UML-Editor Reference Manual The Art of Modeling. . .

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Preface

The wish to enhance application of the *model-based method* motivated the creation of the UML-editor .

In this sense the editor is unique, since it permits the modeling of UML/INTERLIS, i.e. the synthesis of two standards within the scope of data-modeling.

INTERLIS is a specific form of UMLwhich permits the automatic derivation of different formats (amongst others the XML-Schema).

This tool is an attempt to facilitate the application and thus the mastery of the very complex matter of UML and INTERLIS thanks to a intuitive device and hence to render it accessible to a greater number of users.

Thus we express due thanks to KOGIS because without their support this UML/INTERLIS-editor could never have been achieved.

Chapter 1

Regarding This Document

- Chapter 2 gives general information concerning the UML-editor.
- Chapter 3 describes function and interface of the UML-editor.
- Chapter 4 describes specific model elements (objects) of the UML-editor.

Chapter 2

General Remarks

This reference manual has been conceived as an accompanying document for the UML-editor. Thus it offers assistance in the use of functions and explain procedures of the tool. At the same time it displays the technical possibilities of the editor in the modeling of UML and INTERLIS.

Modeling with the UML-editor requires a certain knowledge in UML (see chapter B) [1] and INTERLIS (see chapter C.1). Therefore we do not enter into these topics, because they would be beyond the scope of this reference manual. You will find further information concerning UML in the Internet and for INTERLIS there is an *INTERLIS Reference Manual*[6] which offers ample explication concerning the use of INTERLIS by means of practical examples.

In addition to this manual there is also an *Introduction to the UML/INTERLIS-editor* [7] with a step-by-step explanation of modeling with the UML-editor.

2.1 Installation

For further instructions concerning the installation of the UML-editor see [7].

2.2 License Terms

This library is free software; you can redistribute it and/or modify it under the terms of the GNU Lesser General Public License as published by the Free Software Foundation; either version 2.1 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU Lesser General Public License for more details.

2.3 Mandator

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2.4 Developer

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Assistants:

*soft*Environment
Umwelt- & sozialverträgliche Software

*soft*Environment
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2.5 Software applied

- Java SDK (cf. http://java.sun.com)
- JHotDraw (Graphic) (cf. http://sourceforge.net/projects/jhotdraw)
- Apache Software Foundation (XML) (cf. http://www.apache.org)

Chapter 3

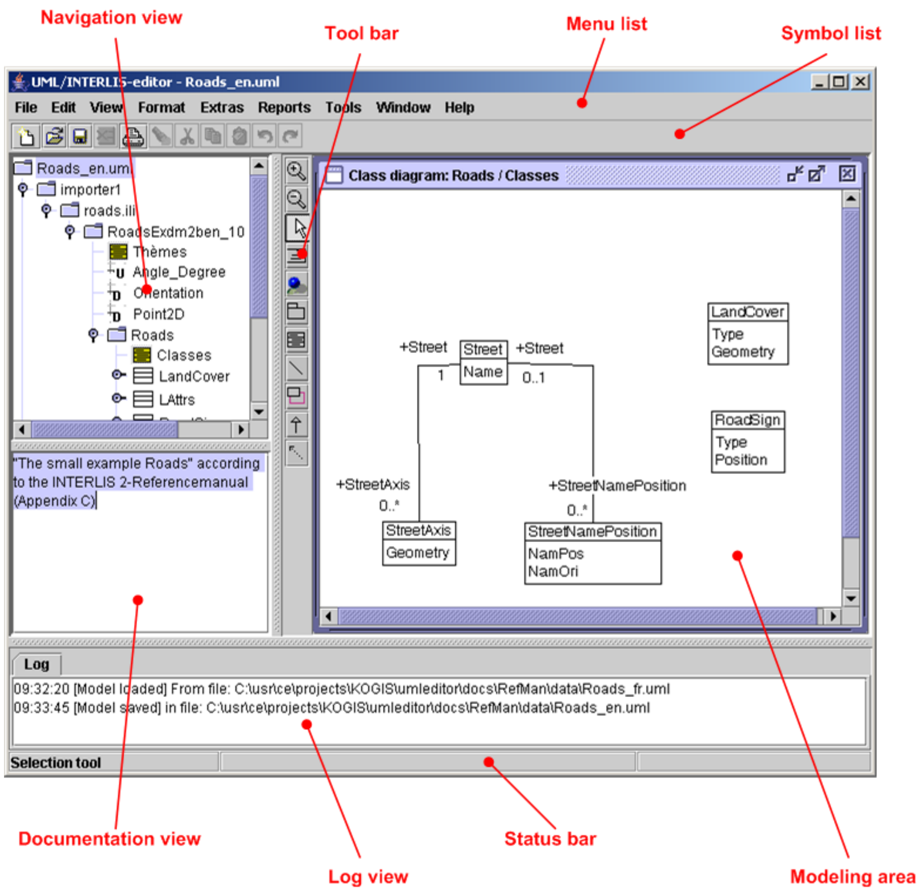
User Interface

On principle the UML-editor see fig. 3.1 represents the most important model elements (see chapter 4) hierarchically in the navigation pane as a tree-structure (see chapter 3.3). Some few elements (e.g. generalization, dependencies, syntax, etc.) do not really make sense in the navigation pane and hence will be suppressed by the UML-editor . However these model elements can still be maintained via the specification dialogs (see chapter 4.2) .

A possible element in the navigation pane is the class diagram (see chapter 4.1), which permits *graphic modeling*. Thus it is possible to represent model elements from the navigation pane in a class diagram. The same model element may appear in several diagrams in order to further visualize different aspects of the same data model. However graphic representation is not possible for all model elements. Class diagrams can be generated in the navigation pane and then opened in the modeling space (see chapter 3.4) .

3.1 Menu Bar

The menu list contains the names of the menus. By clicking a menu name a list of commands will appear, which in turn control a series of functions of the UML-editor.



"The small example Roads" according to the INTERLIS 2-Referencemanual (Appendix C)

```
09:32:20 [Model loaded] From file: C:\usr\ce\projects\KOGIS\umleditor\docs\RefMan\data\Roads_fr.uml
09:33:45 [Model saved] in file: C:\usr\ce\projects\KOGIS\umleditor\docs\RefMan\data\Roads_en.uml
```

Figure 3.1: UML-editor with example-model Roads

3.1.1 File

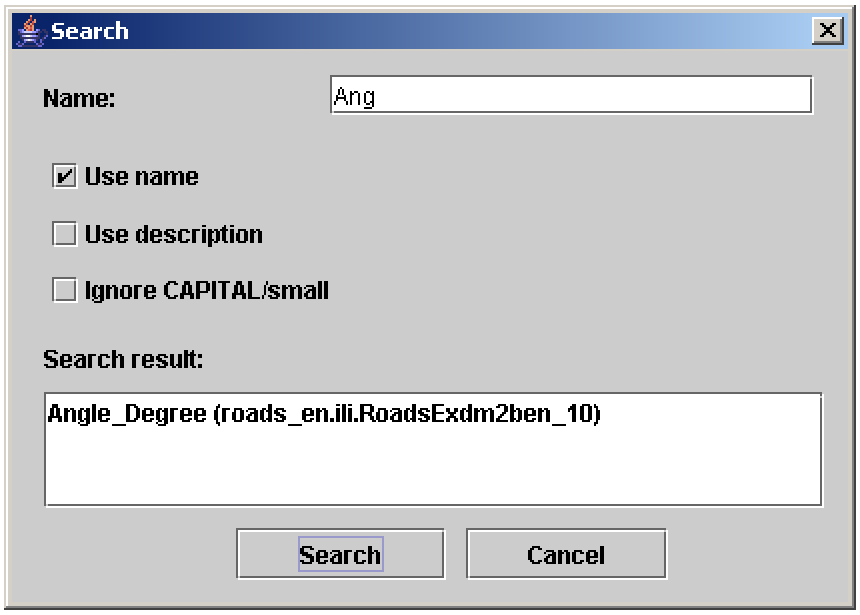
Function	Description
New	Generates a new model.
Open...	Opens a file dialog for the selection of a model file.
Save	Saves the present model with the file name indicated.
Save as...	Opens a file dialog for the saving of a file name with a different name.
Print...	Opens a print dialog.
Close	Closes the program.

3.1.2 Editing

Function	Description
Undo	(At present this function is not implemented.)
Restore	(At present this function is not implemented.)
Cut	(At present this function is not implemented.)
Copy	(At present this function is not implemented.)
Insert	(At present this function is not implemented.)
Select all	(At present this function is not implemented.)
Search/Replace...	Opens a search-dialogsee fig. 3.2, to find elements that correspond to the search criteria. By selecting an element in the *search result list* the relevant element is automatically selected in the navigation pane .

3.1.3 View

Function	Description
Look & Feel	Various representation managers can be selected (independent of platform).
Symbol lists	The standard tool bar (see chapter 3.2) can be activated/ deactivated.
Status bar	The status bar can be activated/ deactivated.



Name: Ang

[✓] Use name

[ ] Use description

[ ] Ignore CAPITAL/small

Search result:

Angle_Degree (roads_en.ili.RoadsExdm2ben_10)

Figure 3.2: dialog – Search/Replace

3.1.4 Formatting

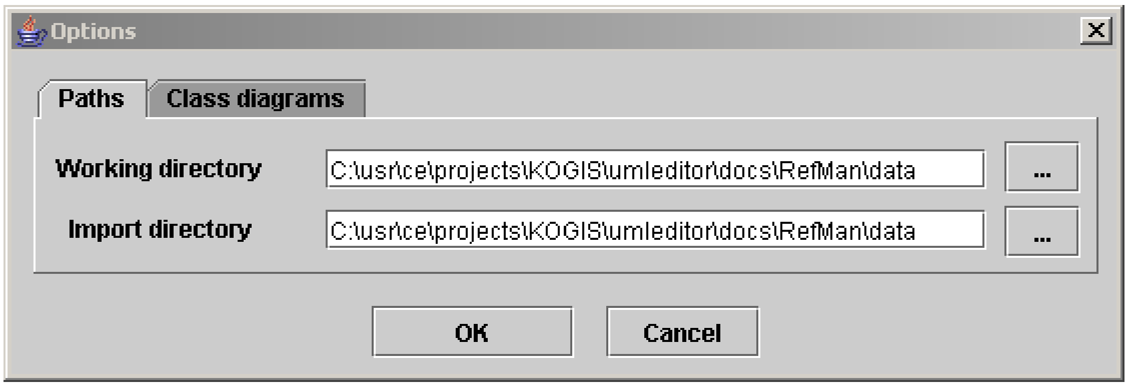
FUNCTION	DESCRIPTION
Adjuste diagram	The contents of the present diagram are automatically adjusted. The function attempts to distribute the model elements as evenly as possible in the diagram and at the same time to avoid as much as possible crossings of lines. In general when using this function it is necessary to manually improve this arrangement.

3.1.5 Extras

FUNCTION	DESCRIPTION
Options...	An options dialog see fig. 3.3, see fig. 3.4 is opened. The necessary configurations are stored in the file *.umleditor* in your personal directory (${user.home}) .

FIELD	DESCRIPTION
Work directory	Standard directory for the saving and opening of files.
Import directory	Standard directory for the import of data.

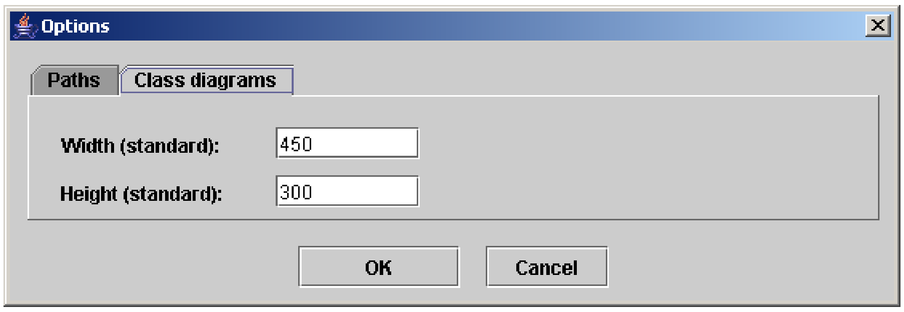
FIELD	DESCRIPTION
Width (Standard)	Standard width for new class diagrams.
Height (Standard)	Standard height for new class diagrams.



Working directory: C:\usr\ce\projects\KOGIS\umleditor\docs\RefMan\data

Import directory: C:\usr\ce\projects\KOGIS\umleditor\docs\RefMan\data

Figure 3.3: dialog – Options (tag *paths*)



Width (standard): 450

Height (standard): 300

Figure 3.4: dialog – Options (tag *Class diagrams*)

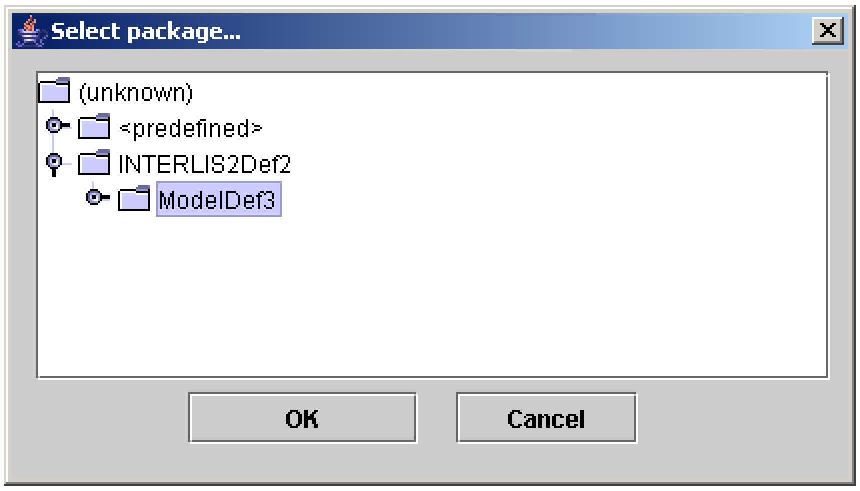
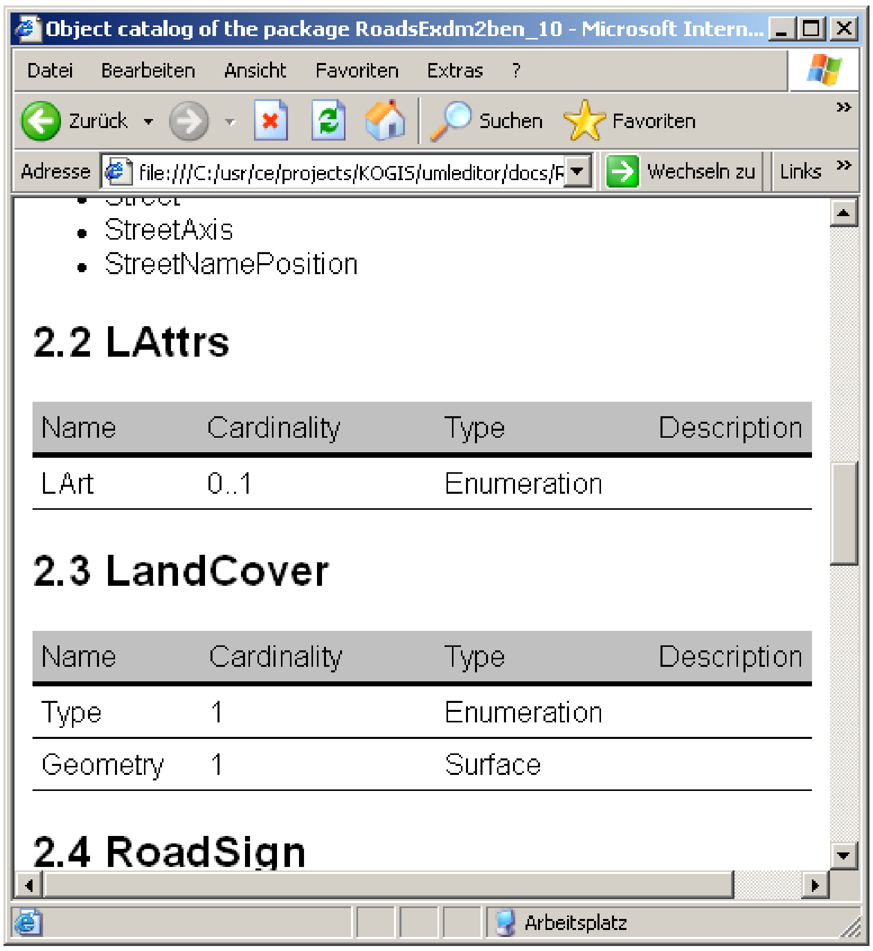


Figure 3.5: dialog – Package selectiondialog

These values define the minimal size of a diagram and thus also the size of a new empty diagram. Depending on the size of your screen it may be sensible to alter these values. If some model elements are situated at the lower or right edge of a diagram, this diagram is automatically enlarged even without previously altering the corresponding values.

3.1.6 Reports

FUNCTION	DESCRIPTION
Object catalog...	Opens a package selection dialog see fig. 3.5 for the selection of a package. For the package thus selected, model objects are listed in an HTML-report see fig. 3.6.
Structure...	Opens a package selection dialog see fig. 3.5 for the selection of a package. For the package thus selected the corresponding package structure is generated in an HTML-report see fig. 3.7.


Object catalog of the package RoadsExdm2ben_10 - Microsoft Intern...
Datei Bearbeiten Ansicht Favoriten Extras ?
Zurück
Suchen
Favoriten
Adresse file:///C:/usr/ce/projects/KOGIS/umleditor/docs/F
Wechseln zu
Links
Arbeitsplatz

- StreetAxis
- StreetNamePosition

2.2 LAttrs

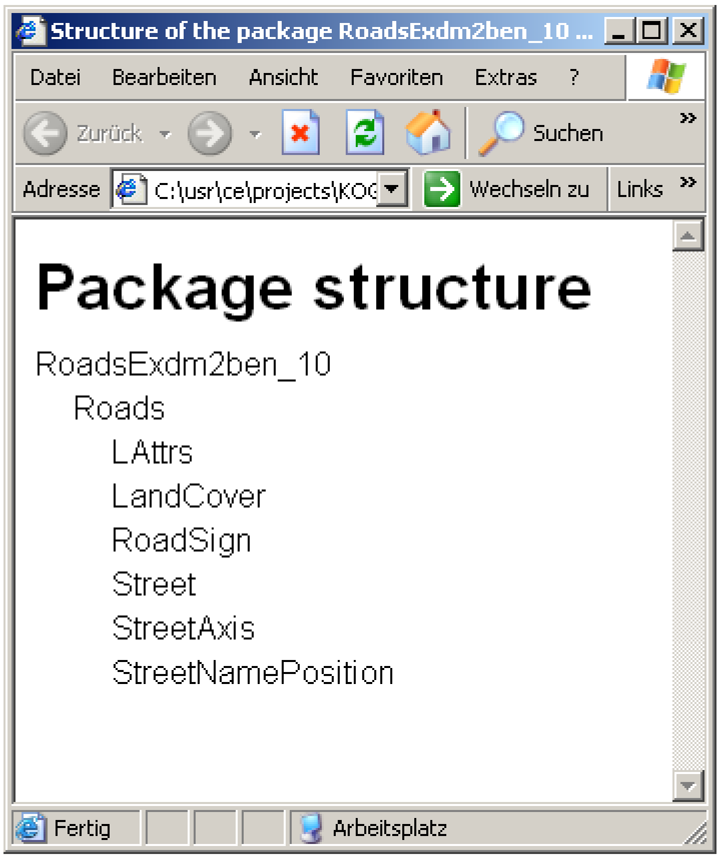
Name	Cardinality	Type	Description
LArt	0..1	Enumeration	

2.3 LandCover

Name	Cardinality	Type	Description
Type	1	Enumeration	
Geometry	1	Surface	

2.4 RoadSign

Figure 3.6: dialog – Report *object catalog*



Package structure

RoadsExdm2ben_10
    Roads
        LAttrs
        LandCover
        RoadSign
        Street
        StreetAxis
        StreetNamePosition

Figure 3.7: dialog – Report *structure*

3.1.7 Tools

INTERLIS

Function	Description
Import...	Opens a filedialogin order to import INTERLIS-model files into the model (see chapter D.4).
Import groups...	(At present this function is not implemented.)
Export...	Generates the INTERLIS-model files (see chapter D.4) according to the present model in the work directory (see chapter 3.1.5).
Export XML-Schema ...	Opens a file-dialogfor the export of the XML-Schema (XSD) (see chapter D.2). The XML-Schema thus generated describes the transfer format.
Model check	The model is examined by means of the INTERLIScompiler (see chapter C.2). Possible errors appear in the log pane with an identification number (see chapter 3.6).

XMI/ROSE

Function	Description
Import...	Opens a file dialogto import a model file exported with Rational-Rose via XMI .

3.1.8 Window

Function	Description
Cascade	Several windows in the modeling space will be super-positioned one behind the other.
Distribute	Several windows in the modeling space will be super-positioned one below the other.

3.1.9 Help

Function	Description
Help...	Opens a help-line in a browser.
Info...	Opens an info dialog with information concerning the program.

3.2 Symbol Bar

Depending on the context, individual functions are activated or deactivated (by activating the symbols in the symbol list). By positioning the mouse cursor on a symbol, the corresponding description of the function appears in text form.

New (see chapter 3.1.1).
Open... (see chapter 3.1.1).
Save (see chapter 3.1.1).
Print (see chapter 3.1.1).

3.3 Navigation Pane

The navigation pane represents the entire model as a tree structure . Thus the user may see how the model is organized and the view can be adjusted to the current needs of the user by opening/closing sub-trees A context-sensitive menu will show the possible functions for each selected model element in the tree:

FUNCTION	DESCRIPTION
New	Permits the inserting of a new model element. Depending on the selection various elements are available (see chapter 4).
Modify...	Opens the specification dialog for the corresponding element model element (see chapter 4.2).
Activate diagram	Opens or displays the selected diagram in the foreground within the modeling range.
Sort	Arranges the tree structure according to the possible selection, criterias being *Name* or *Type/Name*.
Print...	Opens a print dialog.
Delete (in the model)	Deletes the selected model element from the model.
Rename	Permits direct renaming of the selected element.
Insert in diagram	Inserts the selected model element into the momentarily active diagram .

3.4 Modeling Space

In the modeling space diagrams (see chapter 4.1) that typically display a prominent detail from the model can be represented in their own (internal) windows.

3.4.1 Tool Bar

The tool bar is dynamically adjusted to the currently selected diagram (see chapter 4.1), i.e. the tools that are admissible for the corresponding diagram type are automatically displayed and activated.

The following tools are supported by the UML-editor :

Enlarges the current diagram.

Reduces the current diagram.

Permits the *selection* of a model element.

Permits inserting of a *note*.

Permits *connecting a note* with another model element(node).

Permits inserting of a *package*.

Permits inserting of a *class* .

Permits *connecting* two classes by means of a relationship.

Permits the creation of a *reflexive relationship* of a class.

Permits the *inheritance (generalization)* between two model elements.

Permits the creation of a *dependency* between two model elements.

3.5 Documentation Space

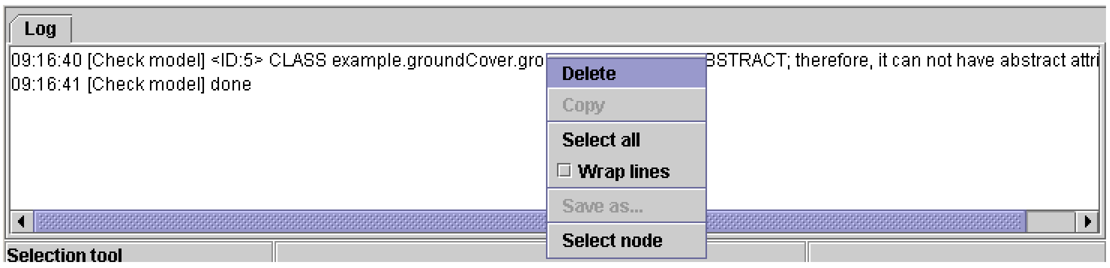
The documentation view displays descriptions concerning an model element , e.g. by means of selection:

- in the navigation pane(see chapter 3.3)
- in the current diagram

A popup menu permits all common editing operations (see chapter 3.1.2).

3.6 Log Pane

The log pane see fig. 3.8 features run-time messages (e.g. when saving the model or during model check (see chapter 3.1.7)). Depending on the selection the following functions of the popup menu are possible:



```
09:16:40 [Check model] <ID:5> CLASS example.groundCover.gro                    BSTRACT; therefore, it can not have abstract attri
09:16:41 [Check model] done
```

Figure 3.8: log pane Select node (according to identification number)

FUNCTION	DESCRIPTION
Delete	Deletes the entire display in the log pane.
Copy	Inserts the selected messages in the copy buffer of the system.
Select all	Selects all messages.
Make up lines	Messages that are longer than the current window width are made up into two lines by the UML-editor .
Save as...	Permits the saving of all messages in the log pane of a file.
Select node	Applies only to special messages with identification number. This function selects the model element concerned by this message in the navigation pane.

3.7 Status Bar

The status bar is set up in three sections:

- *Left box* indicates which tool from the tool bar is currently activated.
- *Middle box* (At present this function is not implemented.)
- *Right box* (At present this function is not implemented.)

Chapter 4

Modeling Elements

Hereafter we describe model elements that can be modeled by means of the UML-editor . Based upon the language definition and resulting rules of INTERLIS there is a valid selection of sub-elements for each model element , These will be automatically supported by the UML-editor .
This is the particular strong point of the UML-editor, a user need not worry whether he is developping a valid model or not. Whatever is rendered possible by the editor, is also valid within the scope of UML and INTERLIS . Special cases can always be verified by means of the INTERLIS-compiler (see chapter 3.1.7).

4.1 Class Diagram

The class diagrams strictly respect the rules of UML (see chapter B). All possible tools are automatically activated when opening a class diagram in the *tool bar* (see chapter 3.4.1).

A typical use of class diagrams is the representation of packages see fig. 4.1 or classes see fig. 4.2:

4.1.1 Popup-Menu for the Diagram

The following functions, affecting the entire diagram , are at your disposal:

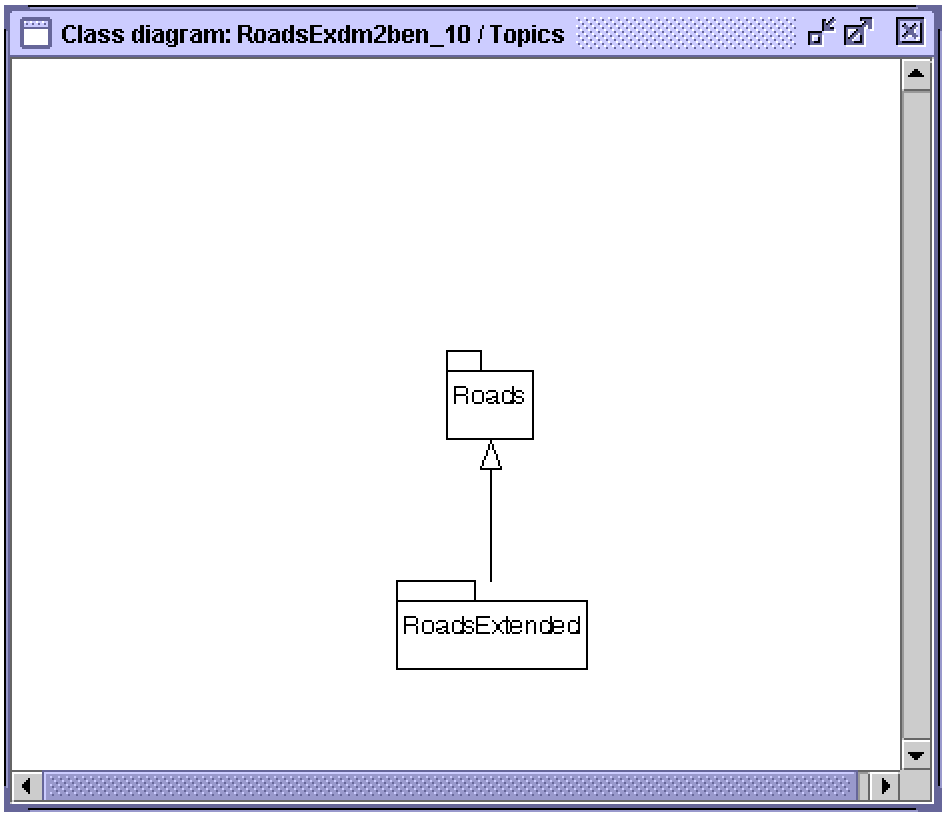
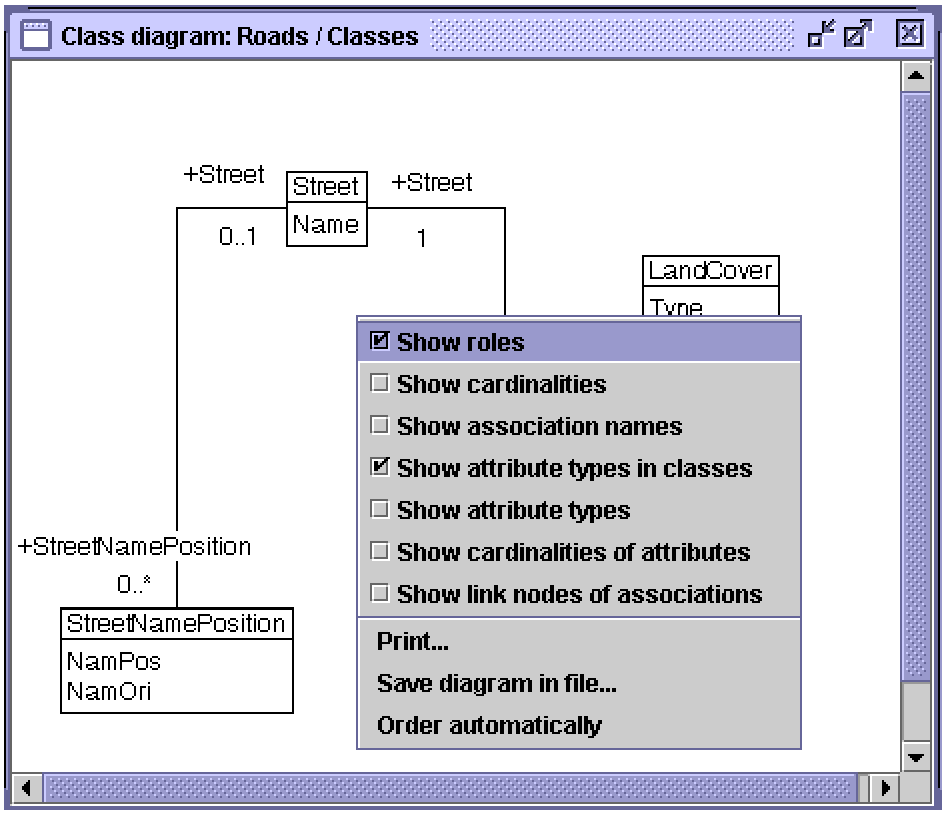


Figure 4.1: Class diagram – Representation of packages



☑ Show roles
☐ Show cardinalities
☐ Show association names
☑ Show attribute types in classes
☐ Show attribute types
☐ Show cardinalities of attributes
☐ Show link nodes of associations

Figure 4.2: Class diagram – Representation of classes with popup-menu for the diagram

Function	Description
Display role	Represents the roles (see chapter 4.2.11) of a relationship or not. Roles are represented with a preceding plus (e.g. *+Street* see fig. 3.1).
Display cardinality	Represents the cardinalities of relationships or not (e.g. ***0..**** see fig. 3.1).
Display association names	Represents the names of all relationships in the diagram dar or not.
Display attributes in classes	Represents the attributes of all classes in the diagram or not.
Display type of attribute	Represents the data type for all attributes displayed in all classes in the diagram or not.
Display cardinality of attributes	Represents the cardinality of all attributes displayed in all classes in the diagram or not .
Display link node of associations	The link node is an "artificial device", that enables graphic links between particular cases of relationships (see chapter 4.2.9) in the diagram .
Print...	Opens a print dialog for the printing of the diagram.
Save... in diagram file	Opens a file-dialog for the saving of the diagram.
Automatic reorganization	Automatic reorganization of the contents of a diagram.

4.1.2 Popup-Menu of a Model Element

General Functions

For each model element the following *general functions* are available see fig. 4.3:

Function	Description
Modify...	Opens the specification dialog (see chapter 4.2) for a model element.
Selecting in the navigation pane	Indicates the selected graphic object in the navigation pane.

Sub-menu *Formatting*:

Function	Description
Font type...	(At present this function is not implemented.).
Line color...	Opens a color dialog for the selection of a line color (e.g. for the coloring of associations).
Fill-in color...	Opens a color dialog for the selection of a fill-in color (e.g. for the coloring of class symbols).

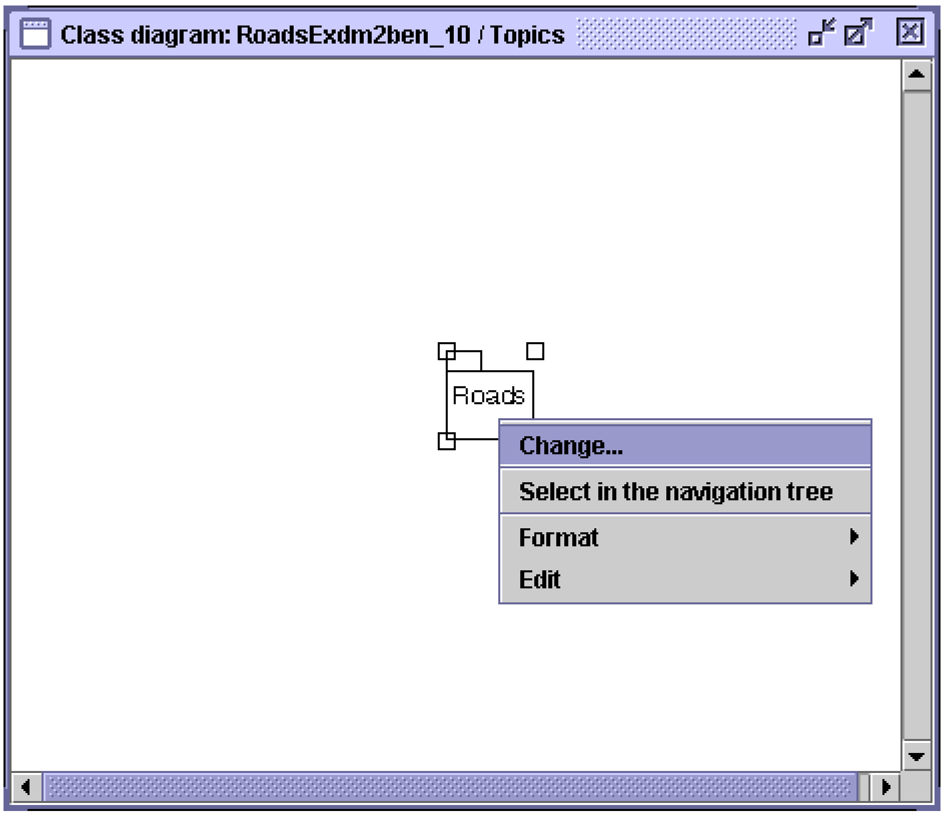

Class diagram: RoadsExdm2ben_10 / Topics
Roads
Change...
Select in the navigation tree
Format
Edit

Figure 4.3: Class diagram – General remarks about popup-menu model elements

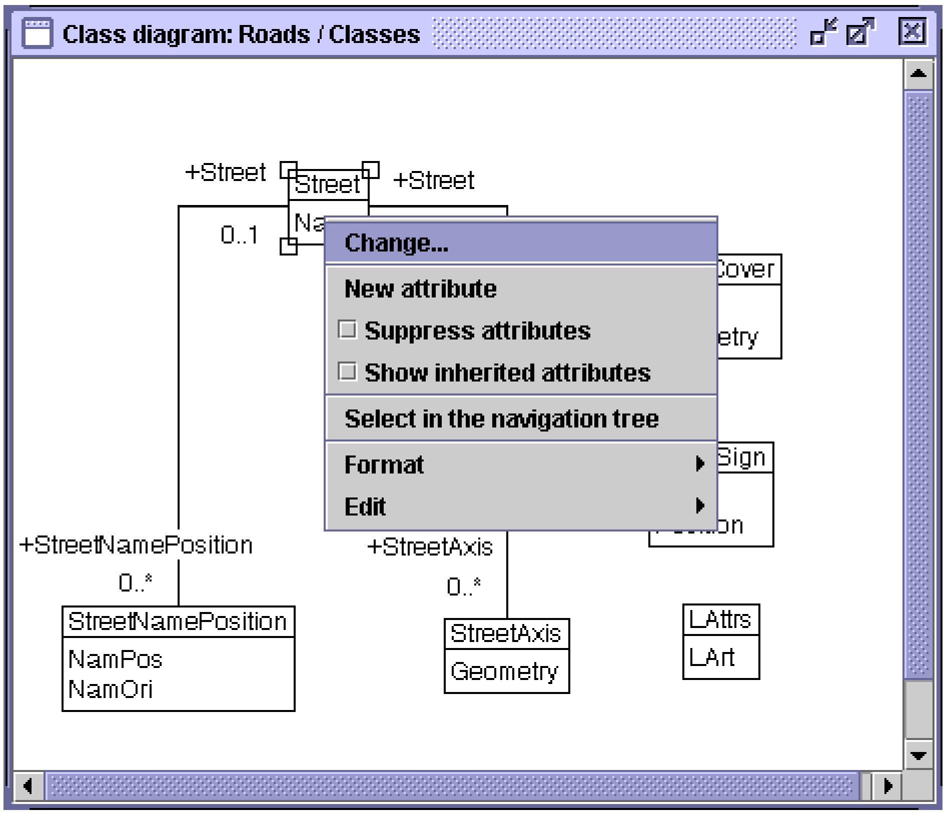


Figure 4.4: Class diagram – Special functions of a class

Sub-menu *Editing*:

FUNCTION	DESCRIPTION
Cut	(At present this function is not implemented.).
Copy	(At present this function is not implemented.).
Paste	(At present this function is not implemented.).
Delete	The selected model element is only graphically deleted in the current diagram, i.e. it remains in the navigation pane (and thus in the model).
Delete in the model	The selected model element is deleted graphically in the current diagram as well as definitively in the model. In addition all model dependencies are deleted (e.g. Roles in classes with connected associations).

Class-specific functions

see fig. 4.4

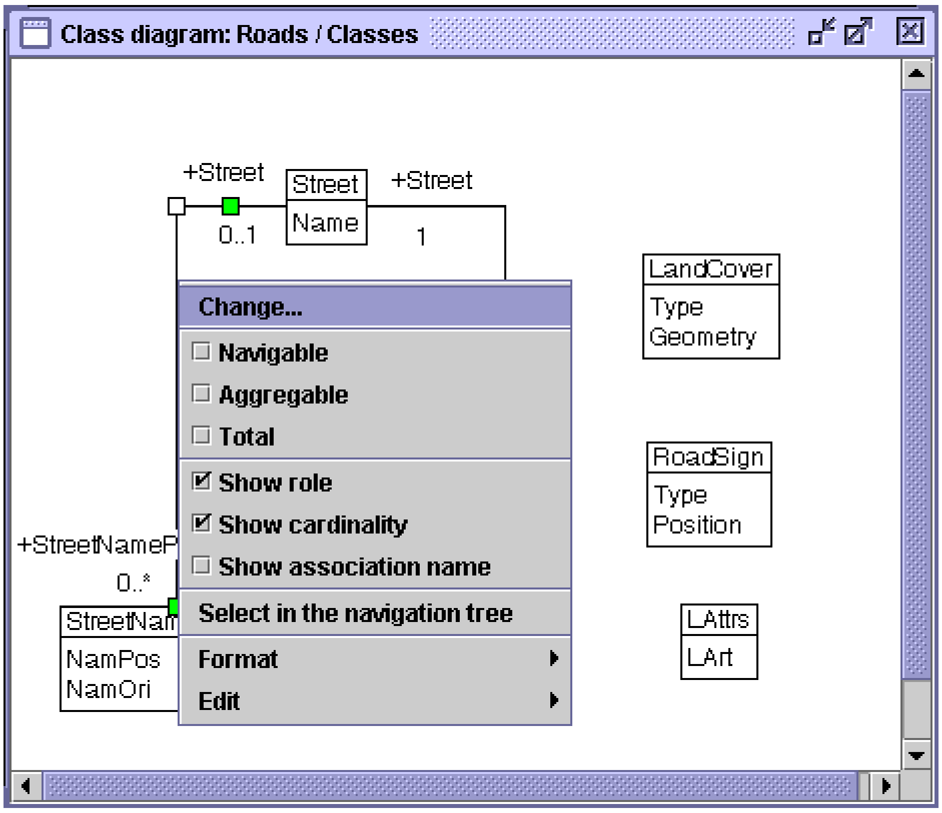


Figure 4.5: Class diagram – Special functions of an relatioship

FUNCTION	DESCRIPTION
New attribute	Adds a new attribute (see chapter 4.2.10) to the class.
Hide attributes	Activates/ Deactivates representation of attributes for this class.
Display inherited attributes	In addition to the attributes defined in this class, the attributes of the basic class(es) are also displayed.

Relation-specific functions

see fig. 4.5

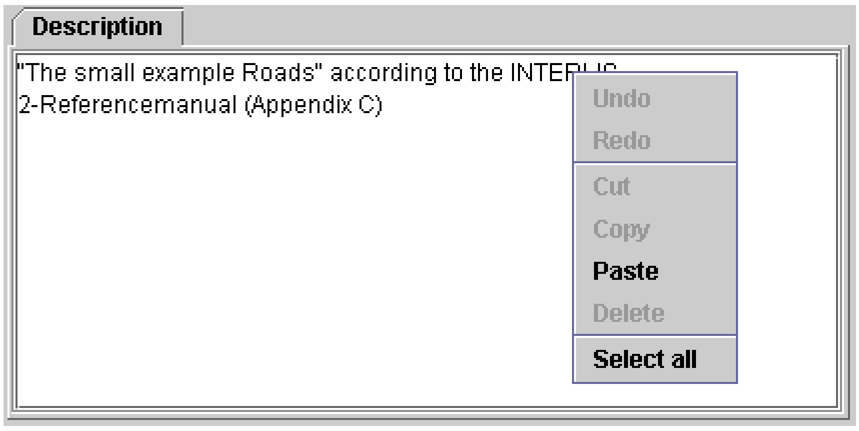

Description
"The small example Roads" according to the INTERLIS
2-Referencemanual (Appendix C)
Undo
Redo
Cut
Copy
Paste
Delete
Select all

Figure 4.6: dialog (tag *description*)

FUNCTION	DESCRIPTION
Association	Defines the *direction of navigation* towards a role (see chapter 4.2.11) on the corresponding relatioship. In accordance with UML this is represented optically by an open arrow in the class diagram .
Aggregation	Characterizes the role (see chapter 4.2.11) of an relatioship as *aggregation*. In accordance with UML this is represented optically with a void rhombus in the class diagram .
Composition	Characterizes the role (see chapter 4.2.11) of an relatioship as *composition*. In accordance with UML this is represented optically with a filled in rhombus in the class diagram .
Display role	Activates / Deactivates the role name (see chapter 4.2.11) of a relationship (see chapter 4.1.1).
Display cardinality	Represents the *cardinality* of the roles (see chapter 4.2.11) of an relatioship or not .
Display name of association	Represents the name of an relatioship or not.

4.2 Dialogs

On principle there is a specific dialog for each model element to view or modify the properties of this element. Each model element-dialog features a minimum of the following tabs see fig. 4.6:

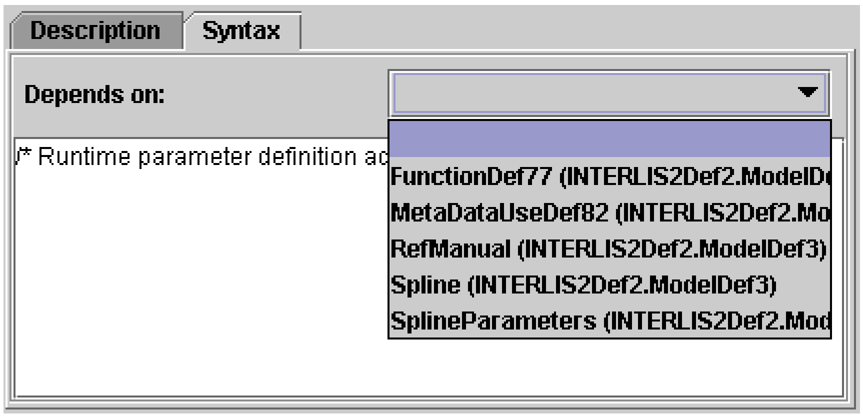

Description
Syntax
Depends on:
/* Runtime parameter definition ac
FunctionDef77 (INTERLIS2Def2.ModelD
MetaDataUseDef82 (INTERLIS2Def2.Mo
RefManual (INTERLIS2Def2.ModelDef3)
Spline (INTERLIS2Def2.ModelDef3)
SplineParameters (INTERLIS2Def2.Mod

Figure 4.7: dialog (tag *Syntax*)

FIELD	DESCRIPTION
Description	Text entry with popup-menu featuring common text functions (see chapter 3.1.2). This text is taken into consideration when generating an object catalog

see fig. 4.7

FIELD	DESCRIPTION
Depends of	Possible dependencies of other *Model elements* can be selected from a list.
INTERLIS Syntax	Text entry with popup-menu featuring common text functions (see chapter 3.1.2). Permits entry of syntax code (in accordance with INTERLISrules). This code can be verified by means of the function *Model check* (see chapter 3.1.7).

Each dialog features the following functions:

FUNCTION	DESCRIPTION
OK	Saves all modifications and closes dialog.
Cancel	Rejects all modifications and closes dialog.
Accept	Saves all modifications without closing dialog.

4.2.1 Baskets of Reference Systems/Signatures

see fig. 4.8

FIELD	DESCRIPTION
File name	Assigns an XML-file .
Description	(see fig. 4.6).

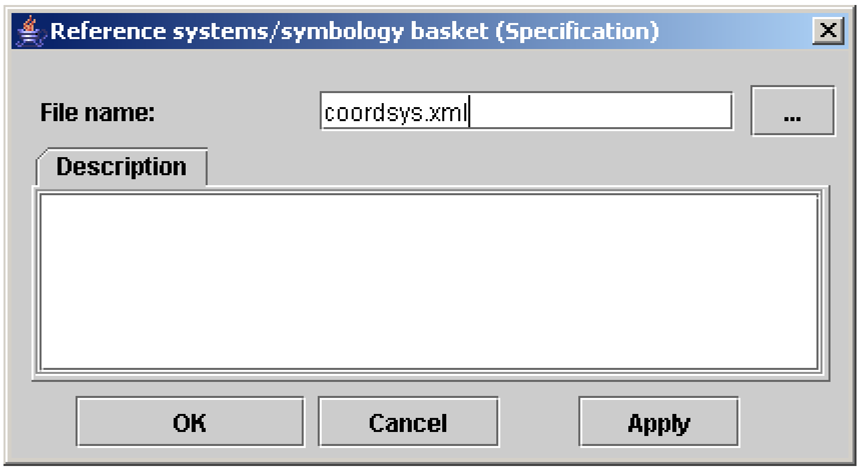


Figure 4.8: dialog – Containers of reference systems/signatures

4.2.2 UML-Package

A UML-package see fig. 4.9 corresponds to a folder, in which other elements can be stored. A UML-package is a model element which does not exist in INTERLIS and hence does not appear in the exported INTERLIS-model.

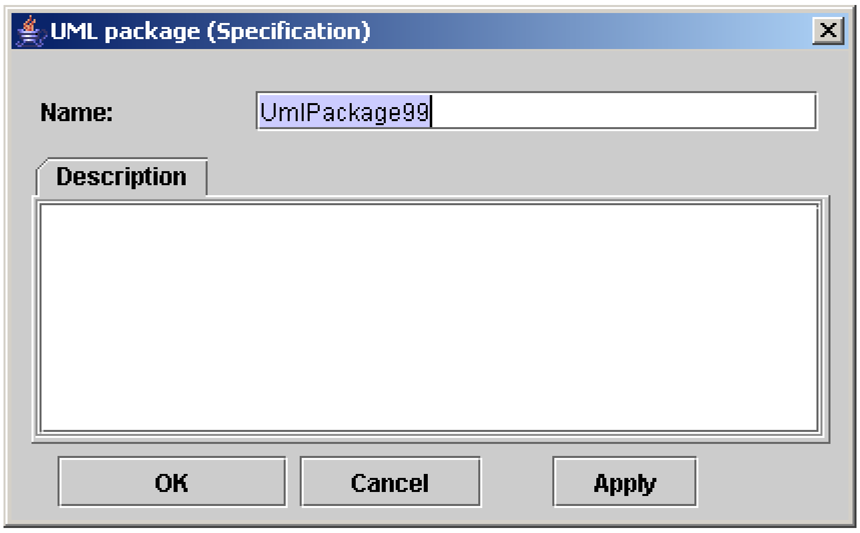
FIELD	DESCRIPTION
Name	Name of the *UML-package*
Description	(see fig. 4.6).

4.2.3 INTERLIS 2-File

A *INTERLIS 2-file* see fig. 4.10 corresponds to a package in accordance with UML.

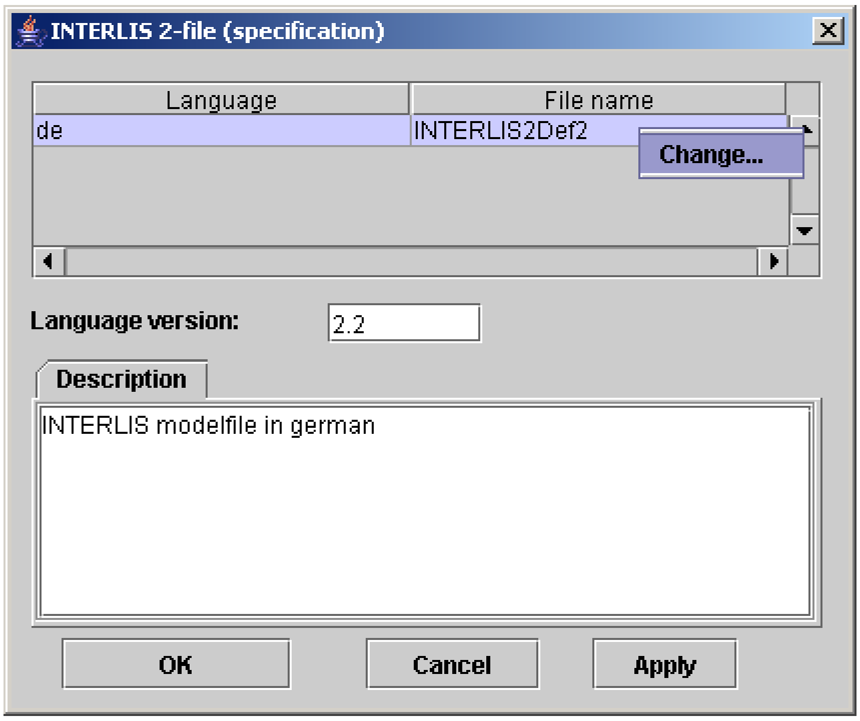
For further information concerning rules and properties see INTERLIS 2 – Referencemanual 2.3.

FIELD	DESCRIPTION
Table	Lists language and corresponding file names. A model element *INTERLIS 2-file* represents an INTERLIS-model file (see chapter D.4). If the field file name is a relative file path, then it refers to a directory, in which the UML-editor file is stored. By means of the popup-menu-function *Modify...* a table entry can be modified.
Linguistic version	We refer to the version of the INTERLIS-specification applied. This version of the editor supports version 2.2.
Description	(see fig. 4.6).



Name: UmlPackage99

Figure 4.9: dialog – UML-Paket



Language	File name
de	INTERLIS2Def2

Language version: 2.2

INTERLIS modelfile in german

Figure 4.10: dialog – *INTERLIS 2-file*

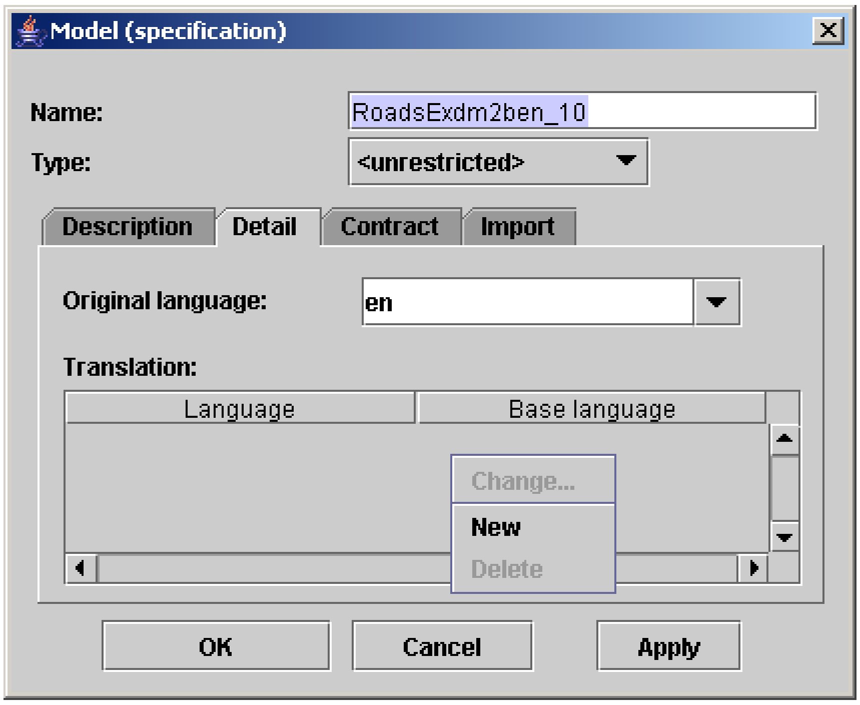


Figure 4.11: dialog – *Model* (tag *Detail*)

4.2.4 Model

A *model* see fig. 4.11 corresponds to a package) in accordance with UML.

For further information concerning rules and properties see INTERLIS 2 – Referencemanual 2.5.1.

FIELD	DESCRIPTION
Name	Name of the *model*
Type	Characterization (possible options being *types*, *reference systems*, *symbologies* or *unlimited*).
Description	(see fig. 4.6).
Original language	Initial language of the *Model* .
Translation (table)	A translation dialog can be opened via a popup-menu (see chapter 4.2.5). All translations concerning the *Model* are listed in the table.

see fig. 4.12

FIELD	DESCRIPTION
Contract (Table)	Via popup-menu you can open a contract dialog (see chapter 4.2.6). In this table all *authors* of contracts are listed.

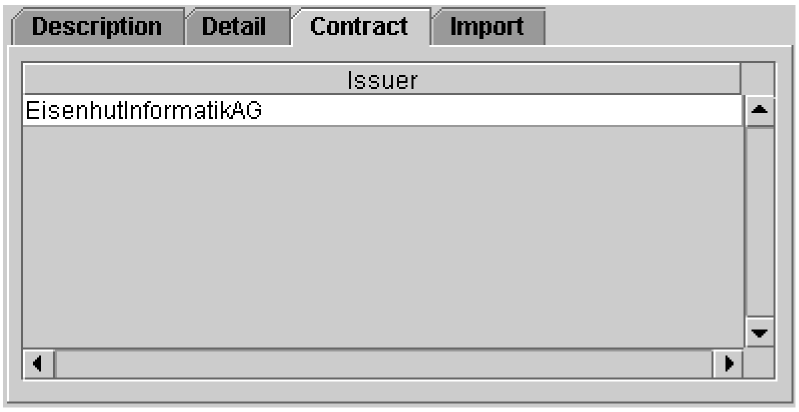


Figure 4.12: dialog – *Model* (tag *Contract*)

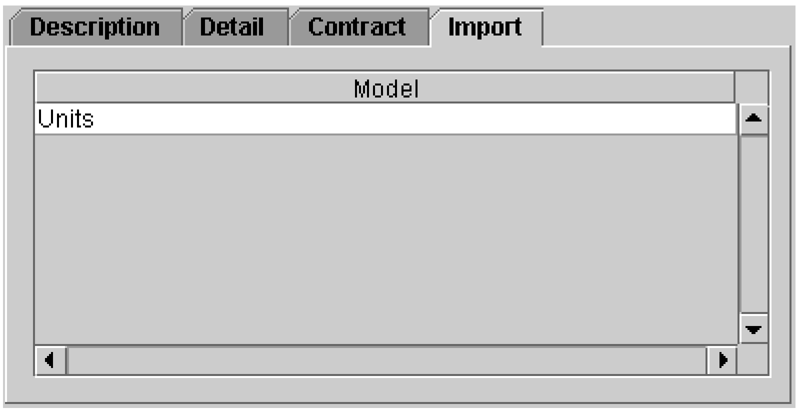


Figure 4.13: dialog – *Model* (tag *Import*)

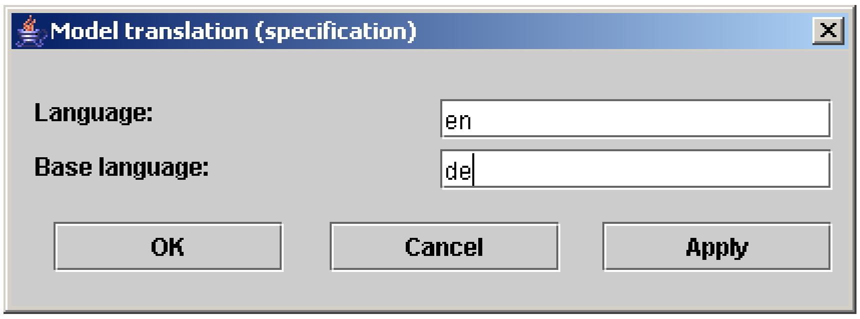
see fig. 4.13

FIELD	DESCRIPTION
Import (Tabelle)	Via popup-menu and by means of a assignation dialog other *models* can be assigned and administered. In the table all imported *models* are listed. Import relationships can be represented in a package diagram.

4.2.5 Translation of the Model

At present multilingual models are not supported by the UML-editor .

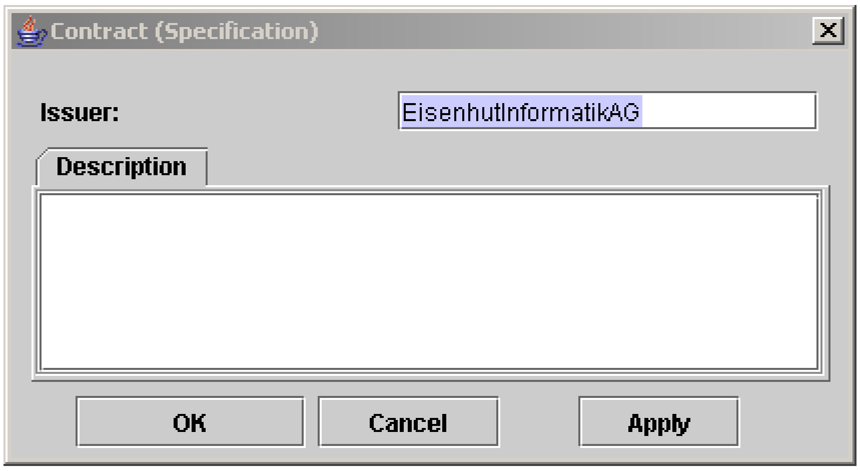
For further information concerning rules and properties see INTERLIS 2 – Referencemanual



Language: en

Base language: de

Figure 4.14: dialog – Translation of model



Issuer: EisenhutInformatikAG

Figure 4.15: dialog – Contract

2.5.1. see fig. 4.14

FIELD	DESCRIPTION
Language	Target language of the translation.
Basic language	Initial language before the translation.

4.2.6 Contract

For further information concerning rules and properties see INTERLIS 2 – Referencemanual 1.7. see fig. 4.15

FIELD	DESCRIPTION
Editor	Author of a contract.
Description	(see fig. 4.6).

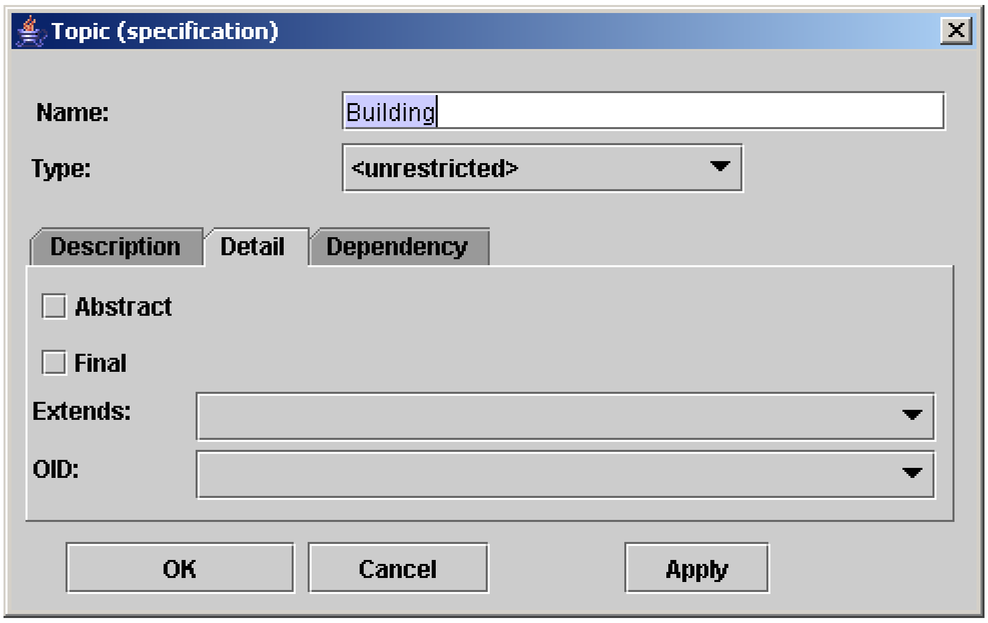


Figure 4.16: dialog – *Topic* (tag *Detail*)

4.2.7 Topic

A *topic* see fig. 4.16 corresponds to a package in accordance with UML.

For further information concerning rules and properties see INTERLIS 2 – Referencemanual 2.5.2.

FIELD	DESCRIPTION
Name	Name of the *topic*
Type	Characterization (by *views* or *unlimited*).
Description	(see fig. 4.6).
abstract	Defines a model element as *abstract* or not.
final	Defines a model element as *final* or not.
Extends	Permits the selection of model element possibly to be extended from a list of model elements suitable for specialization (list is automatically generated by the UML-editor).

see fig. 4.17

FIELD	DESCRIPTION
Dependency (Table)	Via popup-menu and by means of an assignation dialog other *topics* can be assigned and processed. In the table all dependent *topics* are listed. The dependency relationships can be represented in a package diagram.

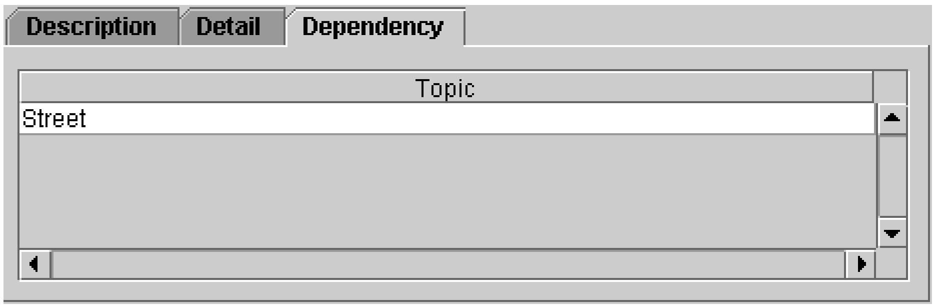


Figure 4.17: dialog – *Topic* (tag *Dependency*)

4.2.8 Class

A class see fig. 4.18 describes similar objects by means of attributes .

For further information concerning rules and properties see INTERLIS 2 – Referencemanual 2.5.3.

Field	Description
Name	Name of the *class*
Description	(see fig. 4.6).
abstract	Defines a model element as *abstract* or not.
final	Defines a model element as *final* or not.
Extends	Permits the selection of model element possibly to be extended from a list of model elements suitable for specialization (list is automatically generated by the UML-editor).
Typ	A class can either be characterized as a *class* (Default) or as a *structure*.

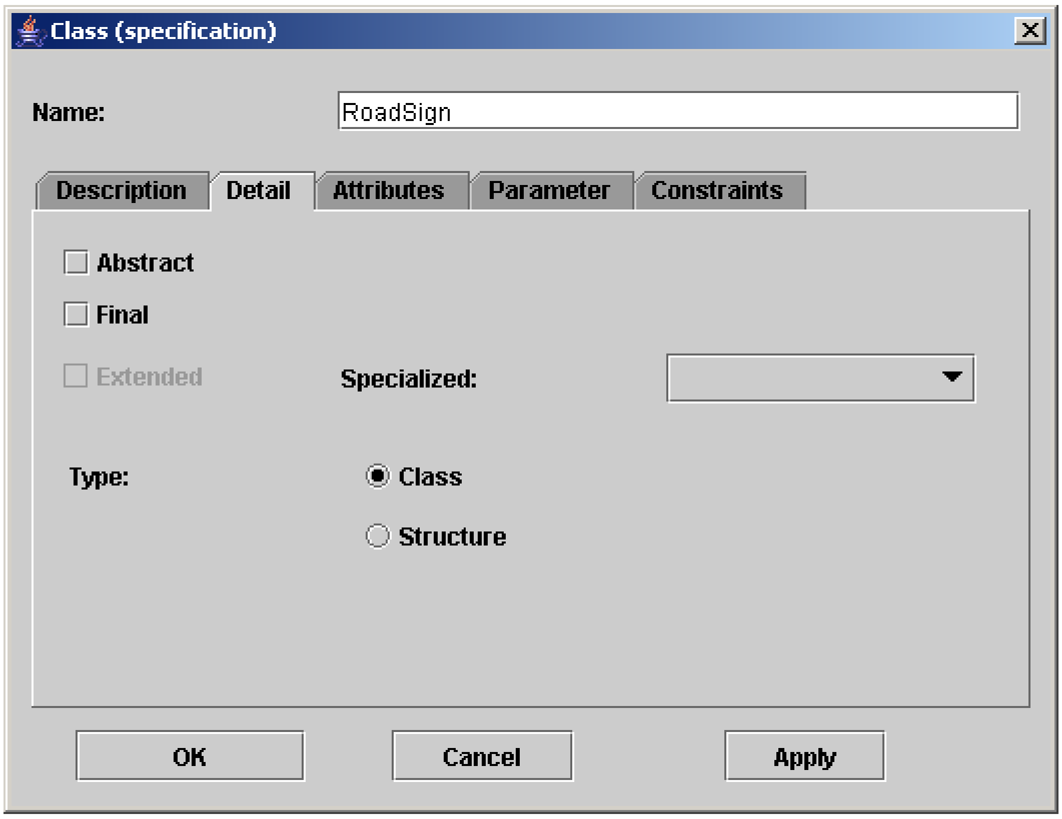
see fig. 4.19

Field	Description
Attribute (Tabelle)	Via popup-menu a list of *attributes* (see chapter 4.2.10) can be processed. All defined *attributes* are listed in the table.

see fig. 4.20

Field	Description
Parameters	Several *Parameters* in the form of syntax codes can be indicated (see fig. 4.7) . Use the symbol bar below the syntax field to facilitate when browsing, for input and deleting of Parameters.

see fig. 4.21



Class (specification)

Name: RoadSign

Abstract: ☐

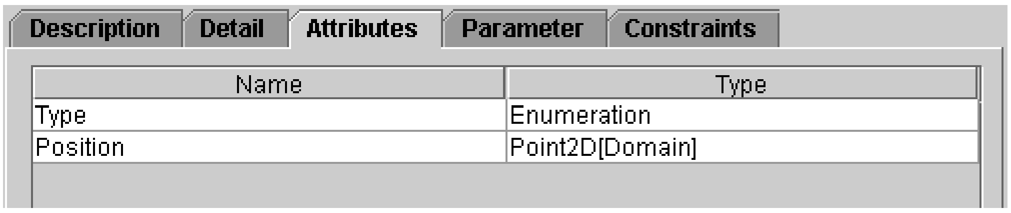
Final: ☐

Extended: ☐

Specialized:

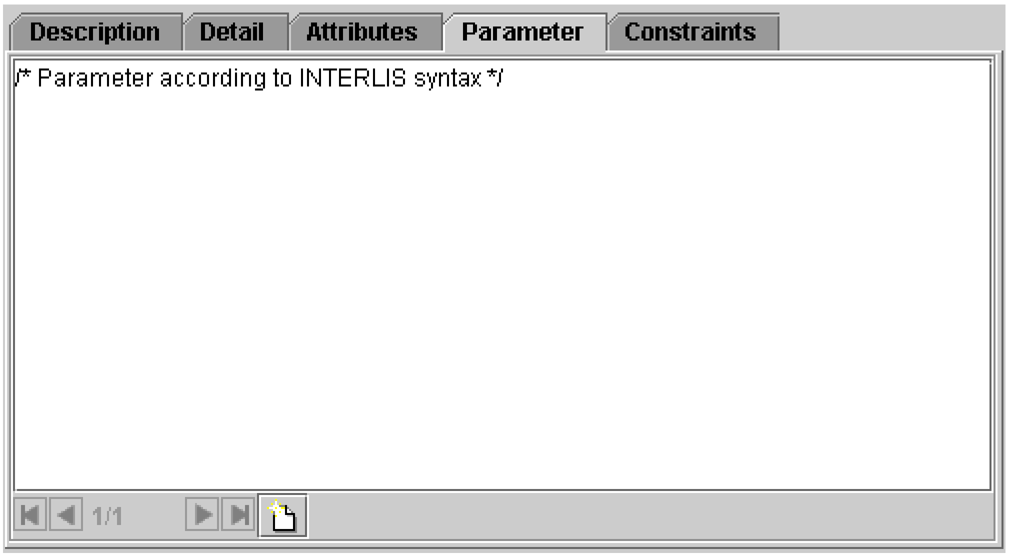
Type: Class [✓] / Structure

Figure 4.18: dialog – *Class* (tag *Detail*)



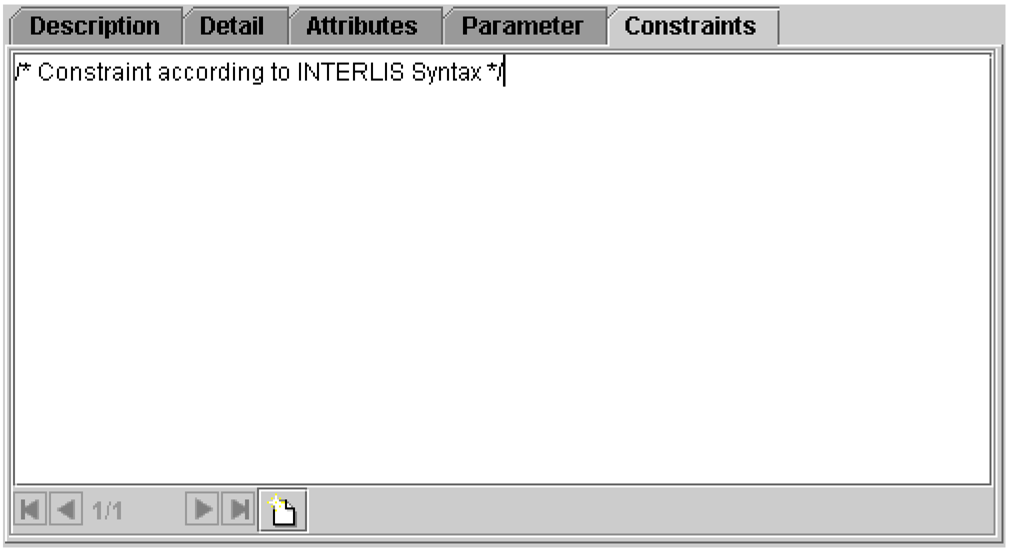
Name	Type
Type	Enumeration
Position	Point2D[Domain]

Figure 4.19: dialog – *Class* (tag *Attribute*)



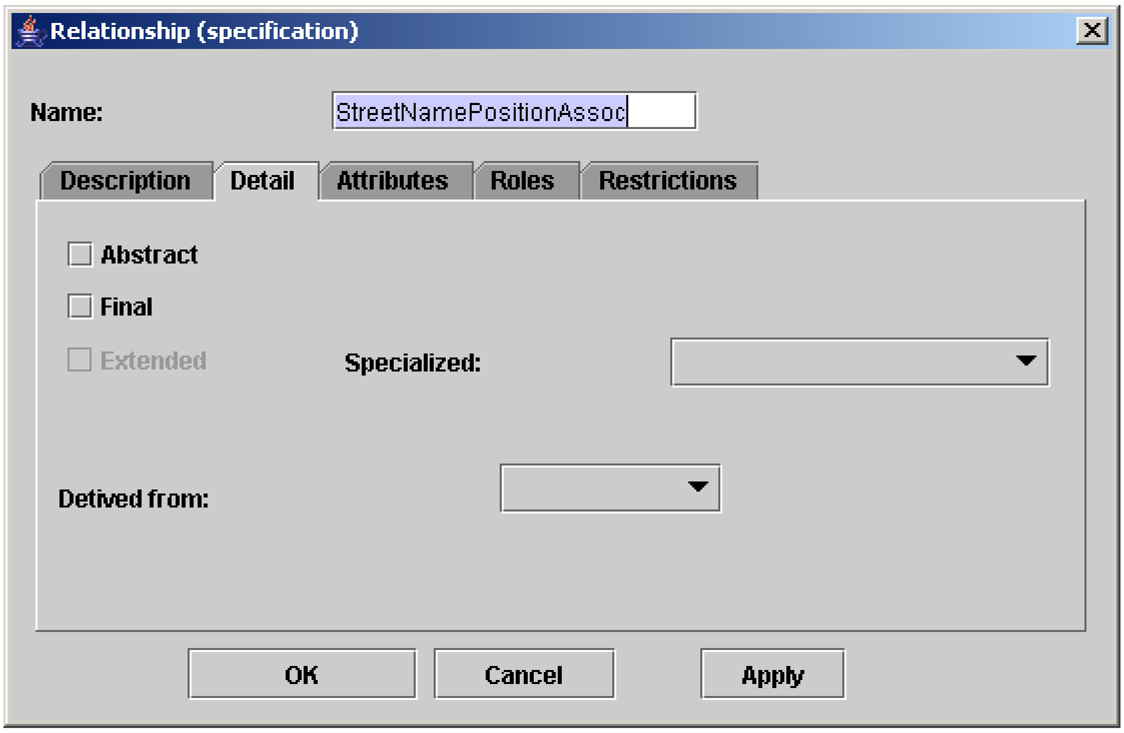
/* Parameter according to INTERLIS syntax */

Figure 4.20: dialog – class (tag *Parameter*)



/* Constraint according to INTERLIS Syntax */

Figure 4.21: dialog – class (tag *Constraints*)



Relationship (specification)

Name: StreetNamePositionAssoc

☐ Abstract

☐ Final

☐ Extended

Specialized:

Detived from:

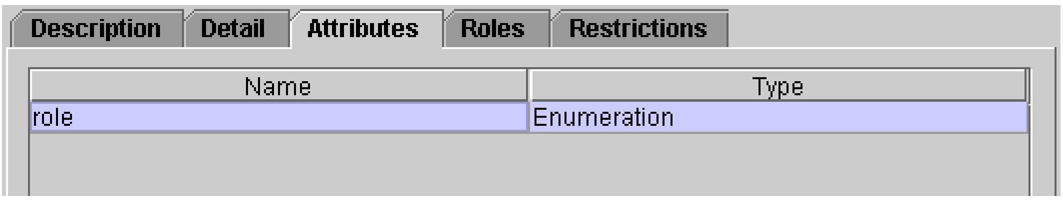
Figure 4.22: dialog – relatioship (tag *Detail*)

FIELD	DESCRIPTION
Constraints	Several *Constraints* in the form of syntax codes can be indicated (see fig. 4.7) . Use the symbol bar below the syntax field to facilitate when browsing, for input and deleting of Constraints.

4.2.9 Relationship

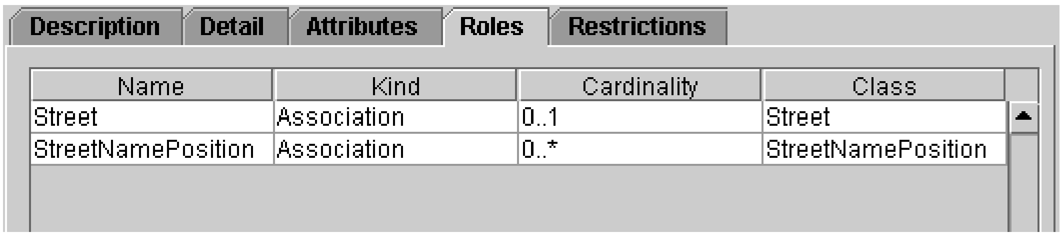
An relatioship see fig. 4.22 describes similar connections between individual objects.

For further information concerning rules and properties see INTERLIS 2 – Referencemanual 2.7.


Description | Detail | Attributes | Roles | Restrictions

Name	Type
role	Enumeration

Figure 4.23: dialog – relatioship (tag *Attributes*)


Description | Detail | Attributes | Roles | Restrictions

Name	Kind	Cardinality	Class
Street	Association	0..1	Street
StreetNamePosition	Association	0..*	StreetNamePosition

Figure 4.24: dialog – relatioship (tag *Roles*)

FIELD	DESCRIPTION
Name	Name of the *association*
Description	(see fig. 4.6).
abstract	Defines a model element as *abstract* or not.
final	Defines a model element as *final* or not.
Extends	Permits the selection of model element possibly to be extended from a list of model elements suitable for specialization (list is automatically generated by the UML-editor).
Derived from	From a list an model element (in general a view) can be selected, from which the relatioship is to be derived.

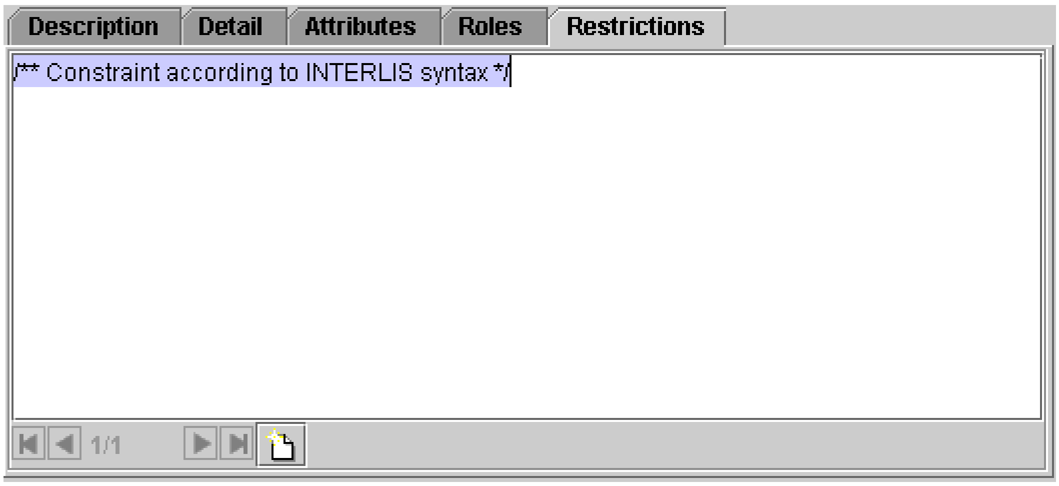
see fig. 4.23

FIELD	DESCRIPTION
Attributes (Table)	Via popup-menu a list of *attributes* (see chapter 4.2.10) can be processed. In the table all defined *attributes* can be listed.

see fig. 4.24

FIELD	DESCRIPTION
Roles (Table)	Via the table all defined *rolles* are listed.

see fig. 4.25



/** Constraint according to INTERLIS syntax */

Figure 4.25: dialog – relatioship (tag *Constraints*)

FIELD	DESCRIPTION
Constraints	Several *Constraints* in the form of syntax codes can be indicated (see fig. 4.7) . Use the symbol bar below the syntax field to facilitate when browsing, for input and deleting of Constraints.

There are a few special cases of associations (besides the common binary association), which the UML-editor supports graphically and thus also in the model.

Reflexive relations

see fig. 4.26

Inherited associations

see fig. 4.27

Hint:

- For graphic modelling it is necessary to visualize first the *link knots* in the class diagram (void rhombus in the middle of the association) (see chapter 4.1).

Multiple relations

see fig. 4.28

Hint:

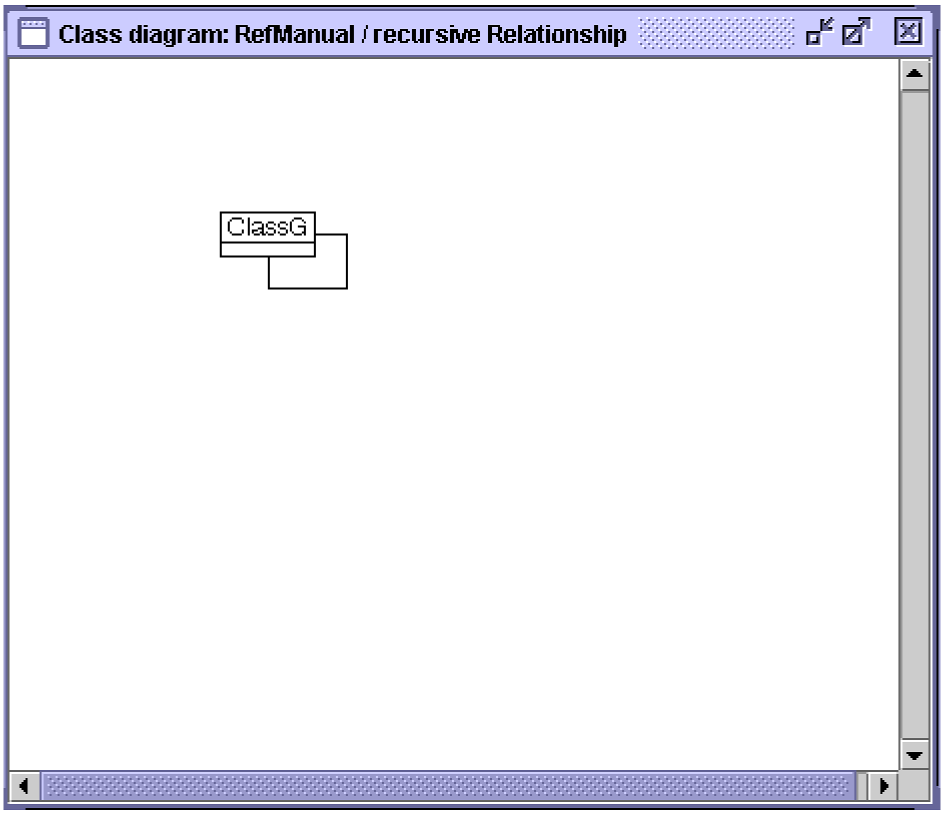


Figure 4.26: Reflexive relations

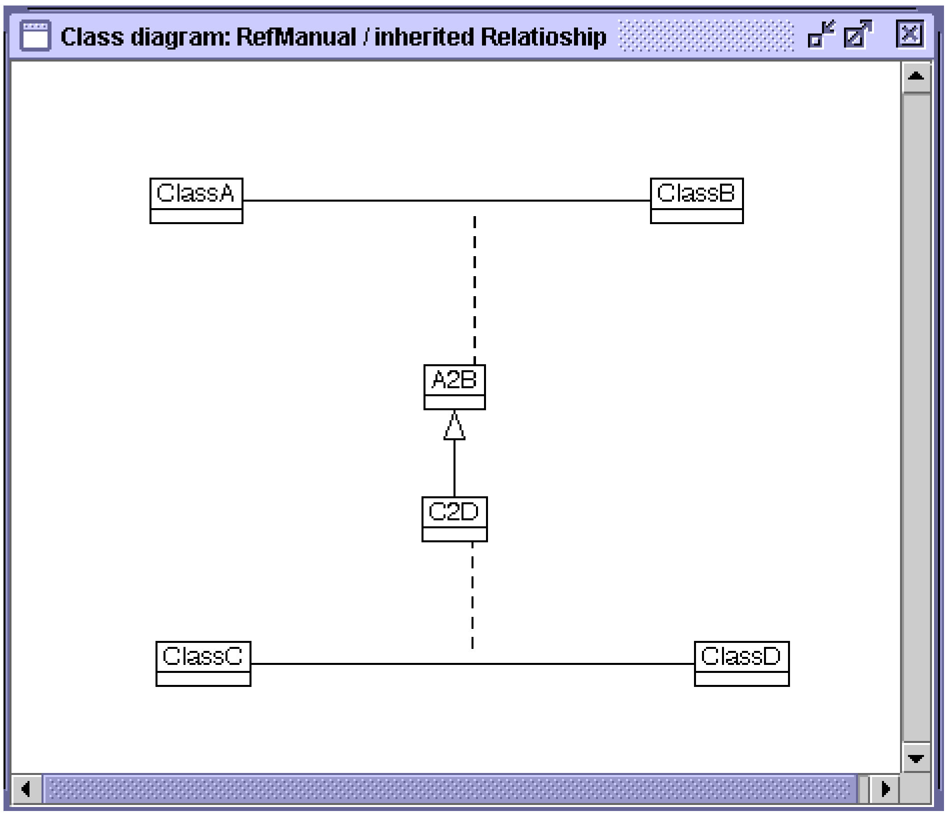


Figure 4.27: Inherited relations

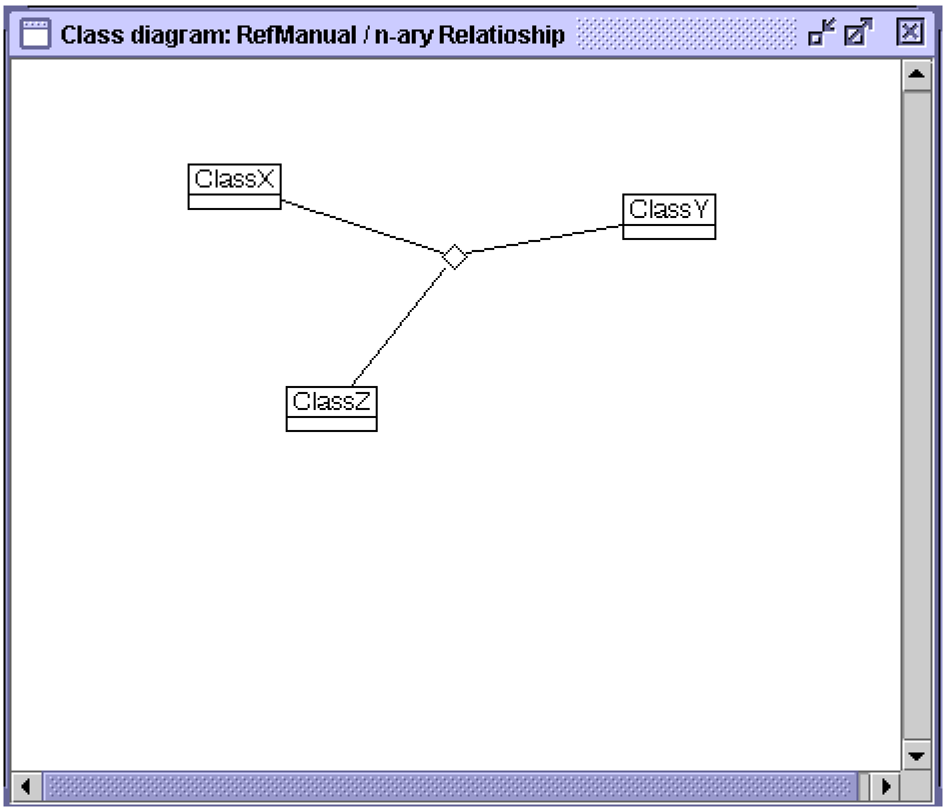


Figure 4.28: Multiple relations

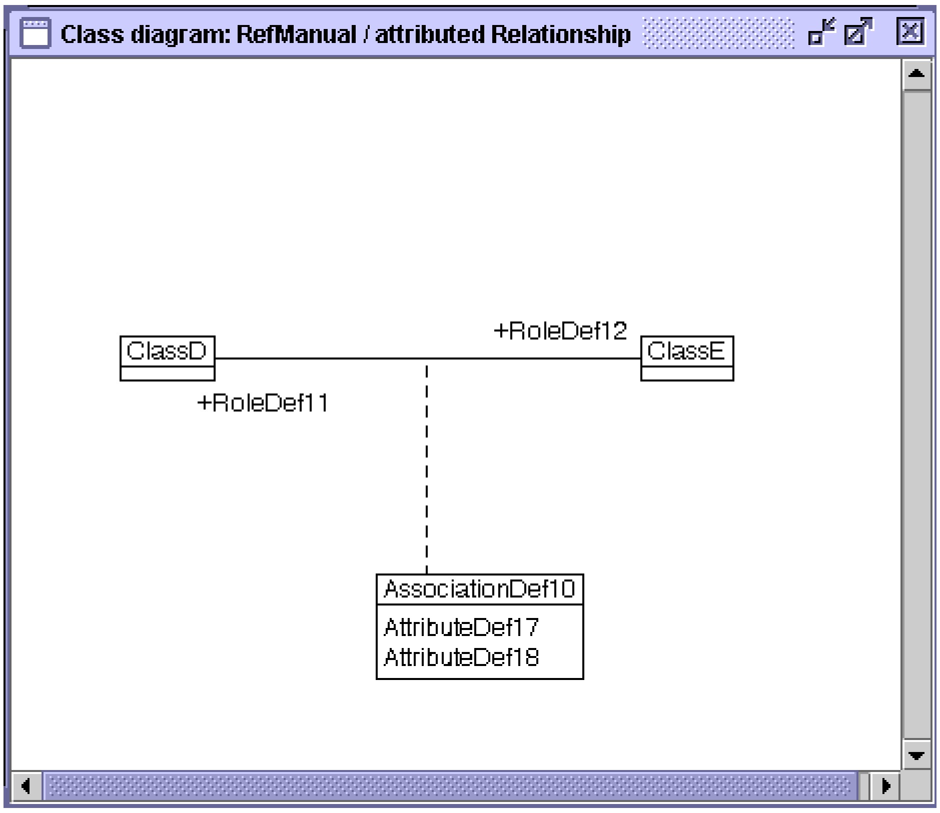


Figure 4.29: Association with attributes

- For graphic modelling it is necessary to visualize first the *link knots* in the class diagram (void rhombus in the middle of the association) (see chapter 4.1).

Association with attributes

see fig. 4.29

Hint:

- Via the specification dialog *Attributes* can be processed in the tab *Attribute* . The representation in the class diagram ensues automatically.

4.2.10 Attributes

An attribut (engl. feature or also property) see fig. 4.30 is a data element of a class. An attribute possesses both name and data type. As data types all types that have been defined by INTERLIS are at your disposal.

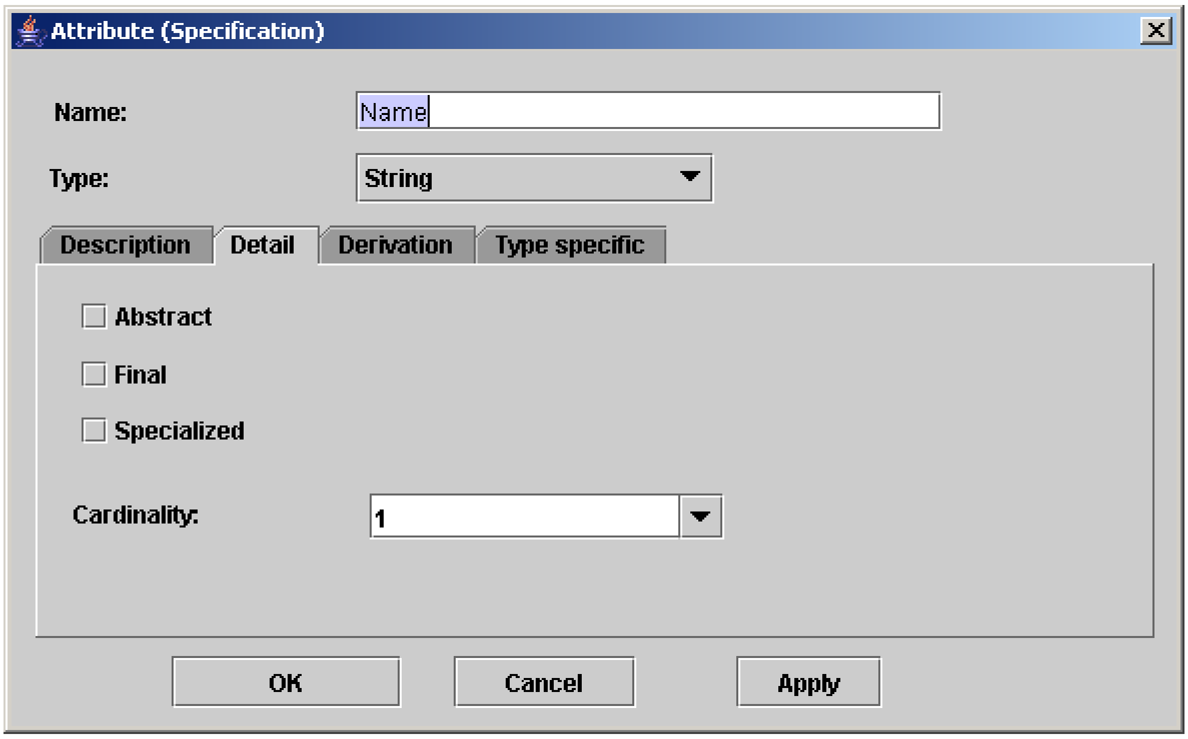


Figure 4.30: dialog – Attribute (tag *Detail*)

Attributes can be processed in three different ways, these being navigation pane (see chapter 3.3), class diagram see chapter 4.1.2 or this dialog.

For further information concerning rules and properties see INTERLIS 2 – Referencemanual 2.6.

FIELD	DESCRIPTION
Name	Name of the *Attributes*
Typ	Depending on the *type* selected specific information can be indicated in the tab (see below).
Description	(see fig. 4.6).
abstract	Defines a model element as *abstract* or not.
final	Defines a model element as *final* or not.
specialized	Defines a model element as *specialized* or not.
Cardinality	Selection of the cardinality is possible in a list. Attributes with an anonymous domain can only possess cardinality 0..1 or 1. Attributes which refer to a domain definition, can have maximum cardinality greater than 1.

see fig. 4.31

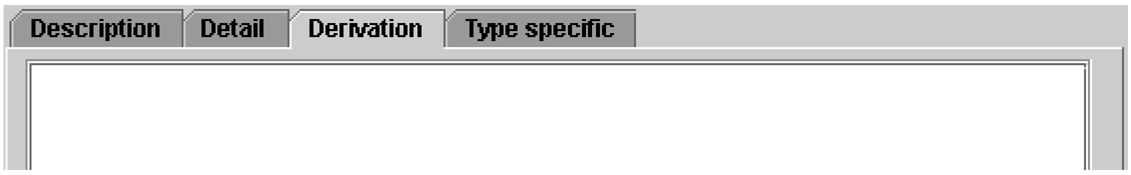
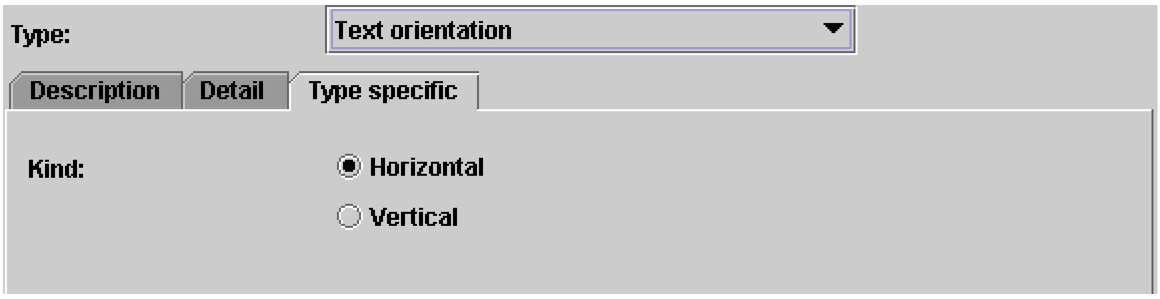


Figure 4.31: dialog – Attribute (tag *Derivation*)



Type: Text orientation

Kind: [✓ Horizontal] Vertical

Figure 4.32: INTERLIS-basic type – Text orientation

FIELD	DESCRIPTION
Derivation	Permits the indication of a syntax code (see fig. 4.7) , e.g. a function call or a constant.

Depending on the *type* the representation of information in the tab varies:

Boolean

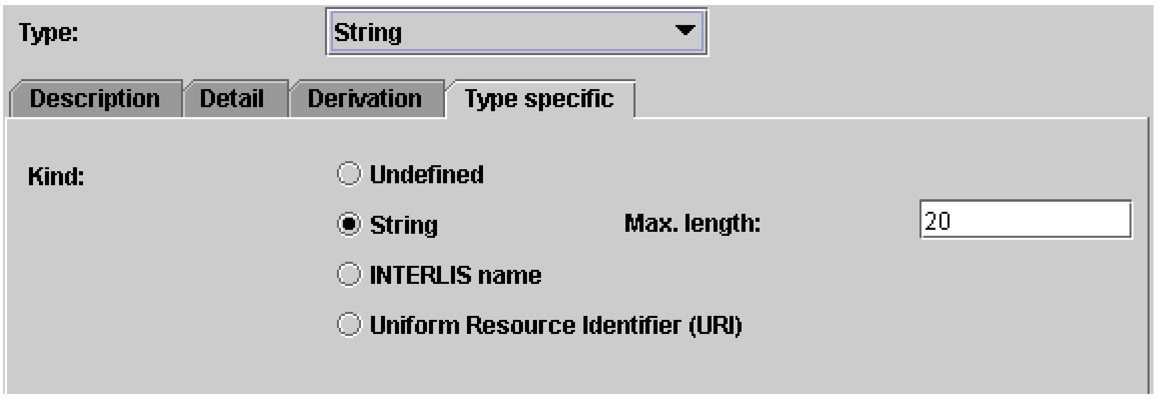
For further information concerning rules and properties see INTERLIS 2 – Referencemanual 2.8.4.

For the type *Boolean* there is no special view.

Text Orientation

For further information concerning rules and properties see INTERLIS 2 – Referencemanual 2.8.3. see fig. 4.32

FIELD	DESCRIPTION
Type	Characterizes the text orientation *Horizontal* or *Vertical*.



Type: String

Kind: [● String]

Max. length: 20

Figure 4.33: INTERLIS-basic type – String

String

For further information concerning rules and properties see INTERLIS 2 – Referencemanual 2.8.1. see fig. 4.33

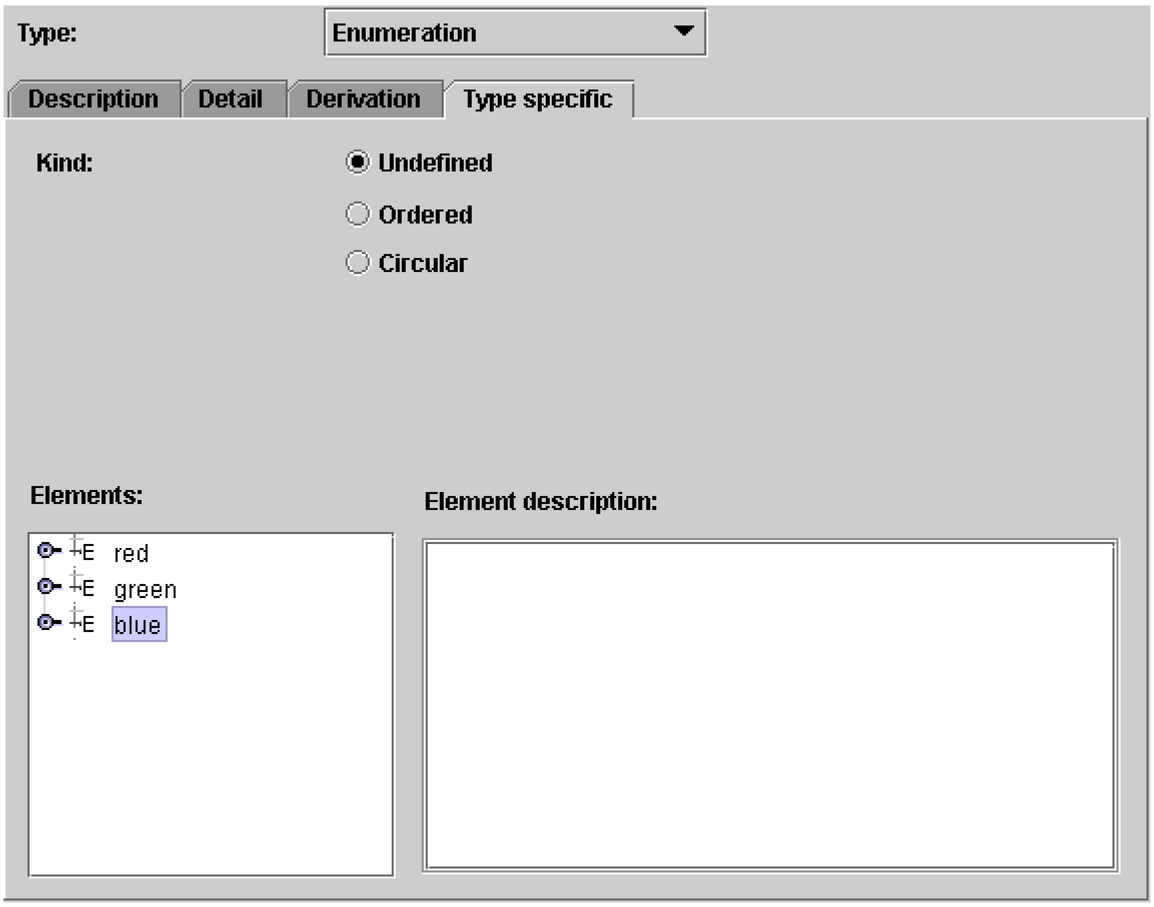
FIELD	DESCRIPTION
Type	Characterizes the string as *Undefined*, *String* (Default), *INTERLIS-name* or *Uniform Resource Identifier (URI)*.
Max. Length (only for the selection of "string")	entry of a whole number for limiting the maximum string length.

Enumeration

With the type *enumeration* see fig. 4.34 it is possible to define enumerations or sub-enumerations as a tree-structure in the field *elements*. Furthermore each enumeration element can be commented upon in the domain *element description*.

For further information concerning rules and properties see INTERLIS 2 – Referencemanual 2.8.2.

FIELD	DESCRIPTION
Type	Charakterizes the string as *Undefined* (Default), *Ordered*, oder *Circular*.
Elements	A popup-menu permits the processing of enumerations in a tree structure (by means of sub-enumeration).
Element description	for each enumeration elementa corresponding comment can be formulated (see fig. 4.6).



Type: Enumeration

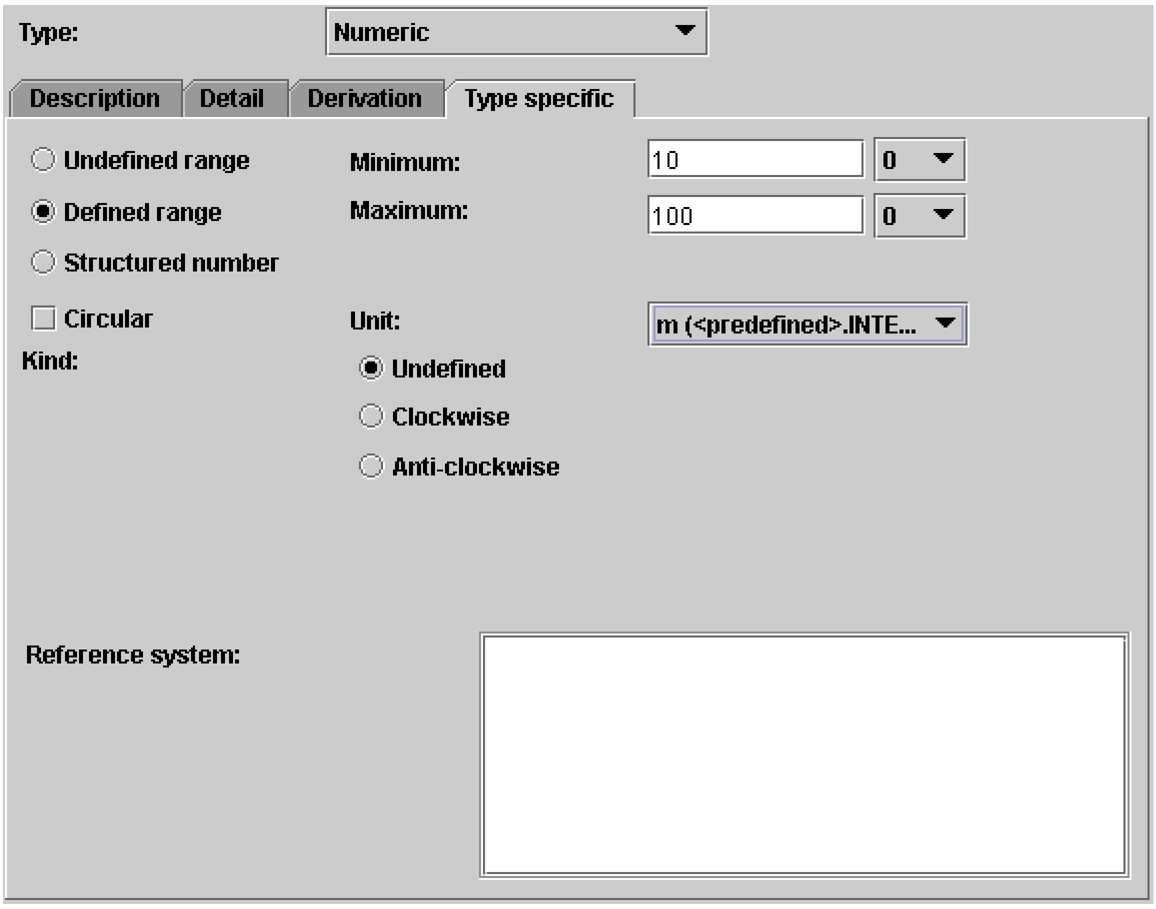
Kind: [✓ Undefined] Ordered Circular

Elements:

red
green
blue

Element description:

Figure 4.34: INTERLIS-basic type – enumeration


Type: Numeric

Description | Detail | Derivation | Type specific

( ) Undefined range
(●) Defined range
( ) Structured number

☐ Circular

Minimum: 10 | 0
Maximum: 100 | 0

Unit: m (<predefined>.INTE...

Kind:
(●) Undefined
( ) Clockwise
( ) Anti-clockwise

Reference system:

Figure 4.35: INTERLIS-basic type – Numeric

Numeric

For further information concerning rules and properties see INTERLIS 2 – Referencemanual 2.8.5. see fig. 4.35

Field	Description
Domain	Characterizes the numeric domain as an *Undefined domain* (Default), as a *Defined domain* (permits the entry of a minimal or maximal domain as a value with flowing comma, whereby accuracy can be defined via the selection list), or as a *structured number*.
Cirkular	Defines a model element as *Cirkular* or not.
Unit	A list permits the selection of a *unit* existing in the model (see chapter 4.2.14). This list is automatically generated by the UML-editor.
Type	Characterizes the type as *Undefined* (Default), as *clockwise* or as *anti-clockwise*.
Reference system	Permits the indication of syntax code (see fig. 4.7) .

Coordinate

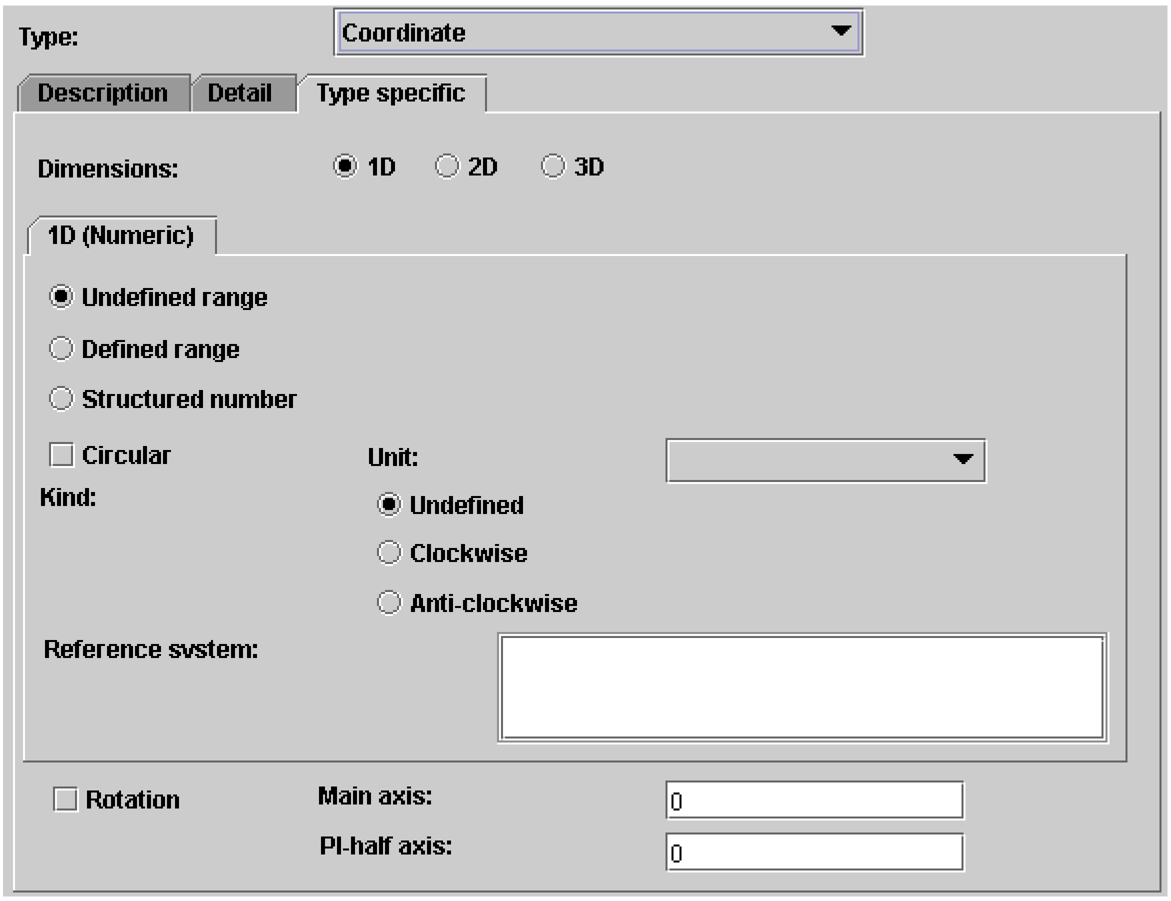
For further information concerning rules and properties see INTERLIS 2 – Referencemanual 2.8.7. see fig. 4.36

Field	Description
Dimensions	Defines the number of dimensions of the *coordinate*.
Circular	Defines a model element as *Circular* or not.
1/2/3D (Numeric)	For each dimension it is possible to indicate a *numeric value* (see chapter 4.2.10) moeglich.
Rotation	Defines a model element as *Rotation* or not.
Main axis	Provided the *rotation* has been determined, the *main axis* can be defined.
PI-main axis	Provided the *rotation* has been determined, the *PI-main axis* can be defined.

Basket

For further information concerning rules and properties see INTERLIS 2 – Referencemanual 2.8.9. see fig. 4.37

Field	Description
Type	Characterizes the type as *Undefined* (Default), *Data basket*, *Sicht-Behaelter*, *Basis-Behaelter fuer Grafik* oder als *Grafik-Behaelter*.
According to	Permits the indication of a topic (see chapter 4.2.7). This list is automatically generated by the UML-editor.


Type: Coordinate

Description | Detail | Type specific

Dimensions: [✓ 1D] 2D 3D

1D (Numeric)

[✓ Undefined range]
Defined range
Structured number

☐ Circular

Unit:

Kind: [✓ Undefined] Clockwise Anti-clockwise

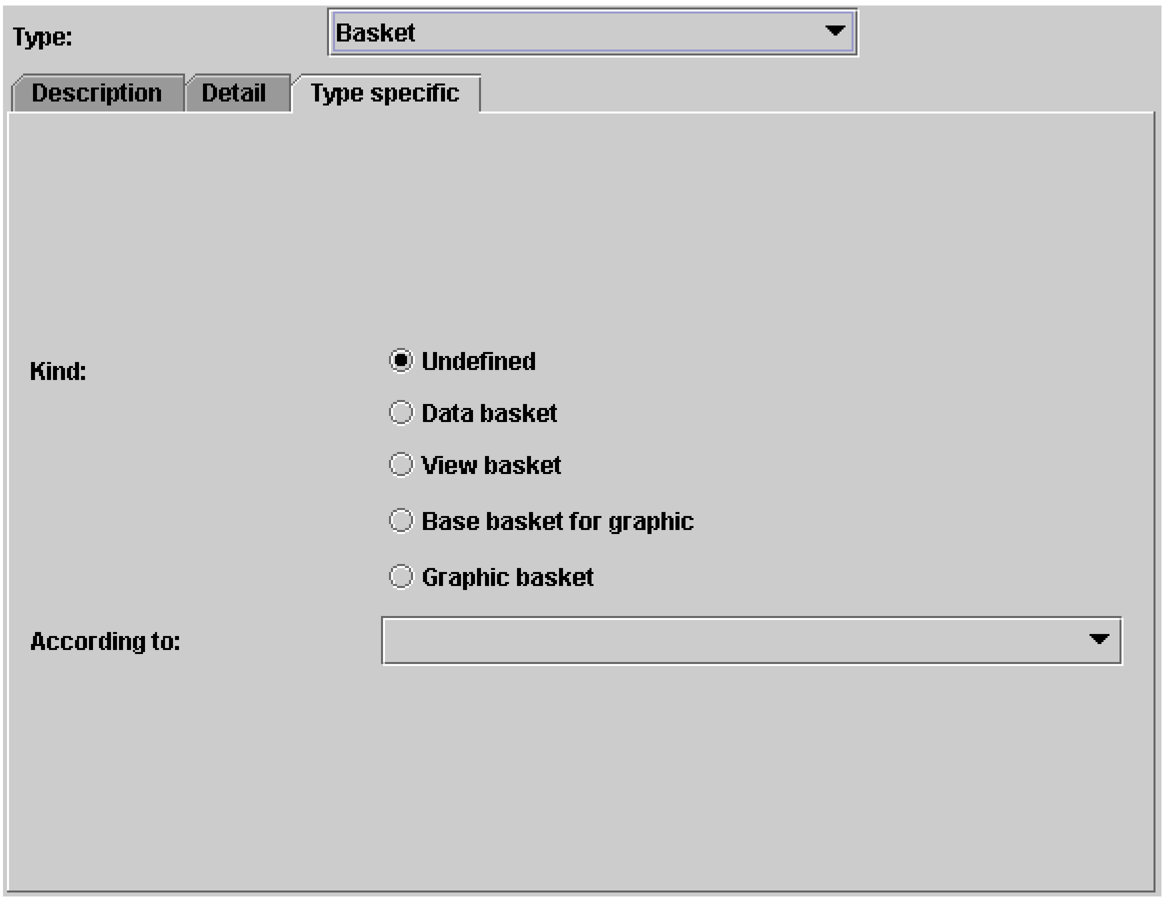
Reference svstem:

☐ Rotation

Main axis: 0

PI-half axis: 0

Figure 4.36: INTERLIS-basic type – Coordinate



Type: Basket

Description | Detail | Type specific

Kind: [✓ Undefined] Data basket View basket Base basket for graphic Graphic basket

According to:

Figure 4.37: INTERLIS-basic type – Basket

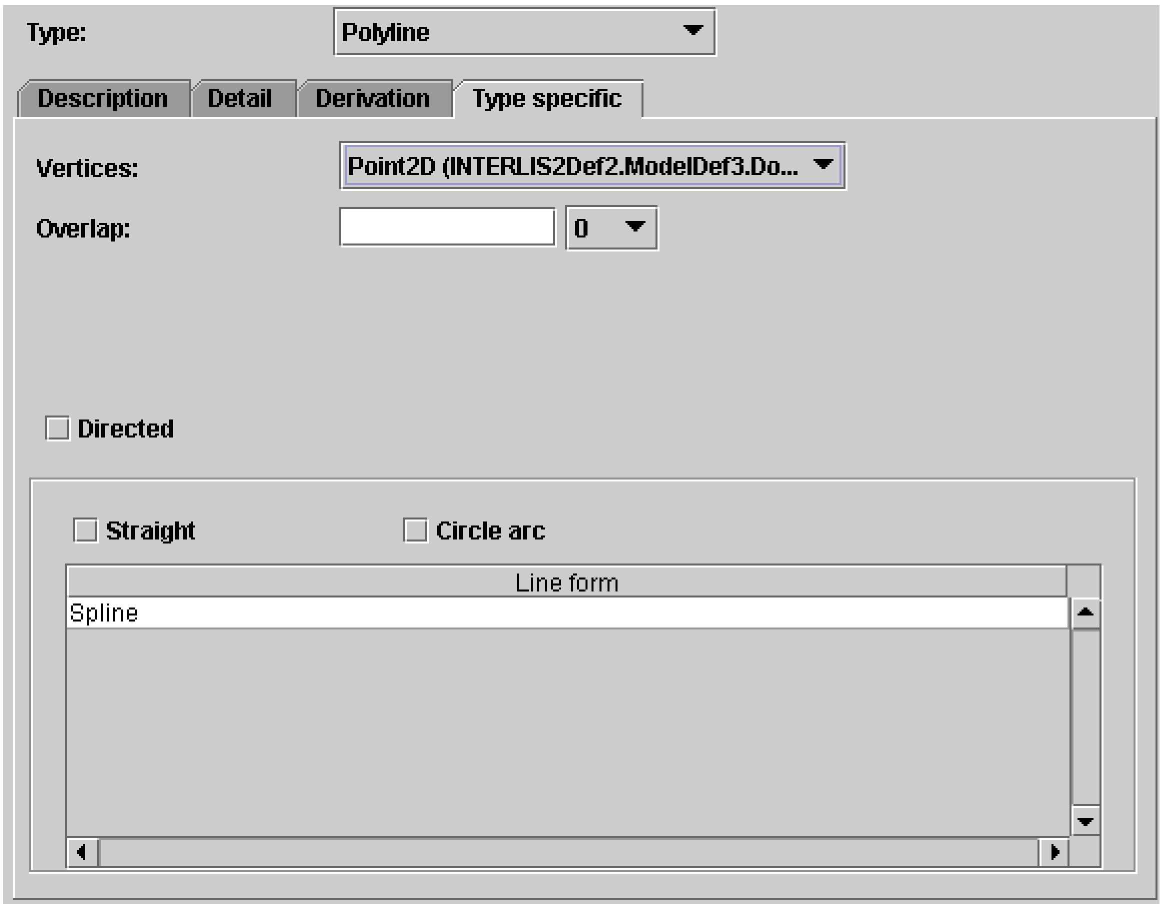
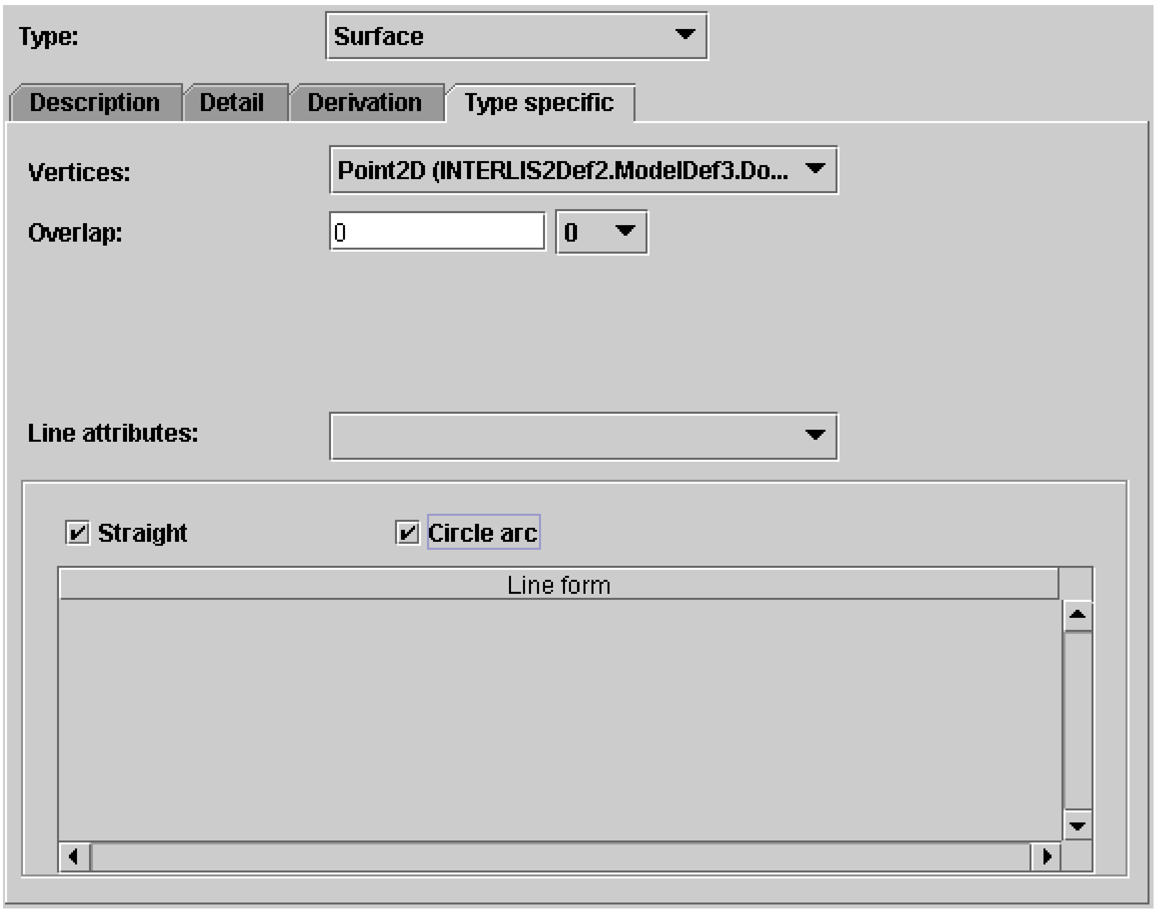


Figure 4.38: INTERLIS-basic type – Polyline

Polyline

For further information concerning rules and properties see INTERLIS 2 – Referencemanual 2.8.11.2. see fig. 4.38

FIELD	DESCRIPTION
Vertices	Permits the assignation of a domain (see chapter 4.2.12) for the vertices of a polyline. This list is automatically generated by the UML-editor.
Overlap	Permits the entry of a decimal value (definition of accuracy by means of selection list).
Directed	Defines the polyline as *directed* or not.
Straight	Defines *straights* as admissible line types.
Circle arc	Defines *circle arcs* as admissible line types.
Line type (table)	A popup-menu of the table permits the assiognation of line types (see chapter 4.2.15).


Type: Surface

Description | Detail | Derivation | Type specific

Vertices: Point2D (INTERLIS2Def2.ModelDef3.Do...

Overlap: 0 0

Line attributes:

☑ Straight ☑ Circle arc

Line form

Figure 4.39: INTERLIS-basic type – Surface

Surface

For further information concerning rules and properties see INTERLIS 2 – Referencemanual 2.8.12.2. see fig. 4.39

Field	Description
Vertices	Permits the assignation of a domain (see chapter 4.2.12) for the vertices of the surfaces. This list is automatically generated by the UML-editor.
Overlap	Permits the enty of a decimal value (definition of accuracy by means of a selection list).
Line attributes	Permits the selection of a structure (see chapter 4.2.8) for the line attributes. This list is automatically generated by the UML-editor.
Straight	Defines *straights* as admissible line types.
Circle arc	Defines *circle arcs* as admissible line types.
Line type (table)	A popup-menu of the table permits the assiognation of line types (see chapter 4.2.15).

Area Tessellation

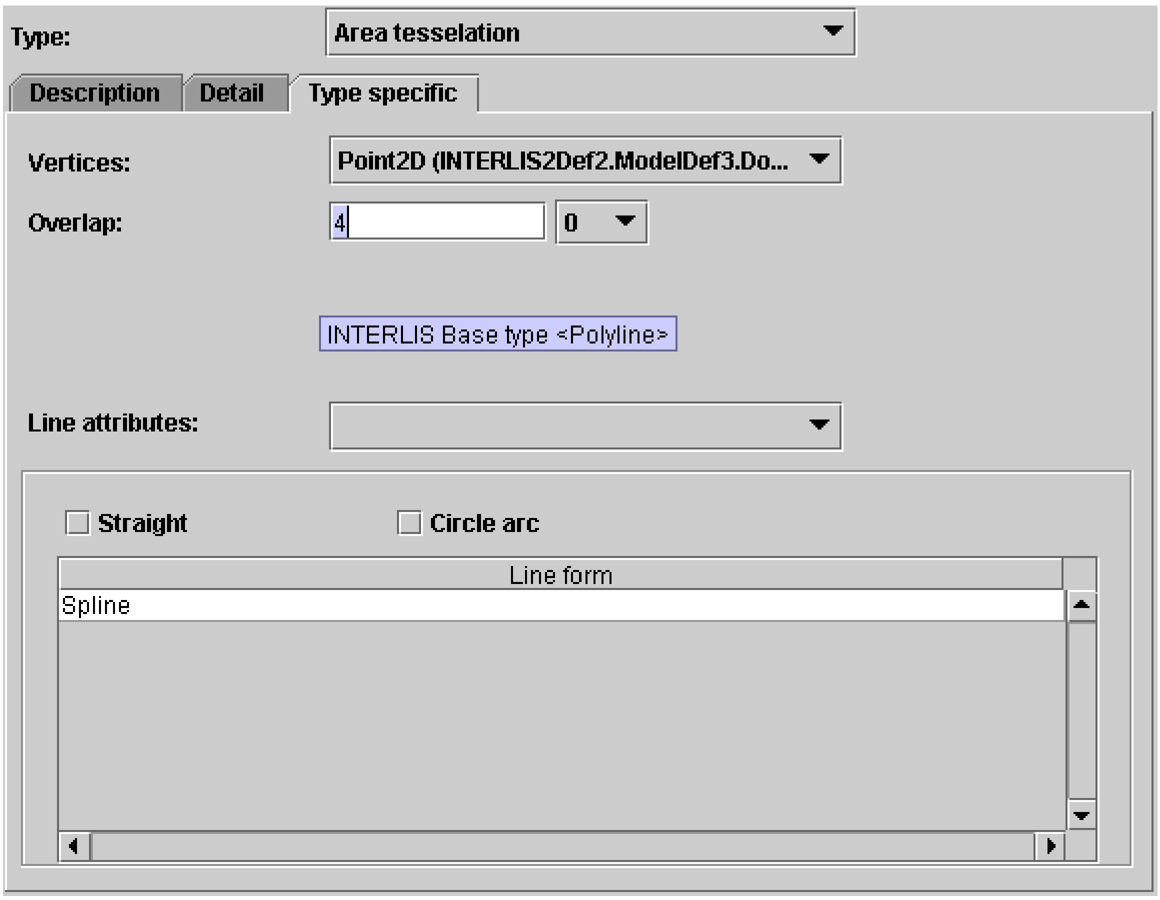
For further information concerning rules and properties see INTERLIS 2 – Referencemanual 2.8.12.3. see fig. 4.40

Field	Description
Vertices	Permits the assignation of a domain (see chapter 4.2.12) for the vertices of the area tessellation. This list is automatically generated by the UML-editor.
Overlap	Permits the entry of a decimal value (Definition of accuracy by means of a selection list).
Line attributes	Permits the selection of a structure (see chapter 4.2.8) for the line attributes. This list is automatically generated by the UML-editor.
Straights	Defines *straights* as admissible line types.
Circle arcs	Defines *circle arcs* as admissible line types.
Line type (table)	A popup-menu of the table permits the assiognation of line types (see chapter 4.2.15).

Domain definition

For further information concerning rules and properties see INTERLIS 2 – Referencemanual 2.6.2. see fig. 4.41

Field	Description
Name	Permits the assignation of the *domain* (see chapter 4.2.12). This list is automatically generated by the UML-editor.


Type: Area tesselation

Vertices: Point2D (INTERLIS2Def2.ModelDef3.Do...

Overlap: 4 0

INTERLIS Base type <Polyline>

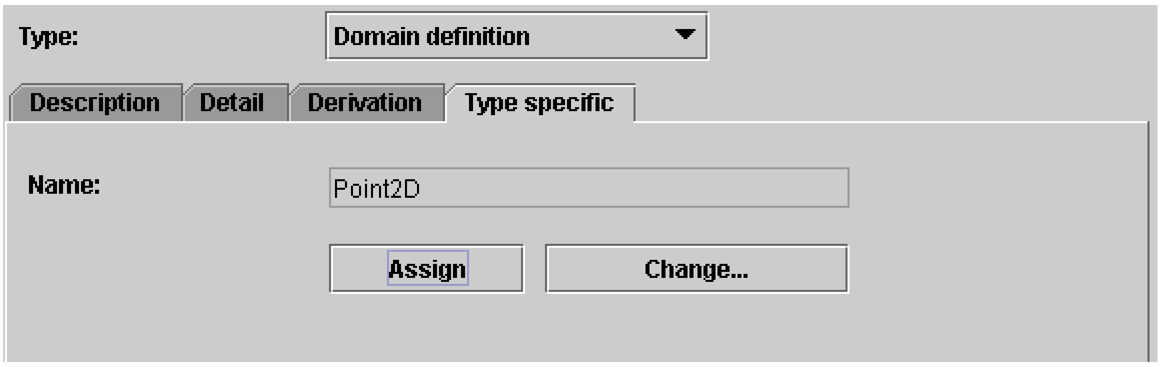
Line attributes:

Straight

Circle arc

Line form
Spline

Figure 4.40: INTERLISbasic type – Area tessellation


Type: Domain definition

Name: Point2D

Figure 4.41: INTERLIS-basic type – Domain definition

4.2.11 Role

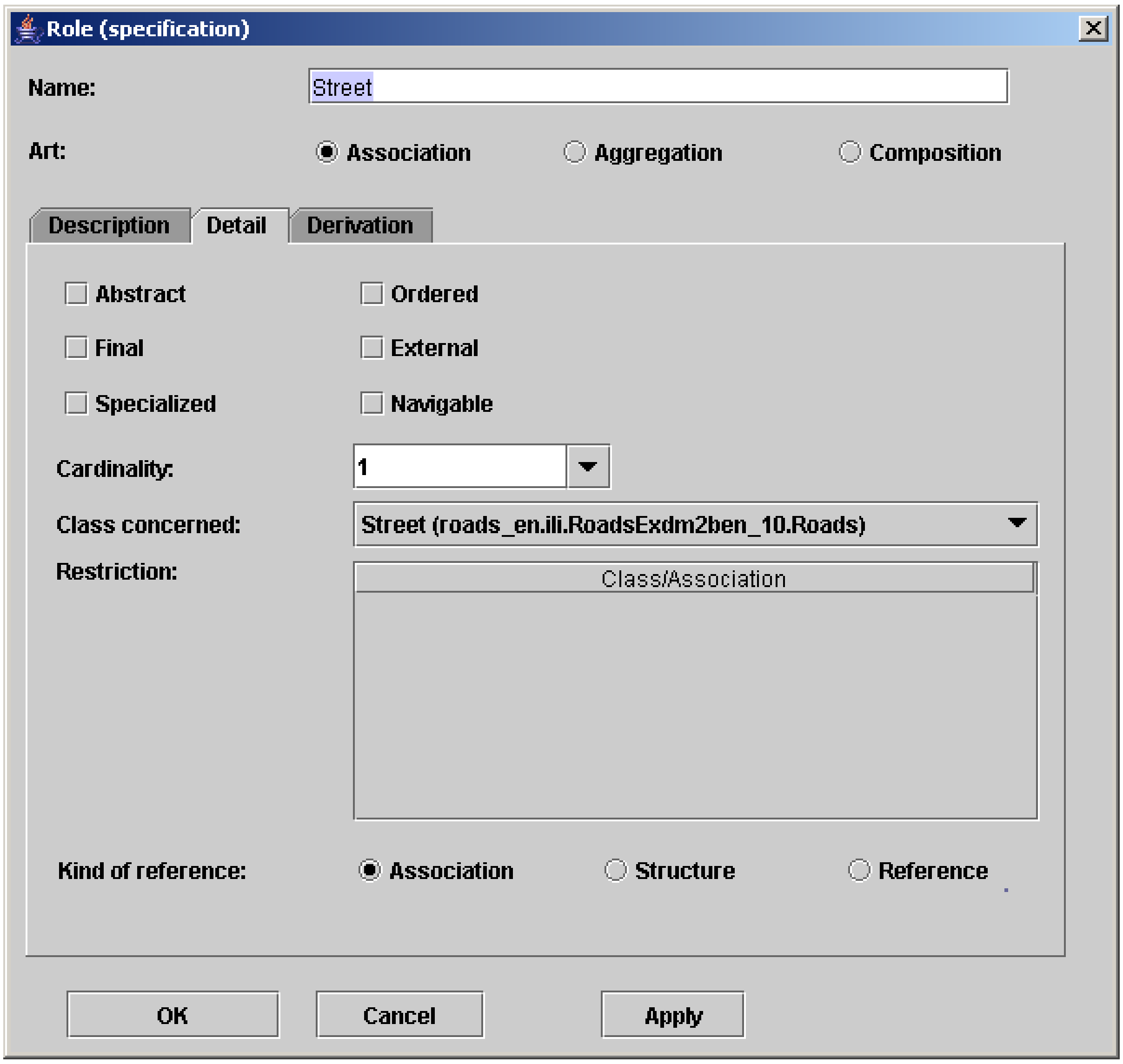
A role see fig. 4.42 is on end of a relationship. When dealing with a relationship between the class *school* and the class *person*, *teacher* would be a possible role for a *Person*.

For further information concerning rules and properties see INTERLIS 2 – Referencemanual 2.7.

FIELD	DESCRIPTION
Name	Name of the *role*
Type	Permits the indication if *Association* (Default), *Aggregation* or *Composition* (For further information concerning rules and properties see INTERLIS 2 – Referencemanual 2.7.2.). Depending on the selection the specific representation (rhomboid) ensues in the class diagram in accordance with UML.
Description	(see fig. 4.6).
abstract	Defines a model element as *abstract* or not.
final	Defines a model element as *final* or not.
Specialised	Defines a model element as *Specialised* or not.
Ordered	Defines a model element as *Ordered* or not.
Navigierbar	Defines a model element as *Navigierbar* or not.
Cardinality	(For further information concerning rules and properties see INTERLIS 2 – Referencemanual 2.7.3.)
Classes concerned	Permits the selection of the *class* concerned with this *Role* (see chapter 4.2.8). This list is automatically generated by the UML-editor.
Constraints (Table)	Permits the assignation of corresponding *classes* (see chapter 4.2.8 and For further information concerning rules and properties see INTERLIS 2 – Referencemanual 2.7.5.).
Type of reference	Permits the selection of the *Role* as *Association* (Default), *Structure* or *Reference*.

4.2.12 Domain

For further information concerning rules and properties see INTERLIS 2 – Referencemanual 2.8. see fig. 4.43


Role (specification)

Name: Street

Art: [● Association] ○ Aggregation ○ Composition

Description | Detail | Derivation

☐ Abstract ☐ Ordered

☐ Final ☐ External

☐ Specialized ☐ Navigable

Cardinality: 1

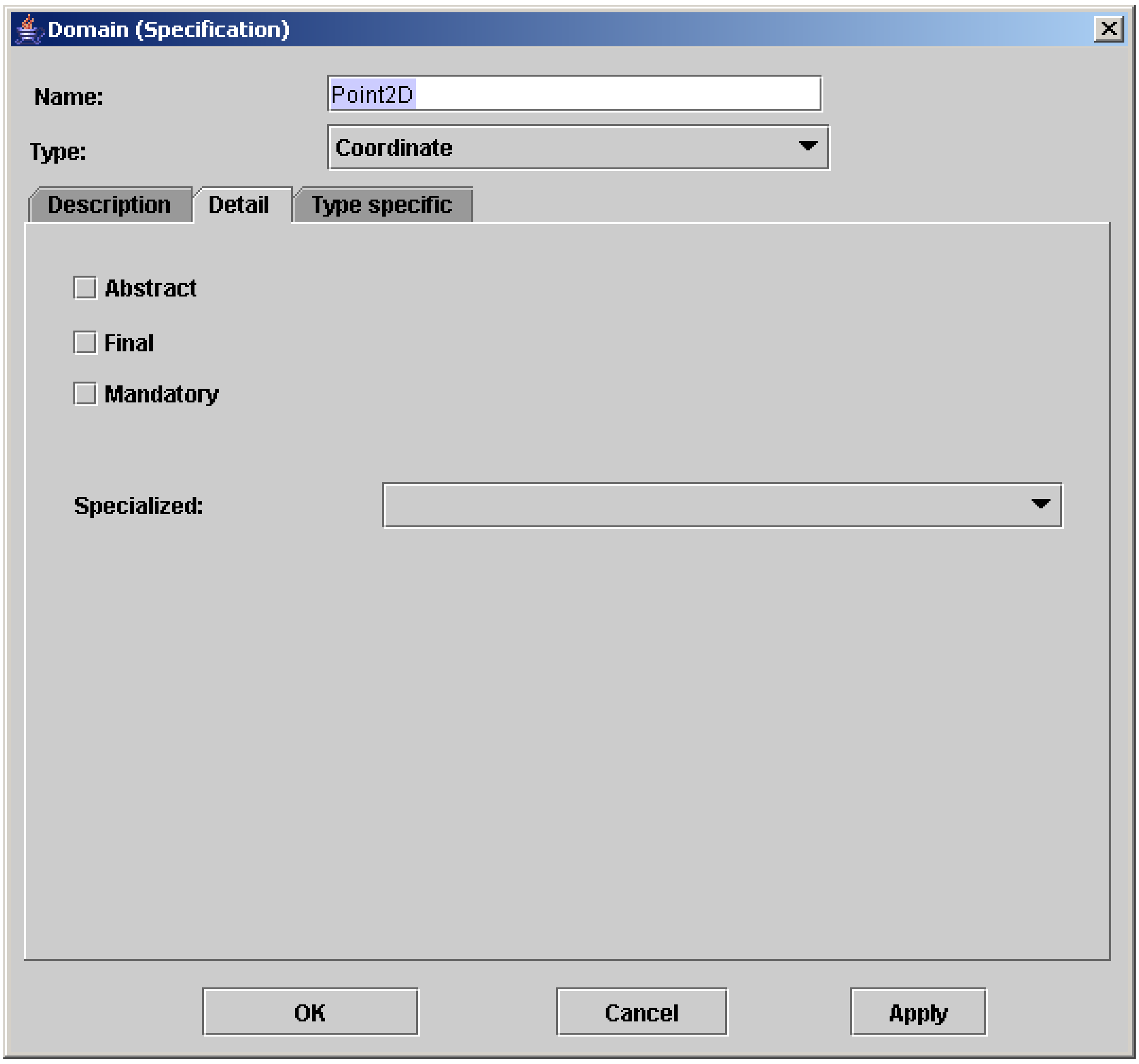
Class concerned: Street (roads_en.ili.RoadsExdm2ben_10.Roads)

Restriction:

Class/Association

Kind of reference: [● Association] ○ Structure ○ Reference

Figure 4.42: dialog – Role (tag *Detail*)


Domain (Specification)

Name: Point2D

Type: Coordinate

- [ ] Abstract
- [ ] Final
- [ ] Mandatory

Specialized:

Figure 4.43: dialog – Domain

FIELD	DESCRIPTION
Name	Name of the *domain*
Typ	Depending on the *type* selected it is possible to indicate special information in a tab (analogous see chapter 4.2.10).
Description	(see fig. 4.6).
abstract	Defines a model element as *abstract* or not.
final	Defines a model element as *final* or not.
Mandatory	Defines a model element as *Mandatory* or not.
Specialised	Permits the selection of a basic -*domain* .

4.2.13 Reference Systems/Symbology Baskets - Agreement

For further information concerning rules and properties see INTERLIS 2 – Referencemanual 2.10. see fig. 4.44

FIELD	DESCRIPTION
Name	Name of the *reference system/symbology basket - Agreement*
Basket identification (BID)	Indication of the BID.
Type	Selection as *symbology basket* (Default) or *reference system basket*.
Description	(see fig. 4.6).
Definition	(see fig. 4.7)

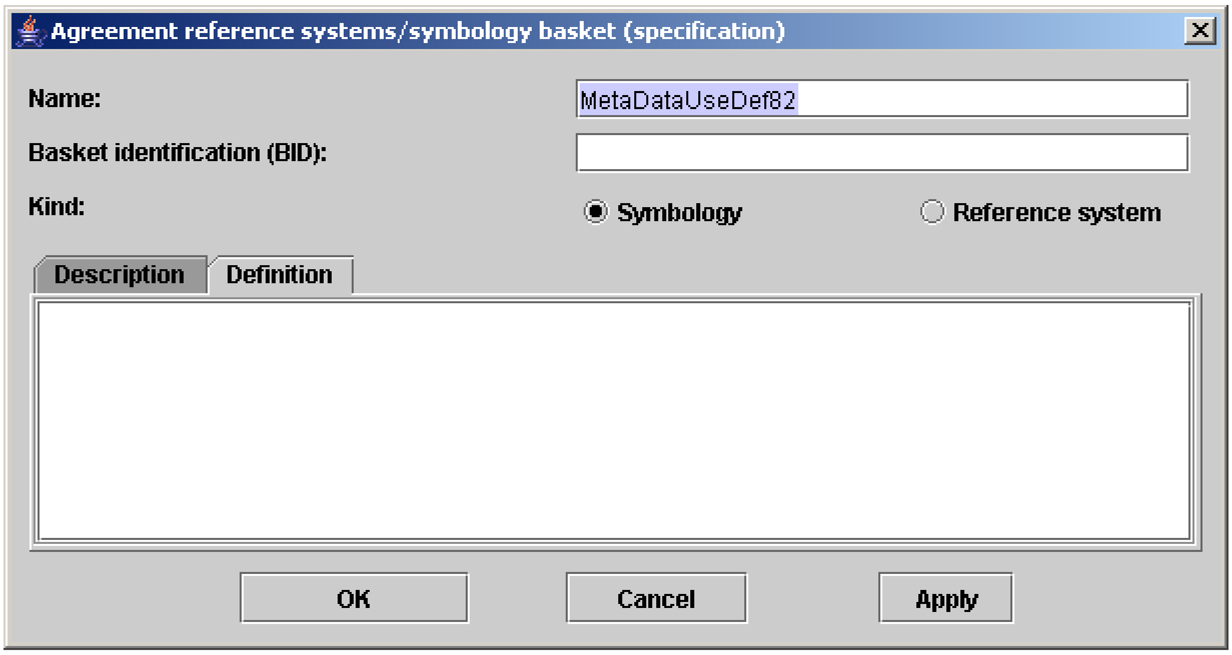
4.2.14 Unit

For further information concerning rules and properties see INTERLIS 2 – Referencemanual 2.9. see fig. 4.45

FIELD	DESCRIPTION
Name (Abbreviation	Abbreviation of the *Unit*.
Description	Name written in full of the *Unit*.
Description	(see fig. 4.6).
Depends on	Selection of dependency on another model element. This list is automatically generated by the UML-editor..
Syntax	(see fig. 4.7).

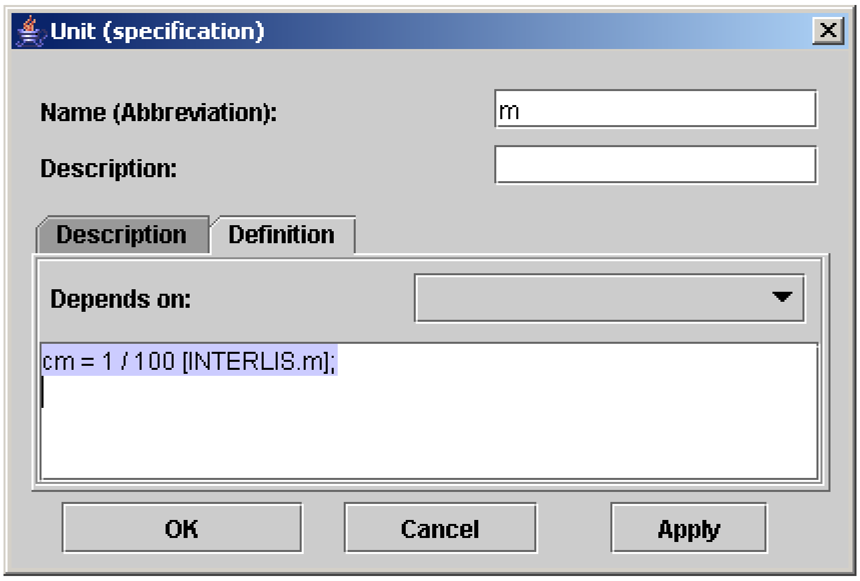
4.2.15 Line Form Type

For further information concerning rules and properties see INTERLIS 2 – Referencemanual 2.8.11.3. see fig. 4.46


Agreement reference systems/symbology basket (specification)
Description
Definition
OK
Cancel
Apply

Name: MetaDataUseDef82
Basket identification (BID):
Kind: [✓ Symbology] Reference system

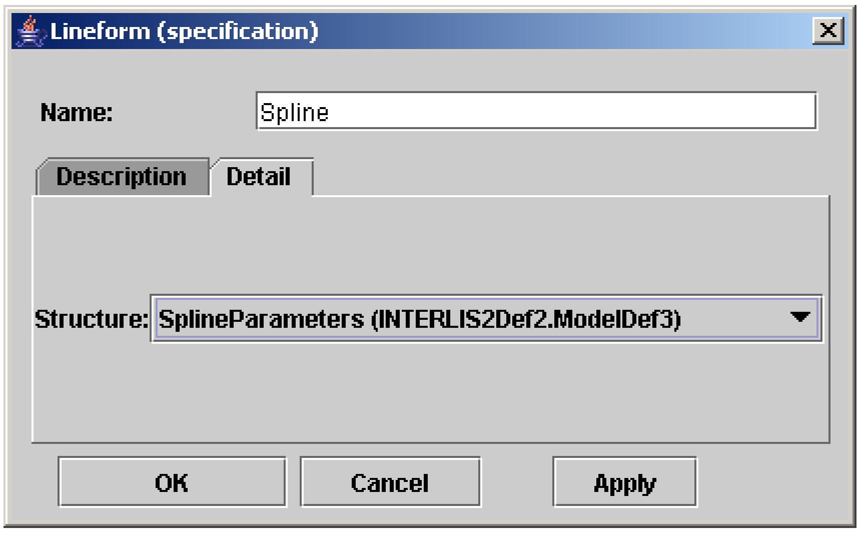
Figure 4.44: dialog – Reference systems/Symbology baskets



Name (Abbreviation): m
Description:
Depends on:

```
cm = 1 / 100 [INTERLIS.m];
```

Figure 4.45: dialog – Unit



Name: Spline

Structure: SplineParameters (INTERLIS2Def2.ModelDef3)

Figure 4.46: dialog – Line form

FIELD	DESCRIPTION
Name	Name of the *Line form*
Description	(see fig. 4.6).
Syntax	(see fig. 4.7).

4.2.16 Run Time Parameter

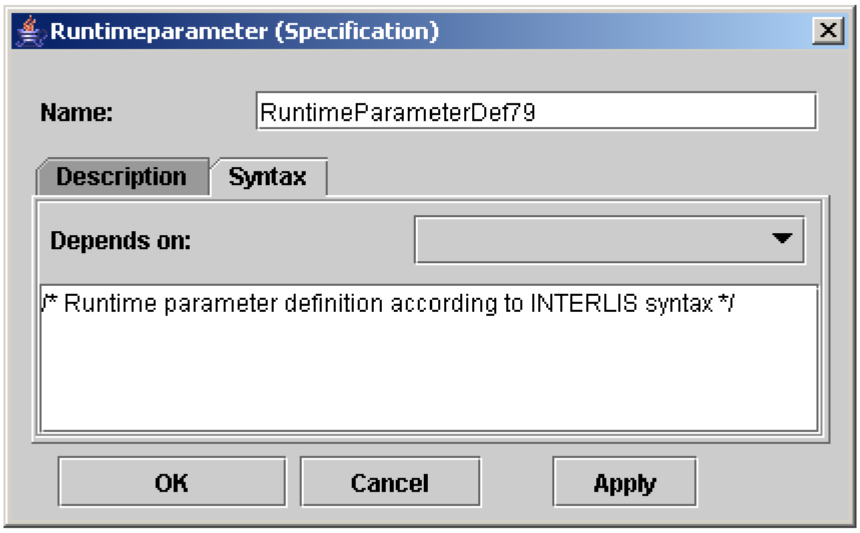
For further information concerning rules and properties see INTERLIS 2 – Referencemanual 2.11. see fig. 4.47

FIELD	DESCRIPTION
Name	Name of *Run time parameter*
Description	(see fig. 4.6).
Syntax	(see fig. 4.7).

4.2.17 Function

For further information concerning rules and properties see INTERLIS 2 – Referencemanual 2.14. see fig. 4.48

FIELD	DESCRIPTION
Name	Name of the *function*
Description	(see fig. 4.6).
Syntax	(see fig. 4.7).

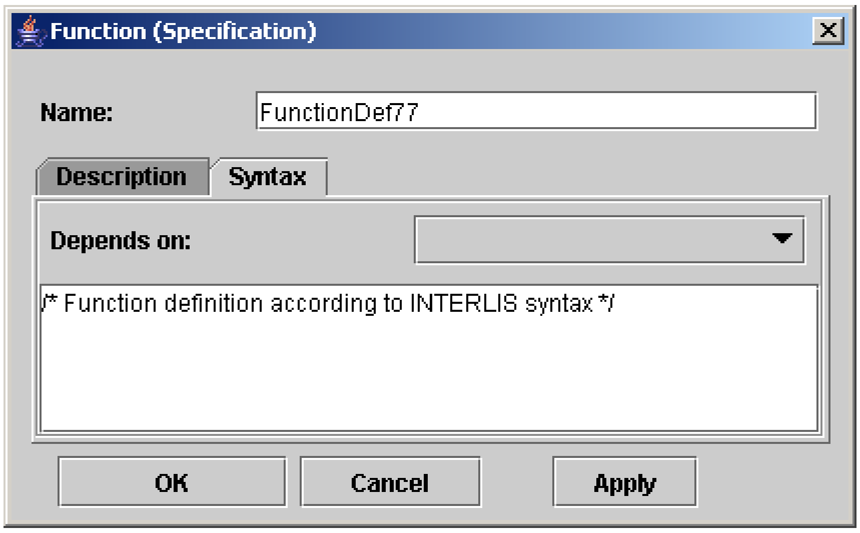


Name: RuntimeParameterDef79

Depends on:

/* Runtime parameter definition according to INTERLIS syntax */

Figure 4.47: dialog – Run time parameter

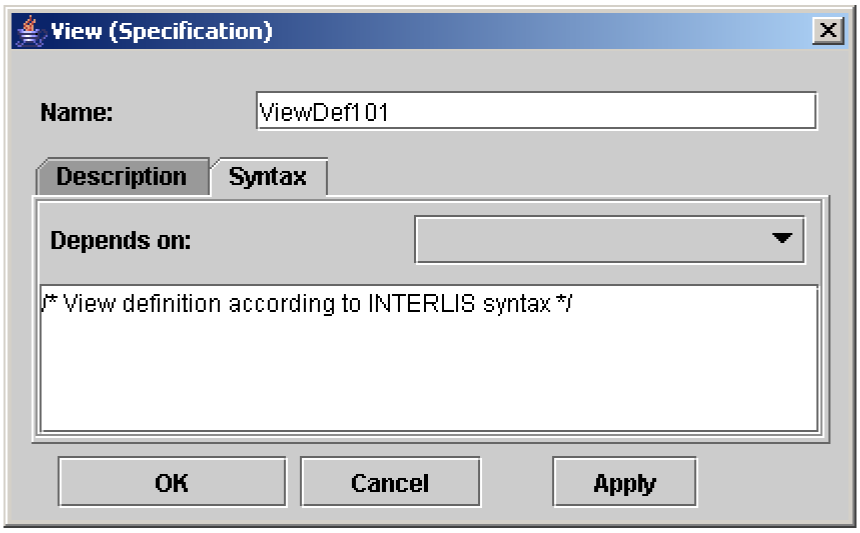


Name: FunctionDef77

Depends on:

/* Function definition according to INTERLIS syntax */

Figure 4.48: dialog – Function



ViewDef101

/* View definition according to INTERLIS syntax */

Figure 4.49: dialog – View

4.2.18 View

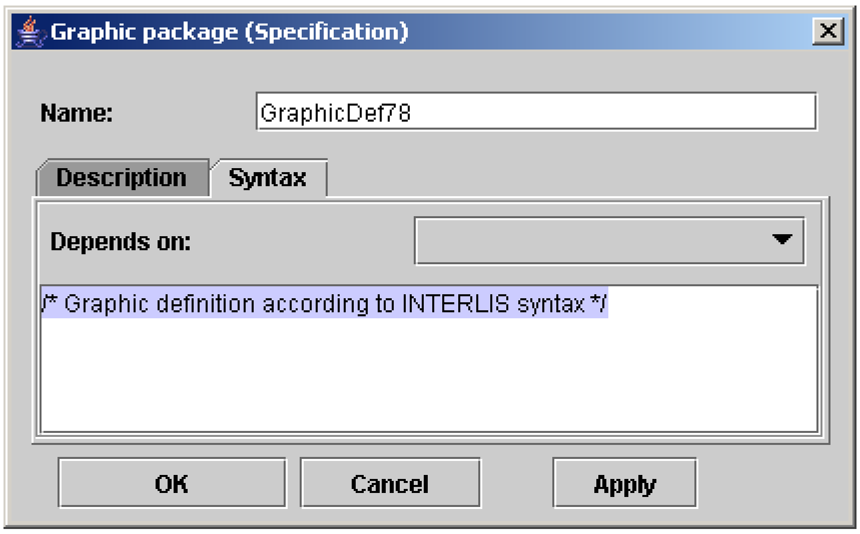
For further information concerning rules and properties see INTERLIS 2 – Referencemanual 2.15. see fig. 4.49

FIELD	DESCRIPTION
Name	Name of the *view*
Description	(see fig. 4.6).
Syntax	(see fig. 4.7).

4.2.19 Graphic

For further information concerning rules and properties see INTERLIS 2 – Referencemanual 2.16. see fig. 4.50

FIELD	DESCRIPTION
Name	Name of the *graphic*
Description	(see fig. 4.6).
Syntax	(see fig. 4.7).



Name: GraphicDef78

Depends on:

/* Graphic definition according to INTERLIS syntax */

Figure 4.50: dialog – Graphic

Appendix A

Technical Background

The UML-editor is based entirely on the UML meta model of the Object Managment Group (OMG). Thus it is guaranteed that all models created with this UML-editor will be compatible in all respects of the UML-specification (see chapter B.1). Any upgrade of the UML-meta model design on the part of OMG should be possible with very little effort.

An INTERLIS-Plugin extends and concretizes the UML-meta model by adding INTERLISelements. Thus the UML-editor becomes the ideal tool for users that intend to model INTERLIS (see chapter C.1) (i.e. geomatic engineers).

The UML-editor has been entirely conceived in Java (s. `http://java.sun.com`). Java was considered the ideal device for this project because besides other advantages it offers the possibility to implement the object-oriented design of UML and INTERLIS . Furthermore Java is deemed platform-independent. The present release is based upon JRE 1.3, but on principle it can also be applied in improved versions of the Virtual Machine (VM).

For its greater part the model has been designed with Rational Rose (a commercial UML-editor) and then generated with a specially extended Java-Code-Generator. Thus the design will always be up-to-date with the source code.

This document was drafted in LaTeX.

Appendix B

UML

OMG's Unified Modeling Language™(UML) is of use when specifying, visualizing and documenting models in connection with software systems (including their structure and design).

UML can be used in business-modeling as well as in non-software-systems. In the present case UML is especially adapted to the demands of modeling of INTERLIS-data models.

B.1 Specification

The present version of the UML-editor is determined by the *UML Specification Version 1.4*.

It is possible to look into detailed information concerning the contents of the UML specification under `http://www.omg.org/uml` .

B.1.1 UML Meta Model

OMG makes the UML meta modell available in the form of a download .

The UML-specification in accordance with OMG is very extensive. In the present version of the UML-editor only those possibilities have been implemented with priority which are relevant within the scope of modeling with INTERLIS.

Appendix C

INTERLIS

C.1 Specification

The present version of the UML-editor is in accordance with the *INTERLIS specification version 2*.

For more detailed information concerning this reference manual see `http://www.interlis.ch`

C.2 INTERLIS Compiler

The INTERLIScompiler developped by *Eisenhut Informatik AG* (see chapter 2.4) on behalf of KOGIS (cf. `http://www.interlis.ch`) is an integrated component of the UML-editor and permits e.g. the examination of INTERLIS language definitions within an INTERLIS model (see chapter 3.1.7).

Appendix D

Formats

D.1 UML-editor-Format

The UML-editor uses its own format for saving (see chapter 3.1.1) models with the ending *.uml*.

D.2 XML-Schema

ASCII-Code nach *Export of an XML-Schema* (see chapter 3.1.7) into a file with suffix *.XSD*.

```
<xsd:schema xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns="http://www.interlis.ch/INTERLIS2.2"
targetNamespace="http://www.interlis.ch/INTERLIS2.2"
elementFormDefault="qualified" attributeFormDefault="unqualified">
    <xsd:element name="TRANSFER" type="Transfer"/>
    <xsd:complexType name="Transfer">
      <xsd:sequence>
        <xsd:element name="HEADERSECTION" type="HeaderSection"/>
        <xsd:element name="DATASECTION" type="DataSection"/>
      </xsd:sequence>
    </xsd:complexType>
    <xsd:complexType name="HeaderSection">
      <xsd:sequence>
        <xsd:element name="ALIAS" type="Alias"/>
        <xsd:element name="COMMENT" type="xsd:anyType" minOccurs="0"/>
      </xsd:sequence>
      <xsd:attribute name="VERSION" type="xsd:decimal" use="required" fixed="2.2"/>
      <xsd:attribute name="SENDER" type="xsd:string" use="required"/>
```

```
</xsd:complexType>
<xsd:complexType name="Alias">
  <xsd:sequence>
    <xsd:element name="ENTRIES" type="Entries" minOccurs="0" maxOccurs="unbounded"/>
  </xsd:sequence>
</xsd:complexType>
<xsd:complexType name="Entries">
  <xsd:sequence>
    <xsd:choice maxOccurs="unbounded">
      <xsd:element name="TAGENTRY" type="Tagentry"/>
      <xsd:element name="VALENTRY" type="Valentry"/>
      <xsd:element name="DELENTRY" type="Delentry"/>
    </xsd:choice>
  </xsd:sequence>
  <xsd:attribute name="FOR" type="xsd:string" use="required"/>
</xsd:complexType>
<xsd:complexType name="Tagentry">
  <xsd:attribute name="FROM" type="xsd:string" use="required"/>
  <xsd:attribute name="TO" type="xsd:string" use="required"/>
</xsd:complexType>
<xsd:complexType name="Valentry">
  <xsd:attribute name="ATTR" type="xsd:string" use="required"/>
  <xsd:attribute name="FROM" type="xsd:string" use="required"/>
  <xsd:attribute name="TO" type="xsd:string" use="required"/>
</xsd:complexType>
<xsd:complexType name="Delentry">
  <xsd:attribute name="TAG" type="xsd:string" use="required"/>
</xsd:complexType>
<xsd:complexType name="BasketValue">
  <xsd:attribute name="TOPIC" type="xsd:string" use="required"/>
  <xsd:attribute name="KIND" type="xsd:string" use="required"/>
  <xsd:attribute name="BID" type="xsd:string" use="required"/>
</xsd:complexType>
<xsd:complexType name="CoordValue">
  <xsd:sequence>
    <xsd:element name="C1">
      <xsd:simpleType>
        <xsd:restriction base="xsd:decimal"/>
      </xsd:simpleType>
    </xsd:element>
    <xsd:element name="C2" minOccurs="0">
      <xsd:simpleType>
        <xsd:restriction base="xsd:decimal"/>
      </xsd:simpleType>
    </xsd:element>
    <xsd:element name="C3" minOccurs="0">
      <xsd:simpleType>
        <xsd:restriction base="xsd:decimal"/>
      </xsd:simpleType>
    </xsd:element>
  </xsd:sequence>
</xsd:complexType>
<xsd:complexType name="ArcPoint">
  <xsd:sequence>
    <xsd:element name="C1">
      <xsd:simpleType>
        <xsd:restriction base="xsd:decimal"/>
      </xsd:simpleType>
    </xsd:element>
    <xsd:element name="C2">
      <xsd:simpleType>
        <xsd:restriction base="xsd:decimal"/>
      </xsd:simpleType>
    </xsd:element>
    <xsd:element name="C3" minOccurs="0">
      <xsd:simpleType>
        <xsd:restriction base="xsd:decimal"/>
      </xsd:simpleType>
    </xsd:element>
    <xsd:element name="A1">
      <xsd:simpleType>
        <xsd:restriction base="xsd:decimal"/>
      </xsd:simpleType>
    </xsd:element>
    <xsd:element name="A2">
      <xsd:simpleType>
        <xsd:restriction base="xsd:decimal"/>
      </xsd:simpleType>
    </xsd:element>
    <xsd:element name="R">
      <xsd:simpleType>
        <xsd:restriction base="xsd:decimal"/>
      </xsd:simpleType>
    </xsd:element>
  </xsd:sequence>
</xsd:complexType>
<xsd:complexType name="RoleType">
  <xsd:simpleContent>
    <xsd:extension base="xsd:string">
      <xsd:attribute name="REF" type="xsd:string"/>
```

```
        <xsd:attribute name="EXTREF" type="xsd:string"/>
        <xsd:attribute name="BID" type="xsd:string"/>
        <xsd:attribute name="NEXT_TID" type="xsd:string"/>
      </xsd:extension>
    </xsd:simpleContent>
  </xsd:complexType>

  <xsd:complexType name="DataSection">
    <xsd:sequence>
      <xsd:choice minOccurs="0" maxOccurs="unbounded">
      </xsd:choice>
    </xsd:sequence>
  </xsd:complexType>
</xsd:schema>
```

D.3 INTERLIS-Compiler Configuration

Compiler configuration files use the format **.ilc* (see chapter 3.1.7).

D.4 INTERLIS Model File

In general an INTERLIS-model file ends in *.ili* and contains ASCII-signs. When importing/exporting (see chapter 3.1.7) from an INTERLIS model INTERLIScode in an ASCII-file is expected as follows.

An example according to the Roads Model in see fig. 3.1):

```
\textbf{INTERLIS} 2.2;

\textbf{MODEL} ModelDef3 (de) =

  \textbf{DOMAIN}

    Point2D= \textbf{COORD NUMERIC CIRCULAR, NUMERIC};

  \textbf{TOPIC TOPIC} Roads =

    \textbf{CLASS} StreetAxis =
      Geometry : \textbf{TEXT*}20;
    \textbf{END} StreetAxis;
  \textbf{CLASS} LandCover =
    Type : \textbf{TEXT*}20;
    Geometry : \textbf{TEXT*}20;
  \textbf{END} LandCover;

  \textbf{CLASS} PointObject =
    Type : \textbf{TEXT*}20;
    Position : \textbf{TEXT*}20;
  \textbf{END} PointObject;

  /** Position of a StreetName
   */
  \textbf{CLASS} StreetNamePosition =
    NamPos : \textbf{TEXT*}20;
    NamOri : \textbf{TEXT*}20;
  \textbf{END} StreetNamePosition;

  \textbf{UNIT}

    PI / 180 [rad]

  \textbf{CLASS} Street =
    Name : \textbf{TEXT*}20;
  \textbf{END} Street;

  \textbf{ASSOCIATION} StreetNamePositionAssoc =
    StreetNamePosition -- {0..*} StreetNamePosition;
    Street -- {1} Street;
  \textbf{END} StreetNamePositionAssoc;

  \textbf{ASSOCIATION} StreetAxisAssoc =
    Street -- {1} Street;
    StreetAxis -- {9223372036854775807..*} StreetAxis;
  \textbf{END} StreetAxisAssoc;

\textbf{END TOPIC} Roads;

\textbf{TOPIC TOPIC} RoadsExtended =

  \textbf{CLASS} PointObjectExtended
  \textbf{EXTENDS} ModelDef3.\textbf{TOPIC} Roads.PointObject =
  \textbf{END} PointObjectExtended;

  \textbf{CLASS} StreetAxisExtended
  \textbf{EXTENDS} ModelDef3.\textbf{TOPIC} Roads.StreetAxis =
      Precision : \textbf{TEXT*}20;
    \textbf{END} StreetAxisExtended;

  \textbf{END TOPIC} RoadsExtended;

\textbf{END} ModelDef3.
```

Appendix E

Country-Specific Differences

Depending on the country or region there are different names for the same technical term. All texts (strings) concerning the UML-editor are stored in so-called *ressource-files (with the ending .property)* . This bears the advantage, that the terms used in the UML-editor can be altered without having to recompile the entire program. This is why it may be possible that e.g. field names differ from the ones printed in this manual.

Bibliography

[1] OMG, *Object Management Group*, http://www.omg.org, The Object Management Group (OMG) is an open membership, non-profit consortium that produces and maintains computer industry specifications for interoperable enterprise applications. Our membership includes virtually every large company in the computer industry, and hundreds of smaller ones. Most of the companies that shape enterprise and Internet computing today are represented on our Board of Directors.

[2] UML, *Cetus-Links*, http://www.cetus-links.org, Various links to *Objects & Components*

[3] Martin Fowler & Kendall Scott, *UML konzentriert*, Addison-Wesley

[4] James Martin & James Odell, *Object-oriented methods a foundation*, Prentice-Hall

[5] KOGIS, *INTERLIS-Reference Manual*, http://www.interlis.ch

[6] KOGIS, *INTERLIS-User Manual*, http://www.interlis.ch

[7] KOGIS, *Introduction to the UML-Editor*, http://www.eisenhutinformatik.ch/umleditor

[8] KOGIS, *UML-Editor*, http://www.eisenhutinformatik.ch/umleditor