup"/&gt; &lt;attributeGroup ref="gml:OwnershipAttributeGroup" /&gt; &lt;/complexType&gt;  &lt;element name="ClassB" type="ClassBType" substitutionGroup="gml:AbstractGML"/&gt; </pre>
19136 comments	should schematron context not include substhead(ClassA)?
ISO 19139	<pre> &lt;complexType name="ClassA_Type"&gt; &lt;complexContent&gt; &lt;extension base="gco:AbstractObject_Type"&gt; &lt;sequence&gt; &lt;element name="classB" type="ClassB_PropertyType" minOccurs="0" maxOccurs="unbounded"/&gt; &lt;/sequence&gt; &lt;/extension&gt; &lt;/complexContent&gt; &lt;/complexType&gt; </pre>

	<pre> &lt;complexType name="ClassA_PropertyType"&gt;   &lt;sequence minOccurs="0"&gt;     &lt;element ref="ClassA"/&gt;   &lt;/sequence&gt;   &lt;attributeGroup ref="gco:ObjectReference"/&gt;   &lt;attribute ref="gco:NilReason" /&gt; &lt;/complexType&gt;  &lt;element name="ClassA" type="ClassA_Type"/&gt;  &lt;complexType name="ClassB_Type"&gt;   &lt;complexContent&gt;     &lt;extension base="gco:AbstractObject_Type"&gt;       &lt;sequence&gt;       &lt;/sequence&gt;     &lt;/extension&gt;   &lt;/complexContent&gt; &lt;/complexType&gt;  &lt;complexType name="ClassB_PropertyType"&gt;   &lt;sequence minOccurs="0"&gt;     &lt;element ref="ClassB"/&gt;   &lt;/sequence&gt;   &lt;attributeGroup ref="gco:ObjectReference"/&gt;   &lt;attribute ref="gco:NilReason" /&gt; &lt;/complexType&gt;  &lt;element name="ClassB" type="ClassB_Type"/&gt; </pre>
19139 comments	
XMI	<pre> &lt;xsd:element name="ClassA" type="ClassA"/&gt; &lt;xsd:complexType name="ClassA"&gt;   &lt;xsd:choice minOccurs="0" maxOccurs="unbounded"&gt;     &lt;xsd:element name="classB" type="xmi:Any" minOccurs="0" maxOccurs="unbounded"/&gt;     &lt;xsd:element ref="xmi:Extension"/&gt;   &lt;/xsd:choice&gt;   &lt;xsd:attribute ref="xmi:id"/&gt;   &lt;xsd:attributeGroup ref="xmi:ObjectAttribs"/&gt; &lt;/xsd:complexType&gt;  &lt;xsd:element name="ClassB" type="ClassB"/&gt; &lt;xsd:complexType name="ClassB"&gt;   &lt;xsd:choice minOccurs="0" maxOccurs="unbounded"&gt;     &lt;xsd:element name="classA" type="xmi:Any" minOccurs="0" maxOccurs="unbounded"/&gt;     &lt;xsd:element ref="xmi:Extension"/&gt;   &lt;/xsd:choice&gt;   &lt;xsd:attribute ref="xmi:id"/&gt;   &lt;xsd:attributeGroup ref="xmi:ObjectAttribs"/&gt; </pre>

	<xsd:attribute name="classA" type="xsd:IDREFS" use="optional"/> </xsd:complexType>
XMI comments	If composition no attributes.

### uml: association class (#71)

UML	<pre> classDiagram     class ClassA     class ClassB     class AssocAtoB {         attributeA[0..1]     }     ClassA "1" -- "1" ClassB     AssocAtoB .. ClassA     AssocAtoB .. ClassB </pre>
Source specification	uml
Comments	
ISO 19136	
19136 comments	forbidden
ISO 19139	
19139 comments	no encoding rules specified
XMI	
XMI comments	not supported by MOF 2.1

### uml: n-ary association (#72)

UML	<pre> classDiagram     class ClassA     class ClassB     class ClassC     ClassA --- Junction     Junction --- ClassB     Junction --- ClassC </pre>
Source specification	uml
Comments	
ISO 19136	
19136 comments	forbidden
ISO 19139	
19139 comments	no encoding rules specified
XMI	
XMI comments	not supported by MOF 2.1

### xmi: association {remoteOnly} (#73)

UML	<pre> classDiagram     class ClassA     class ClassB     ClassA --&gt; ClassB : classB {remoteOnly=true}     </pre>
Source specification	xmi
Comments	If set on one end of a bidirectional relationship, only serializes that end if it is remote.
ISO 19136	
19136 comments	
ISO 19139	
19139 comments	
XMI	<pre> &lt;xsd:element name="ClassA" type="ClassA"/&gt; &lt;xsd:complexType name="ClassA"&gt;   &lt;xsd:choice minOccurs="0" maxOccurs="unbounded"&gt;     &lt;xsd:element name="classB" type="xmi:Any" minOccurs="0" maxOccurs="unbounded"/&gt;     &lt;xsd:element ref="xmi:Extension"/&gt;   &lt;/xsd:choice&gt;   &lt;xsd:attribute ref="xmi:id"/&gt;   &lt;xsd:attributeGroup ref="xmi:ObjectAttribs"/&gt; &lt;/xsd:complexType&gt;  &lt;xsd:element name="ClassB" type="ClassB"/&gt; &lt;xsd:complexType name="ClassB"&gt;   &lt;xsd:choice minOccurs="0" maxOccurs="unbounded"&gt;     &lt;xsd:element name="classA" type="xmi:Any" minOccurs="0" maxOccurs="unbounded"/&gt;     &lt;xsd:element ref="xmi:Extension"/&gt;   &lt;/xsd:choice&gt;   &lt;xsd:attribute ref="xmi:id"/&gt;   &lt;xsd:attributeGroup ref="xmi:ObjectAttribs"/&gt; &lt;/xsd:complexType&gt;     </pre>
XMI comments	affects only instance (ClassA/classB is only set if the referenced ClassB object is not in the same document).

## xmi: association {href} (#74)

UML	<pre> classDiagram     class ClassA     class ClassB     ClassA --&gt; ClassB : classB {href=true}     </pre>
Source specification	xmi
Comments	If true, use the href attribute rather than the idref attribute for links within a document
ISO 19136	
19136 comments	
ISO 19139	
19139 comments	
XMI	<pre> &lt;xsd:element name="ClassA" type="ClassA"/&gt; &lt;xsd:complexType name="ClassA"&gt;   &lt;xsd:choice minOccurs="0" maxOccurs="unbounded"&gt;     &lt;xsd:element name="classB" type="xmi:Any" minOccurs="0" maxOccurs="unbounded"/&gt;     &lt;xsd:element ref="xmi:Extension"/&gt;   &lt;/xsd:choice&gt;   &lt;xsd:attribute ref="xmi:id"/&gt;   &lt;xsd:attributeGroup ref="xmi:ObjectAttribs"/&gt; &lt;/xsd:complexType&gt;  &lt;xsd:element name="ClassB" type="ClassB"/&gt; &lt;xsd:complexType name="ClassB"&gt;   &lt;xsd:choice minOccurs="0" maxOccurs="unbounded"&gt;     &lt;xsd:element name="classA" type="xmi:Any" minOccurs="0" maxOccurs="unbounded"/&gt;     &lt;xsd:element ref="xmi:Extension"/&gt;   &lt;/xsd:choice&gt;   &lt;xsd:attribute ref="xmi:id"/&gt;   &lt;xsd:attributeGroup ref="xmi:ObjectAttribs"/&gt; &lt;/xsd:complexType&gt;     </pre>
XMI comments	affects only instance (ClassA/classB shall only be href).

## Package

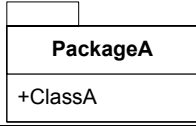
### uml: package (#75)

UML	<pre> classDiagram     package PackageA     </pre>
Source specification	uml

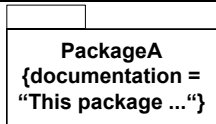


Comments	
ISO 19136	
19136 comments	
ISO 19139	
19139 comments	
XMI	
XMI comments	FIXME: XMI can handle class level properties

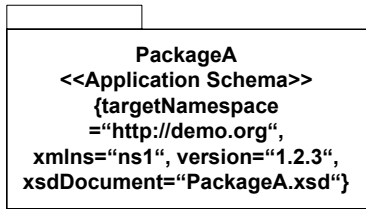
### uml: package (public elements) (#76)

UML	
Source specification	uml
Comments	
ISO 19136	
19136 comments	The visibility of all UML elements shall be set to "public".
ISO 19139	
19139 comments	
XMI	
XMI comments	ignores visibility

### uml: package {documentation} (#77)

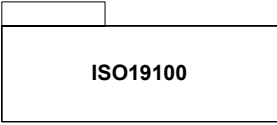
UML	
Source specification	uml
Comments	
ISO 19136	
19136 comments	
ISO 19139	
19139 comments	
XMI	
XMI comments	same as package without documentation

### 19136: package <<Application Schema>> (#78)

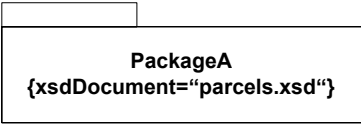
UML	
Source specification	19136
Comments	
ISO 19136	<?xml version="1.0" encoding="UTF-8"?>

	<pre>&lt;schema targetNamespace="http://demo.org" xmlns:ns1="http://demo.org" elementFormDefault="qualified" version="1.2.3"&gt; ... &lt;/schema&gt;</pre>
19136 comments	Unclear, if gml,xlink namespace declarations and imports are generated automatically?
ISO 19139	
19139 comments	
XMI	
XMI comments	

### 19136: package ISO19100 (#79)

UML	
Source specification	19136
Comments	
ISO 19136	
19136 comments	Content is ignored but required to recognize definitions from 19100 standards.
ISO 19139	
19139 comments	
XMI	
XMI comments	

### 19136: package {xsdDocument} (#80)

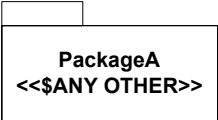
UML	
Source specification	19136
Comments	
ISO 19136	
19136 comments	Package contents will be generated to it's own schema document. This schema document will be included by schema document of parent package.
ISO 19139	
19139 comments	
XMI	
XMI comments	

### 19103: package <<Leaf>> (#81)

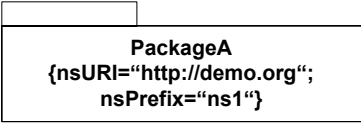
UML	
-----	---

Source specification	19103
Comments	
ISO 19136	
19136 comments	Unknown stereotype to 19136! Is package inclusive contents ignored?
ISO 19139	
19139 comments	
XMI	
XMI comments	

### uml: package <<ANYOTHER>> (#82)

UML	
Source specification	uml
Comments	Package with any not explicitly specified stereotype
ISO 19136	
19136 comments	Is package including contents ignored?
ISO 19139	
19139 comments	
XMI	
XMI comments	no encoding rules specified

### xmi: package {nsURI, nsPrefix} (#83)

UML	
Source specification	xmi
Comments	The namespace URI of the MOF package. The namespace prefix of the MOF package; this is used in schemas. (Any legal XML prefix may be used in documents.)
ISO 19136	
19136 comments	
ISO 19139	
19139 comments	
XMI	<?xml version="1.0" encoding="UTF-8"?> <xsd:schema xmlns:xsd="http://www.w3.org/2001/XMLSchema" xmlns:xmi="http://www.omg.org/XMI" targetNamespace="http://demo.org" xmlns:ns1="http://demo.org"> <xsd:import namespace="http://www.omg.org/XMI"/> ... </xsd:schema>

XMI comments	What is the schema document name?
--------------	-----------------------------------

### 19139: package <<xmlNamespace>> (#84)

UML	<pre> classDiagram     class PackageA     class PackageA_NS["PackageA_NS &lt;&lt;xmlNamespace&gt;&gt;"]     PackageA_NS --&gt; PackageA : &lt;&lt;implement&gt;&gt; </pre>
Source specification	19139
Comments	assigns a xml namespace name to a conceptual package.
ISO 19136	
19136 comments	
ISO 19139	
19139 comments	
XMI	
XMI comments	

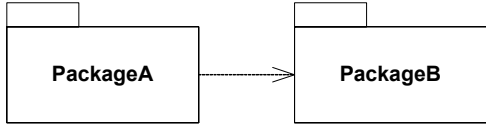
### 19139: package <<xmlSchema>> (#85)

UML	<pre> classDiagram     class PackageA_NS["PackageA_NS &lt;&lt;xmlNamespace&gt;&gt;"]     class PackageA_NS_xsd["PackageA_NS.xsd &lt;&lt;xmlSchema&gt;&gt;"]     PackageA_NS_xsd --&gt; PackageA_NS : &lt;&lt;implement&gt;&gt; </pre>
Source specification	19139
Comments	used to define schema documents.
ISO 19136	
19136 comments	
ISO 19139	<pre> &lt;?xml version="1.0" encoding="UTF-8"?&gt; &lt;xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema" targetNamespace="http://www.isotc211.org/2005/PackageA_NS" xmlns:PackageA_NS="http://www.isotc211.org/2005/PackageA_NS" version="1.0"&gt; ... &lt;/xs:schema&gt; </pre>
19139 comments	
XMI	


XMI comments	
--------------	--

## Package dependency

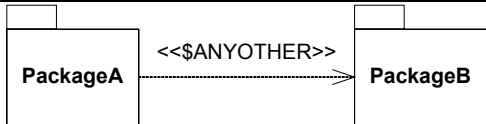
### uml: package dependency (#86)

UML	
Source specification	uml
Comments	
ISO 19136	
19136 comments	Dependencies between packages shall be modelled explicitly and results in includes or imports depending on namespace of packages.
ISO 19139	
19139 comments	gives set of required <<import>> between packages with stereotyp xmlNamespace
XMI	
XMI comments	no encoding rules specified

### uml: package dependency <<import>> (#87)

UML	
Source specification	uml
Comments	
ISO 19136	
19136 comments	Same as without stereotype.
ISO 19139	
19139 comments	no encoding rules specified
XMI	
XMI comments	No explicit import required. If the schema uses declarations from other schemas, the appropriate include or import statements shall be generated.

### uml: package dependency <<\$ANYOTHER>> (#88)

UML	
Source specification	uml
Comments	
ISO 19136	
19136 comments	ignored

ISO 19139	
19139 comments	no encoding rules specified
XMI	
XMI comments	no encoding rules specified

### 19139: package (xmlNamespace) dependency <<import>> (#89)

UML	<pre> classDiagram     class PackageA_NS["PackageA_NS &lt;&lt;xmlNamespace&gt;&gt;"]     class PackageB_NS["PackageB_NS &lt;&lt;xmlNamespace&gt;&gt;"]     PackageA_NS --&gt; PackageB_NS : &lt;&lt;import&gt;&gt; </pre>
Source specification	19139
Comments	used to define imports between schemas.
ISO 19136	
19136 comments	
ISO 19139	
19139 comments	
XMI	
XMI comments	

### 19139: package (xmlSchema) dependency <<include>> (#90)

UML	<pre> classDiagram     class PackageA_NS_xsd["PackageA_NS.xsd &lt;&lt;xmlSchema&gt;&gt;"]     class PackageB_xsd["PackageB.xsd &lt;&lt;xmlSchema&gt;&gt;"]     PackageA_NS_xsd --&gt; PackageB_xsd : &lt;&lt;include&gt;&gt; </pre>
Source specification	19139
Comments	Used to include schema documents.
ISO 19136	
19136 comments	
ISO 19139	
19139 comments	
XMI	
XMI comments	

## Other model elements

### uml: OCL constraints (#91)

UML	
-----	--

Source specification	uml
Comments	
ISO 19136	
19136 comments	ignored
ISO 19139	
19139 comments	no encoding rules specified
XMI	
XMI comments	no encoding rules specified

### uml: ANY OTHER model element (#92)

UML	
Source specification	uml
Comments	
ISO 19136	
19136 comments	ignored
ISO 19139	
19139 comments	no encoding rules specified
XMI	
XMI comments	no encoding rules specified

## Used base definitions

### 19136

```

<element name="AbstractObject" abstract="true">
  <annotation>
    <documentation>This element has no type defined, and is therefore
implicitly (according to the rules of W3C XML Schema) an XML Schema anyType. It
is used as the head of an XML Schema substitution group which unifies complex
content and certain simple content elements used for datatypes in GML, including the
gml:AbstractGML substitution group.</documentation>
  </annotation>
</element>
<element name="AbstractGML" type="gml:AbstractGMLType" abstract="true"
substitutionGroup="gml:AbstractObject">
  <annotation>
    <documentation>The abstract element gml:AbstractGML is any
GML object having identity. It acts as the head of an XML Schema substitution
group, which may include any element which is a GML feature, or other object, with
identity. This is used as a variable in content models in GML core and application
schemas. It is effectively an abstract superclass for all GML
objects.</documentation>
  </annotation>
</element>
<complexType name="AbstractGMLType" abstract="true">
  <sequence>
    <group ref="gml:StandardObjectProperties"/>

```

```

    </sequence>
    <attribute ref="gml:id" use="required"/>
</complexType>
<group name="StandardObjectProperties">
  <sequence>
    <element ref="gml:metaDataProperty" minOccurs="0"
maxOccurs="unbounded"/>
    <element ref="gml:description" minOccurs="0"/>
    <element ref="gml:descriptionReference" minOccurs="0"/>
    <element ref="gml:identifier" minOccurs="0"/>
    <element ref="gml:name" minOccurs="0" maxOccurs="unbounded"/>
  </sequence>
</group>
<attributeGroup name="AssociationAttributeGroup">
  <annotation>
    <documentation>XLink components are the standard method to support
hypertext referencing in XML. An XML Schema attribute group,
gml:AssociationAttributeGroup, is provided to support the use of Xlinks as the
method for indicating the value of a property by reference in a uniform manner in
GML.</documentation>
  </annotation>
  <attributeGroup ref="xlink:simpleLink"/>
  <attribute name="nilReason" type="gml:NilReasonType"/>
  <attribute ref="gml:remoteSchema"/>
</attributeGroup>
<attribute name="remoteSchema" type="anyURI">
  <annotation>
    <appinfo>deprecated</appinfo>
  </annotation>
</attribute>
<element name="abstractAssociationRole" type="gml:AssociationRoleType"
abstract="true">
  <annotation>
    <documentation>Applying this pattern shall restrict the multiplicity of
objects in a property element using this content model to exactly one. An instance of
this type shall contain an element representing an object, or serve as a pointer to a
remote object.
Applying the pattern to define an application schema specific property type allows to
restrict
- the inline object to specified object types,
- the encoding to &#x2013;by-reference only&#x2013; (see 7.2.3.7),
- the encoding to &#x2013;inline only&#x2013; (see 7.2.3.8).</documentation>
  </annotation>
</element>
<complexType name="AssociationRoleType">
  <sequence minOccurs="0">
    <element ref="gml:AbstractObject"/>
  </sequence>
  <attributeGroup ref="gml:OwnershipAttributeGroup"/>
  <attributeGroup ref="gml:AssociationAttributeGroup"/>

```



```

</complexType>
<attributeGroup name="OwnershipAttributeGroup">
  <annotation>
    <documentation>Encoding a GML property inline vs. by-reference shall
not imply anything about the "ownership" of the contained or referenced GML
Object, i.e. the encoding style shall not imply any "deep-copy" or "deep-
delete" semantics. To express ownership over the contained or referenced GML
Object, the gml:OwnershipAttributeGroup attribute group may be added to object-
valued property elements. If the attribute group is not part of the content model of
such a property element, then the value may not be "owned".
When the value of the owns attribute is "true", the existence of inline or referenced
object(s) depends upon the existence of the parent object.</documentation>
  </annotation>
  <attribute name="owns" type="boolean" default="false"/>
</attributeGroup>
<element name="abstractStrictAssociationRole" type="gml:AssociationRoleType"
abstract="true">
  <annotation>
    <documentation>This element shows how an element
declaration may include a Schematron constraint to limit the property to act
in either inline or by-reference mode, but not both.</documentation>
    <appinfo>
      <sch:pattern name="refAndContent co-occurrence prohibited">
        <sch:rule context="gml:abstractStrictAssociationRole">
          <sch:extends rule="hrefOrContent"/>
        </sch:rule>
      </sch:pattern>
    </appinfo>
  </annotation>
</element>
<element name="abstractReference" type="gml:ReferenceType" abstract="true">
  <annotation>
    <documentation>gml:abstractReference may be used as the head of a
substitution group of more specific elements providing a value by-
reference.</documentation>
  </annotation>
</element>
<complexType name="ReferenceType">
  <annotation>
    <documentation>gml:ReferenceType is intended to be used in
application schemas directly, if a property element shall use a "by-reference
only" encoding.</documentation>
  </annotation>
  <sequence/>
  <attributeGroup ref="gml:OwnershipAttributeGroup"/>
  <attributeGroup ref="gml:AssociationAttributeGroup"/>
</complexType>
<element name="abstractInlineProperty" type="gml:InlinePropertyType"
abstract="true">
  <annotation>

```

<documentation>gml:abstractInlineProperty may be used as the head of a substitution group of more specific elements providing a value inline.</documentation>

</annotation>

</element>

<complexType name="InlinePropertyType">

<sequence>

<element ref="gml:AbstractObject"/>

</sequence>

<attributeGroup ref="gml:OwnershipAttributeGroup"/>

</complexType>

<element name="reversePropertyName" type="string">

<annotation>

<documentation>If the value of an object property is another object and that object contains also a property for the association between the two objects, then this name of the reverse property may be encoded in a gml:reversePropertyName element in an appinfo annotation of the property element to document the constraint between the two properties. The value of the element shall contain the qualified name of the property element.</documentation>

</annotation>

</element>

<element name="member" type="gml:AssociationRoleType">

<annotation>

<appinfo>deprecated</appinfo>

</annotation>

</element>

<complexType name="ArrayAssociationType">

<annotation>

<appinfo>deprecated</appinfo>

</annotation>

<sequence>

<element ref="gml:AbstractObject" minOccurs="0" maxOccurs="unbounded"/>

</sequence>

<attributeGroup ref="gml:OwnershipAttributeGroup"/>

</complexType>

<element name="members" type="gml:ArrayAssociationType">

<annotation>

<appinfo>deprecated</appinfo>

</annotation>

</element>

<attribute name="id" type="ID">

<annotation>

<documentation>The attribute gml:id supports provision of a handle for the XML element representing a GML Object. Its use is mandatory for all GML objects. It is of XML type ID, so is constrained to be unique in the XML document within which it occurs.</documentation>

</annotation>

</attribute>

<complexType name="AbstractMemberType" abstract="true">

```

    <annotation>
      <documentation>To create a collection of GML Objects that are not all
features, a property type shall be derived by extension from
gml:AbstractMemberType.
This abstract property type is intended to be used only in object types where software
shall be able to identify that an instance of such an object type is to be interpreted as
a collection of objects.
By default, this abstract property type does not imply any ownership of the objects in
the collection. The owns attribute of gml:OwnershipAttributeGroup may be used on a
property element instance to assert ownership of an object in the collection. A
collection shall not own an object already owned by another object.
</documentation>
    </annotation>
    <sequence/>
    <attributeGroup ref="gml:OwnershipAttributeGroup"/>
</complexType>
<attributeGroup name="AggregationAttributeGroup">
  <annotation>
    <documentation>A GML Object Collection is any GML Object with a
property element in its content model whose content model is derived by extension
from gml:AbstractMemberType.
In addition, the complex type describing the content model of the GML Object
Collection may also include a reference to the attribute group
gml:AggregationAttributeGroup to provide additional information about the semantics
of the object collection. This information may be used by applications to group GML
objects, and optionally to order and index them.
The allowed values for the aggregationType attribute are defined by
gml:AggregationType. See 8.4 of ISO/IEC 11404:1996 for the meaning of the values
in the enumeration.</documentation>
    </annotation>
    <attribute name="aggregationType" type="gml:AggregationType"/>
</attributeGroup>
<simpleType name="AggregationType" final="#all">
  <restriction base="string">
    <enumeration value="set"/>
    <enumeration value="bag"/>
    <enumeration value="sequence"/>
    <enumeration value="array"/>
    <enumeration value="record"/>
    <enumeration value="table"/>
  </restriction>
</simpleType>
<complexType name="AbstractMetadataPropertyType" abstract="true">
  <annotation>
    <documentation>To associate metadata described by any XML
Schema with a GML object, a property element shall be defined whose content
model is derived by extension from gml:AbstractMetadataPropertyType.
The value of such a property shall be metadata. The content model of such a
property type, i.e. the metadata application schema shall be specified by the GML
Application Schema.

```

By default, this abstract property type does not imply any ownership of the metadata. The owns attribute of gml:OwnershipAttributeGroup may be used on a metadata property element instance to assert ownership of the metadata.

If metadata following the conceptual model of ISO 19115 is to be encoded in a GML document, the corresponding Implementation Specification specified in ISO/TS 19139 shall be used to encode the metadata information.

```
</documentation>
  </annotation>
  <sequence/>
  <attributeGroup ref="gml:OwnershipAttributeGroup"/>
</complexType>
<complexType name="CodeType">
  <annotation>
    <documentation>gml:CodeType is a generalized type to be used for a
term, keyword or name.
It adds a XML attribute codeSpace to a term, where the value of the codeSpace
attribute (if present) shall indicate a dictionary, thesaurus, classification scheme,
authority, or pattern for the term.</documentation>
  </annotation>
  <simpleContent>
    <extension base="string">
      <attribute name="codeSpace" type="anyURI"/>
    </extension>
  </simpleContent>
</complexType>
<complexType name="CodeWithAuthorityType">
  <annotation>
    <documentation>gml:CodeWithAuthorityType requires that the
codeSpace attribute is provided in an instance.</documentation>
  </annotation>
  <simpleContent>
    <restriction base="gml:CodeType">
      <attribute name="codeSpace" type="anyURI" use="required"/>
    </restriction>
  </simpleContent>
</complexType>
```

### **19139**

```
<xs:complexType name="AbstractObject_Type" abstract="true">
  <xs:sequence/>
  <xs:attributeGroup ref="gco:ObjectIdentification"/>
</xs:complexType>
<xs:element name="AbstractObject" type="gco:AbstractObject_Type"
abstract="true"/>
<xs:attributeGroup name="ObjectReference">
  <xs:attributeGroup ref="xlink:simpleLink"/>
  <xs:attribute name="uuidref" type="xs:string"/>
</xs:attributeGroup>
<xs:attribute name="nilReason" type="gml:nilReasonType"/>
<xs:complexType name="ObjectReference_PropertyType">
```

```

        <xs:sequence/>
        <xs:attributeGroup ref="gco:ObjectReference"/>
        <xs:attribute ref="gco:nilReason"/>
</xs:complexType>
<xs:attributeGroup name="ObjectIdentification">
    <xs:attribute name="id" type="xs:ID"/>
    <xs:attribute name="uuid" type="xs:string"/>
</xs:attributeGroup>
<xs:complexType name="CodeListValue_Type">
    <xs:simpleContent>
        <xs:extension base="xs:string">
            <xs:attribute name="codeList" type="xs:anyURI"
use="required"/>
            <xs:attribute name="codeListValue" type="xs:anyURI"
use="required"/>
            <xs:attribute name="codeSpace" type="xs:anyURI"/>
        </xs:extension>
    </xs:simpleContent>
</xs:complexType>

```

## **XMI**

```

<xsd:attribute name="id" type="xsd:ID" use="optional"/>
<xsd:attributeGroup name="IdentityAttribs">
    <xsd:attribute name="label" type="xsd:string" use="optional" form="qualified"/>
    <xsd:attribute name="uuid" type="xsd:string" use="optional" form="qualified"/>
</xsd:attributeGroup>
<xsd:attributeGroup name="LinkAttribs">
    <xsd:attribute name="href" type="xsd:string" use="optional"/>
    <xsd:attribute name="idref" type="xsd:IDREF" use="optional"
form="qualified"/>
</xsd:attributeGroup>
<xsd:attributeGroup name="ObjectAttribs">
    <xsd:attributeGroup ref="IdentityAttribs"/>
    <xsd:attributeGroup ref="LinkAttribs"/>
    <xsd:attribute name="version" type="xsd:string" use="optional" fixed="2.0"
form="qualified"/>
    <xsd:attribute name="type" type="xsd:QName" use="optional"
form="qualified"/>
</xsd:attributeGroup>
<xsd:annotation>
    <xsd:documentation>PACKAGE: XMIPackage</xsd:documentation>
</xsd:annotation>
<xsd:annotation>
    <xsd:documentation>CLASS: XMI</xsd:documentation>
</xsd:annotation>
<xsd:complexType name="XMI">
    <xsd:choice minOccurs="0" maxOccurs="unbounded">
        <xsd:any processContents="strict"/>
    </xsd:choice>
    <xsd:attribute ref="id"/>

```

```

    <xsd:attributeGroup ref="IdentityAttribs"/>
    <xsd:attributeGroup ref="LinkAttribs"/>
    <xsd:attribute name="type" type="xsd:QName" use="optional"
form="qualified"/>
    <xsd:attribute name="version" type="xsd:string" use="required" fixed="2.0"
form="qualified"/>
</xsd:complexType>
<xsd:element name="XMI" type="XMI"/>
<xsd:annotation>
    <xsd:documentation>CLASS: Documentation</xsd:documentation>
</xsd:annotation>
<xsd:complexType name="Documentation">
    <xsd:choice minOccurs="0" maxOccurs="unbounded">
        <xsd:element name="contact" type="xsd:string"/>
        <xsd:element name="exporter" type="xsd:string"/>
        <xsd:element name="exporterVersion" type="xsd:string"/>
        <xsd:element name="longDescription" type="xsd:string"/>
        <xsd:element name="shortDescription" type="xsd:string"/>
        <xsd:element name="notice" type="xsd:string"/>
        <xsd:element name="owner" type="xsd:string"/>
        <xsd:element ref="Extension"/>
    </xsd:choice>
    <xsd:attribute ref="id"/>
    <xsd:attributeGroup ref="ObjectAttribs"/>
    <xsd:attribute name="contact" type="xsd:string" use="optional"/>
    <xsd:attribute name="exporter" type="xsd:string" use="optional"/>
    <xsd:attribute name="exporterVersion" type="xsd:string" use="optional"/>
    <xsd:attribute name="longDescription" type="xsd:string" use="optional"/>
    <xsd:attribute name="shortDescription" type="xsd:string" use="optional"/>
    <xsd:attribute name="notice" type="xsd:string" use="optional"/>
    <xsd:attribute name="owner" type="xsd:string" use="optional"/>
</xsd:complexType>
<xsd:element name="Documentation" type="Documentation"/>
<xsd:annotation>
    <xsd:documentation>CLASS: Extension</xsd:documentation>
</xsd:annotation>
<xsd:complexType name="Extension">
    <xsd:choice minOccurs="0" maxOccurs="unbounded">
        <xsd:any processContents="lax"/>
    </xsd:choice>
    <xsd:attribute ref="id"/>
    <xsd:attributeGroup ref="ObjectAttribs"/>
    <xsd:attribute name="extender" type="xsd:string" use="optional"/>
    <xsd:attribute name="extenderID" type="xsd:string" use="optional"/>
</xsd:complexType>
<xsd:element name="Extension" type="Extension"/>
<xsd:annotation>
    <xsd:documentation>CLASS: Difference</xsd:documentation>
</xsd:annotation>
<xsd:complexType name="Difference">

```

```

<xsd:choice minOccurs="0" maxOccurs="unbounded">
  <xsd:element name="target">
    <xsd:complexType>
      <xsd:choice minOccurs="0" maxOccurs="unbounded">
        <xsd:any processContents="skip"/>
      </xsd:choice>
      <xsd:anyAttribute processContents="skip"/>
    </xsd:complexType>
  </xsd:element>
  <xsd:element name="difference" type="Difference"/>
  <xsd:element name="container" type="Difference"/>
  <xsd:element ref="Extension"/>
</xsd:choice>
<xsd:attribute ref="id"/>
<xsd:attributeGroup ref="ObjectAttribs"/>
<xsd:attribute name="target" type="xsd:IDREFS" use="optional"/>
<xsd:attribute name="container" type="xsd:IDREFS" use="optional"/>
</xsd:complexType>
<xsd:element name="Difference" type="Difference"/>
<xsd:annotation>
  <xsd:documentation>CLASS: Add</xsd:documentation>
</xsd:annotation>
<xsd:complexType name="Add">
  <xsd:complexContent>
    <xsd:extension base="Difference">
      <xsd:attribute name="position" type="xsd:string" use="optional"/>
      <xsd:attribute name="addition" type="xsd:IDREFS"
use="optional"/>
    </xsd:extension>
  </xsd:complexContent>
</xsd:complexType>
<xsd:element name="Add" type="Add"/>
<xsd:annotation>
  <xsd:documentation>CLASS: Replace</xsd:documentation>
</xsd:annotation>
<xsd:complexType name="Replace">
  <xsd:complexContent>
    <xsd:extension base="Difference">
      <xsd:attribute name="position" type="xsd:string" use="optional"/>
      <xsd:attribute name="replacement" type="xsd:IDREFS"
use="optional"/>
    </xsd:extension>
  </xsd:complexContent>
</xsd:complexType>
<xsd:element name="Replace" type="Replace"/>
<xsd:annotation>
  <xsd:documentation>CLASS: Delete</xsd:documentation>
</xsd:annotation>
<xsd:complexType name="Delete">
  <xsd:complexContent>

```

```

        <xsd:extension base="Difference"/>
    </xsd:complexContent>
</xsd:complexType>
<xsd:element name="Delete" type="Delete"/>
<xsd:complexType name="Any">
    <xsd:choice minOccurs="0" maxOccurs="unbounded">
        <xsd:any processContents="skip"/>
    </xsd:choice>
    <xsd:anyAttribute processContents="skip"/>
</xsd:complexType>
<xsd:element name="XMIPackage">
    <xsd:complexType>
        <xsd:choice minOccurs="0" maxOccurs="unbounded">
            <xsd:element ref="Difference"/>
            <xsd:element ref="Add"/>
            <xsd:element ref="Replace"/>
            <xsd:element ref="Delete"/>
            <xsd:element ref="XMI"/>
            <xsd:element ref="Documentation"/>
            <xsd:element ref="Extension"/>
        </xsd:choice>
    </xsd:complexType>
</xsd:element>

```