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Literate Data Model

Preliminaries

the basic structure of the model

In Literate Data Modeling, the main components of interest are typically Classes, Attributes, Models, and Subjects. However, to streamline the model and promote reusability, we introduce a supertype called Component. By defining common attributes and behaviors in the Component class, we can inherit them in the subclasses, ensuring consistency and reducing duplication throughout the model.

We present the Component class first because it is a best practice in modeling to introduce supertypes before their subtypes. This approach allows readers to understand the general concepts and shared properties before delving into the specifics of each specialized component.

Component

An element or building block of the literate data model

Components

RAL Components

Annotation

LiterateDataModel , Subject , Class , Key , AttributeSection , Attribute , Constraint , Method , ParameterAnInputToAMethod

the name of the component, not in camel case

(String value O_O)

This is a warning with emoji

The name of the component

(CamelName value O_O)

(QualifiedCamel value O_O)

a short form of the component's name, used for cross references and improved readability.

(CamelName value O_O)

"LDM" is the short form of "Literate Data Model".

name - how do you say name in english?

x.name == y

the abbreviated name should be shorter than the actual name

len(abbreviatedName) < len(name)

Why have an abbreviation longer than the name?

Warning

Does this annotation find it's way to the Constraint? YES! It's fixed!

A brief, one-line definition or description of the component, suitable for use in a descriptive table of contents. _

(OneLiner value O_O)

A more detailed explanation or discussion of the component _

(RichText value O_O)

mechanical attributes

Indicates whether this component is an embellishment added during post-parsing processing _

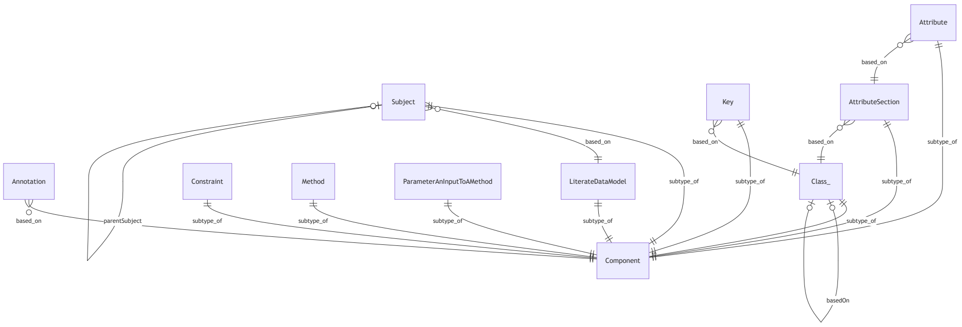
(Boolean value O_O)

false

This attribute is set to true for components that are automatically generated or added during the fleshing out, review, or rendering processes, such as implied attributes or suggested model elements. It helps distinguish embellishments from the core model elements defined in the original LDM source.

Diagram produced for Component

```
erDiagram
Annotation }o--|| Component : based_on
LiterateDataModel ||--|| Component : subtype_of
Subject ||--|| Component : subtype_of
Subject }o--|| LiterateDataModel : based_on
Subject |o--o| Subject : parentSubject
Class_ ||--|| Component : subtype_of
Class_ |o--o| Class_ : basedOn
Key ||--|| Component : subtype_of
Key }o--|| Class_ : based_on
AttributeSection ||--|| Component : subtype_of
AttributeSection }o--|| Class_ : based_on
Attribute ||--|| Component : subtype_of
Attribute }o--|| AttributeSection : based_on
Constraint ||--|| Component : subtype_of
Method ||--|| Component : subtype_of
ParameterAnInputToAMethod ||--|| Component : subtype_of
```



AnnotationType

a kind of note, or aside, used to call attention to additional information about some Component.

Each LDM declares a set of Annotation Types, with defined labels, emojis, and clearly documented purposes. These are *recognized* or *registered* Annotation Types.

AnnotationTypes

RALAnnotationTypes

LiterateDataModel

an emoji

(Emoji value O_O)

an emoji

(String value O_O)

the Unicode for the emoji

(String value O_O)

A short label to indicate the purpose of the annotation _

(LowerCamel value O_O)

the plural form of the label

(UpperCamel value O_O)

based on label

the intended reason for the annotation.

(OneLiner value O_O)

A link back to the LiterateDataModel on which this AnnotationType depends.

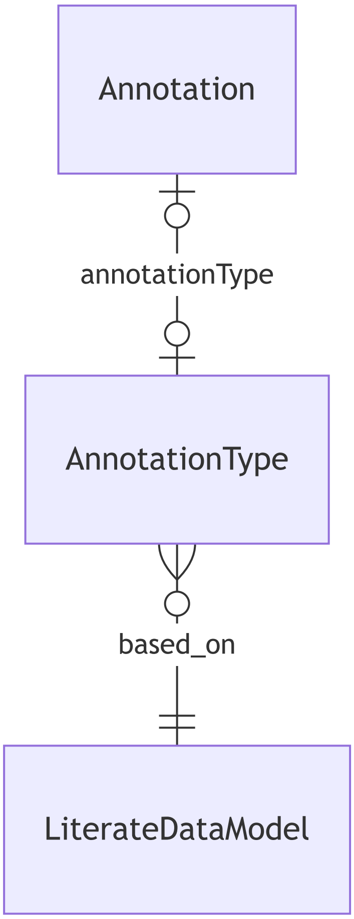
(LiterateDataModel value M_1)

peInverse attribute for Annotation.annotationType from which this was implied.

(Annotation value M_1)

Annotation.annotationType

Diagram produced for AnnotationType
erDiagram
AnnotationType }o--|| LiterateDataModel : based_on
Annotation |o--o| AnnotationType : annotationType



Annotation
A note or comment associated with a model element

Annotations
RALAnnotations
Component

(Optional AnnotationType value O_O)

An Annotation is considered to *recognized* if the label is associated with an Annotation Type. otherwise it is *ad hoc* .
Should be a Value Type
AnnotationType.inverseOfAnnotationType

A short label to indicate the purpose of the annotation _
(CamelName value O_O)

But any short label is valid.

from annotationType

(Optional Emoji value O_O)

from annotation type

The content or body of the annotation
(RichText value O_O)

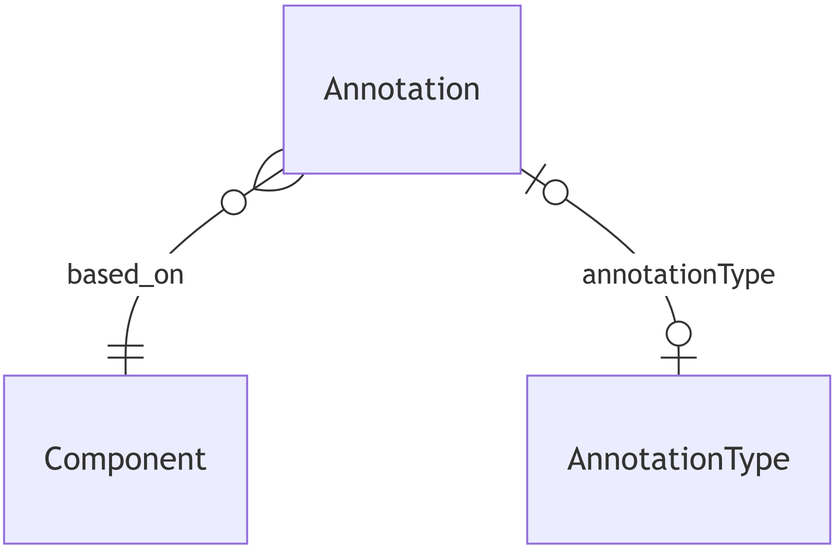
Indicates whether this annotation is an embellishment added during post-parsing processing _
(Boolean value O_O)

false
This attribute is set to true for annotations that are automatically generated or added during the fleshing out, review, or rendering processes, such as suggestions, issues, or diagnostic messages. It helps distinguish embellishment annotations from the annotations defined in the original LDM source.

A link back to the Component on which this Annotation depends.
(Component value M_1)

Diagram produced for Annotation

```
  erDiagram
Annotation }o--|| Component : based_on
Annotation |o--o| AnnotationType : annotationType
```



The Model and its Subjects

LiterateDataModel
A representation of a domain's entities, attributes, and relationships, along with explanatory text and examples

LiterateDataModels
AnnotationType , Subject
Component

(UpperCamel value O_O)

Component.name

list of all classes in the model, as ordered in the definition of the model.
(List of Classes value O_O)

Class.inverseOfAllSubjects
gathering s.allSubjects over s in subjectAreas
Subject names must be unique across the model.

list of all classes in the model, as ordered in the definition of the model.
(List of Classes value O_O)

Class.inverseOfAllClasses
gathering s.allClasses over s in allSubjects.
Class names must be unique across the model.

(List of AnnotationTypes value O_O)

ge the recommended lanquage for expressing derivation, defaults, and constraints
(CodingLanguage value O_O)

OCL

ges (Optional List of CodingLanguages value O_O)

uage the recommended lanquage for expressing derivation, defaults, and constraints
(TemplateLanguage value O_O)

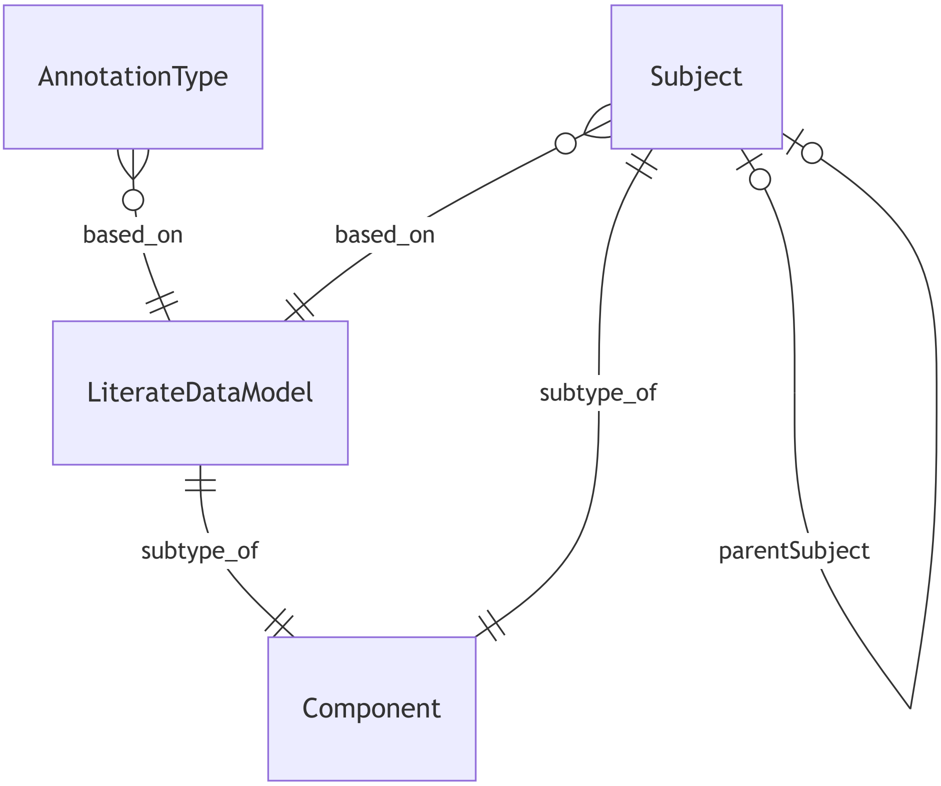
Handlebars

uages (Optional List of TemplateLanguages value O_O)

A list of functions that require sophisticated AI-powered implementation *
(List of String value O_O)

['aiEnglishPlural()']

Diagram produced for LiterateDataModel
erDiagram
AnnotationType }o--|| LiterateDataModel : based_on
LiterateDataModel ||--|| Component : subtype_of
Subject ||--|| Component : subtype_of
Subject }o--|| LiterateDataModel : based_on
Subject |o--o| Subject : parentSubject



Subject
A specific topic or theme within the model

Subjects are the chapters an sections of the model.

- A subject need not contain any Classes if it’s just expository.

Subjects
LiterateDataModel
Component
SubjectArea

(UpperCamel value O_O)

Component.name

The parent subject, if any, under which this subject is nested _
(Optional Subject value O_O)

Subject.inverseOfParentSubject

The major classes related to this subject, in the order in which they should be presented _
(List of Classes value O_O)

define chapter, section, subsection as levels?
Class.inverseOfClasses

Any child subjects nested under this subject, in the order in which they should be presented _
(List of Subjects value O_O)

DSL : the Classes within a Subject are always displayed before the childSubjects.

Subject.inverseOfChildSubjects

A link back to the LiterateDataModel on which this Subject depends.
(LiterateDataModel value M_1)

Inverse attribute for Subject.parentSubject from which this was implied.
(Subject value M_1)

Subject.parentSubject

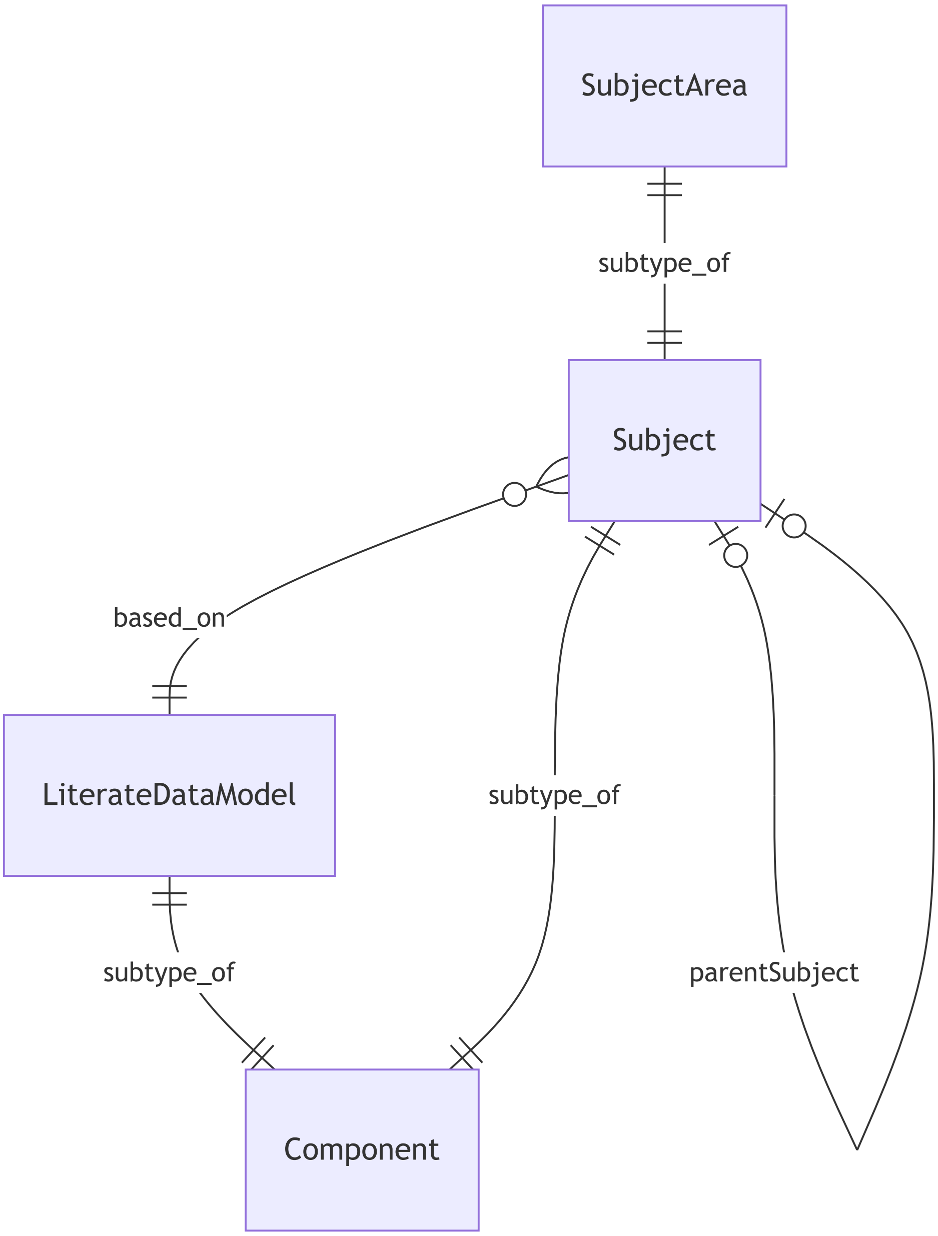
Inverse attribute for Subject.childSubjects from which this was implied.

(Subject value M_1)

Subject.childSubjects

Diagram produced for Subject

```
erDiagram
LiterateDataModel ||--|| Component : subtype_of
Subject ||--|| Component : subtype_of
Subject }o--|| LiterateDataModel : based_on
Subject |o--o| Subject : parentSubject
SubjectArea ||--|| Subject : subtype_of
```


SubjectArea
subtype_of
Subject
based_on
LiterateDataModel
subtype_of
parentSubject
subtype_of
Component

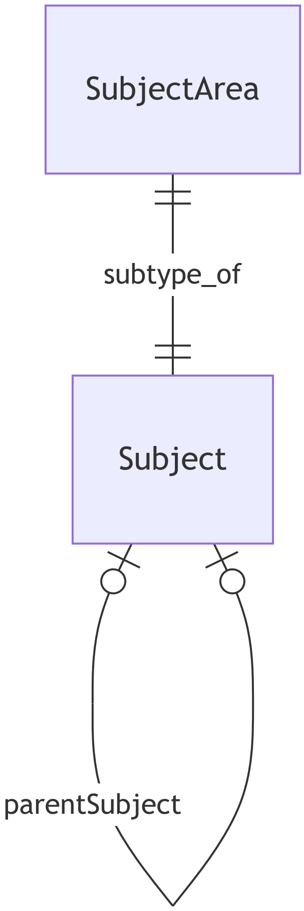
SubjectArea
A main topic or area of focus within the model, containing related subjects and classes

parentSubject is absent
SubjectAreas
LiterateModel , Xyz
Subject

A link back to the LiterateModel on which this SubjectArea depends.
(LiterateModel value M_1)

A link back to the Xyz on which this SubjectArea depends.
(Xyz value M_1)

Diagram produced for SubjectArea
erDiagram
Subject |o--o| Subject : parentSubject
SubjectArea ||--|| Subject : subtype_of


SubjectArea
subtype_of
Subject
parentSubject

Classes

Class
A key entity or object type in the model, often corresponding to a real-world concept

Classes
Subtyping , Key , AttributeSection , ClassConstraint
Component
ReferenceType
Within each Class, attribute names must be unique.

the normal English plural form of the name of the Class
(UpperCamel value O_O)

Might be Books for the Book class or other regular plurals.

- But also might be People for Person.

When inputting a model, you will rarely need to specify the plural form. The input program will just look it up.
the regular plural, formed by adding "s" or "es".

the Class or Classes on which this class is dependent
(Set of Class value O_O)

This is solely based on **Existence Dependency** . A true dependent entity cannot logically exist without the related parent entity. For instance, an Order Item cannot exist without an Order. If removing the parent entity logically implies removing the dependent entity, then it is a dependent entity.

that basedOn and dependentOf are being used synonymousle in this metamodel.
Class.inverseOfBasedOn

The parent class
(Es value O_O)

the criteria, or dimensions, by which the class can be divided into subtypes
(List of Subtypings value O_O)

in a library model, the `Book` class could have subtypings based on genre (e.g., Fiction, Non-fiction), format (e.g., Hardcover, Paperback), or subject (e.g., Science, History).
Subtyping.inverseOfSubtypings

Any subtypes or specializations of this class based on it’s subtypings.
(List of Classes value O_O)

For instance, using the `Book` example, the subtypes could include `FictionBook` , `Non-fictionBook` , `HardcoverBook` , `PaperbackBook` , `ScienceBook` , and `HistoryBook` .

Class.inverseOfSubtypes

The attributes or properties of the class, in the order in which they should be presented _

*(List of **Attributes** value O_O)*

Attribute.inverseOfAttributes

additional attributes or properties of the class, grouped for clarity and elaboration. _

*(List of **AttributeSections** value O_O)*

AttributeSection.inverseOfAttributeSections

Any constraints, rules, or validations specific to this class _

*(List of **Constraints** value O_O)*

Constraints may be expressed on either the Class or the Attribute. Always?

Any behaviors or operations associated with this class _

*(List of **Methods** value O_O)*

Method.inverseOfMethods

the Classes which are basedOn this Class

*(Optional Set of **Classes** value O_O)*

Class.basedOn

*(Optional Set of **UniqueKeys** value O_O)*

UniqueKey.basedOn

Inverse attribute for LiterateDataModel.allSubjects from which this was implied.

*(**LiterateDataModel** value M_1)*

LiterateDataModel.allSubjects

Inverse attribute for LiterateDataModel.allClasses from which this was implied.

*(**LiterateDataModel** value M_1)*

LiterateDataModel.allClasses

Inverse attribute for Subject.classes from which this was implied.

(Subject value M_1)

Subject.classes

Inverse attribute for Class.basedOn from which this was implied.

(Class value M_1)

Class.basedOn

Inverse attribute for Class.subtypes from which this was implied.

(Class value M_1)

Class.subtypes

Inverse attribute for Subtyping.classes from which this was implied.

(Subtyping value M_1)

Subtyping.classes

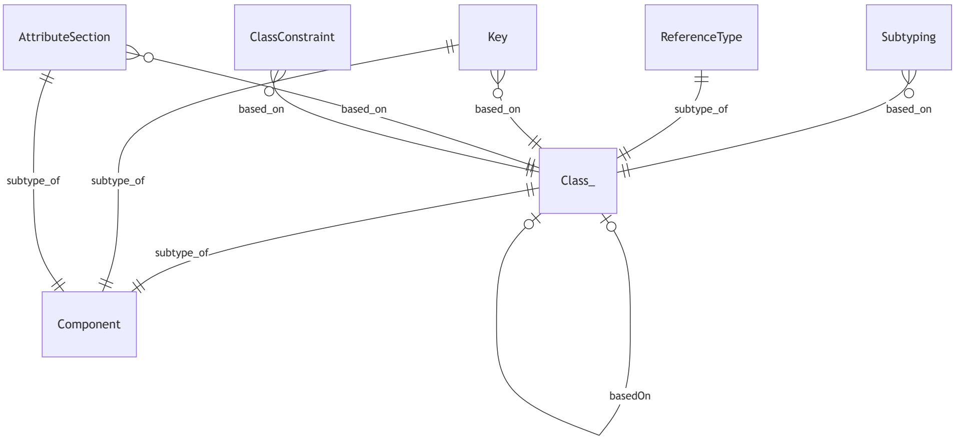
Inverse attribute for SimpleDataTypeSubtpeOfDataType.coreClass from which this was implied.

(SimpleDataTypeSubtpeOfDataType value M_1)

SimpleDataTypeSubtpeOfDataType.coreClass

Diagram produced for Class_

```
erDiagram
Class_ ||--|| Component : subtype_of
Class_ |o--o| Class_ : basedOn
Subtyping }o--|| Class_ : based_on
ReferenceType ||--|| Class_ : subtype_of
Key ||--|| Component : subtype_of
Key }o--|| Class_ : based_on
AttributeSection ||--|| Component : subtype_of
AttributeSection }o--|| Class_ : based_on
ClassConstraint }o--|| Class_ : based_on
```


AttributeSection
ClassConstraint
Key
ReferenceType
Subtyping
based_on
based_on
based_on
subtype_of
based_on
subtype_of
subtype_of
Class_
subtype_of
Component
basedOn

Subtyping

a way in which subtypes of a Class may be classified

Subtypings

RALSubtypings

Class

(LowerCamel value O_O)

(Boolean value O_O)

true

(Boolean value O_O)

true

(List of Classes value O_O)

DSL : Shown in the DSL as

- Subbtypes: byBrand - Brand1, Brand2,... (non exclusive, exhaustive)
- on the super class. And as
- Subtype of: SuperClass byBrand
- on the subclass.

every class can have an unnamed subtyping.

Class.inverseOfClasses

Inverse attribute for Class.subtypings from which this was implied.

(Class value M_1)

Class.subtypings

A link back to the Class on which this Subtyping depends.

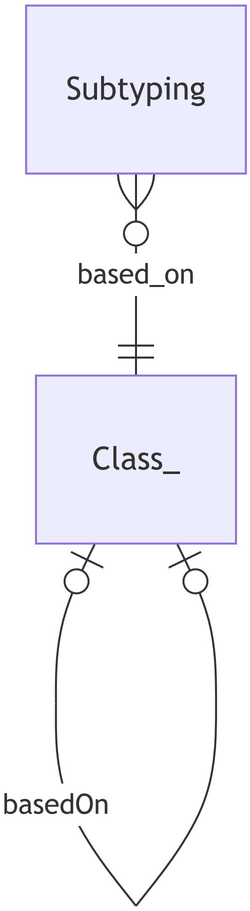
(Class value M_1)

Diagram produced for Subtyping

erDiagram

Class_ |o--o| Class_ : basedOn

Subtyping }o--|| Class_ : based_on



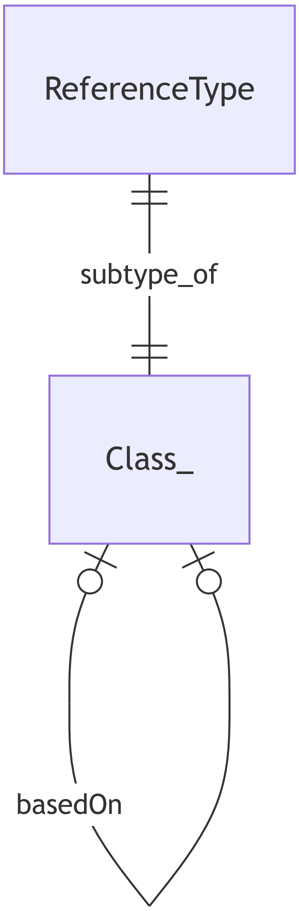
ReferenceType
A class that is presumed to be used as a reference, rather than a value

ReferenceTypes

RALReferenceTypes

[Class]

Diagram produced for ReferenceType
erDiagram
Class_ |o--o| Class_ : basedOn
ReferenceType ||--|| Class_ : subtype_of



CodeType
A data type or enumeration used in the model

CodeTypes

RALCodeTypes
CodeValue

the code type was implied by use in an attribute and is only used for that attribute
*(**Boolean value O_O**)*

Diagram produced for CodeType
erDiagram
CodeValue }o--|| CodeType : based_on

CodeValue
A possible value for an enumerated data class

CodeValues
RALCodeValues
CodeType

A short code or abbreviationi for the value _
*(**NameString value O_O**)*

an explanation of what the code means
*(**RichText value O_O**)*

Often, a CodeType will be assigned to just one attribute in the model. In such cases, there's no need to declare a new Code Type and invent a name for it. Instead:

A link back to the CodeType on which this CodeValue depends.
*(**CodeType value M_1**)*

Diagram produced for CodeValue

erDiagram
CodeValue }o--|| CodeType : based_on

erDiagram CodeValue }o--|| CodeType : based_on

Key
a list of attributes of a class

Keys
RALKeys
[Class](#)
[Component](#)
[UniqueKey](#)

the attributes of the base Class.
(List of [Attributes](#) value O_O)

[Attribute.inverseOfKeyAttributes](#)
each attribute must be a direct or inherited of the base class.
no repetitions allowed in keyAttributes

👍 **Issue** : introduce PureLists?

need ascending descending to support index keys or ordering keys.

A link back to the Class on which this Key depends.
([Class](#) value M_1)

Diagram produced for Key
erDiagram
Class_ ||--|| Component : subtype_of
Class_ |o--o| Class_ : basedOn
Key ||--|| Component : subtype_of
Key }o--|| Class_ : based_on
UniqueKey ||--|| Key : subtype_of

erDiagram Class_ ||--|| Component : subtype_of Class_ |o--o| Class_ : basedOn Key ||--|| Component : subtype_of Key }o--|| Class_ : based_on UniqueKey ||--|| Key : subtype_of

UniqueKey

a list of attributes on which instances of the base class may be keyed.

order unimportant for Unique Keys.

UniqueKeys

RAL UniqueKeys

Key

Diagram produced for UniqueKey

erDiagram

UniqueKey ||--|| Key : subtype_of

erDiagram UniqueKey ||--|| Key : subtype_of

Attributes

AttributeSection

a group of attributes for a class that merit a shared explanation.

AttributeSections

RALAttributeSections

Class

Attribute

Component

whether the attributes in this section, taken together, are optional.

(Boolean value O_O)

If the Attribute Section is required,then each Attribute within the sectional is optional ot required, depending on how it is marked.

-
- But if the Arrribute Section is optional each attribute in the section is only required if any attribute in the section is ptresent.

Inverse attribute for Class.attributeSections from which this was implied.

(Class value M_1)

Class.attributeSections

A link back to the Class on which this AttributeSection depends.

(Class value M_1)

Diagram produced for AttributeSection

erDiagram

Class_ ||--|| Component : subtype_of

Class_ |o--o| Class_ : basedOn

AttributeSection ||--|| Component : subtype_of

AttributeSection }o--|| Class_ : based_on

Attribute ||--|| Component : subtype_of

Attribute }o--|| AttributeSection : based_on

erDiagram Class_ ||--|| Component : subtype_of Class_ |o--o| Class_ : basedOn AttributeSection ||--|| Component : subtype_of AttributeSection }o--|| Class_ : based_on Attribute ||--|| Component : subtype_of Attribute }o--|| AttributeSection : based_on

Attribute
A property or characteristic of a class

Attributes
AttributeSection
AttributeConstraint
Component

(LowerCamel value O_O)

Component.name

The kind of object to which the attribute refers. _
(DataType value O_O)

But,

-
  - List of Editions
-
  - Set of Edition
-
  - ... and more complicated cases.

the section below on Data Type Specifiers.

Indicates whether the attribute must have a value for every instance of the class _
(Boolean value O_O)

*** False

The cardinality of the relationship represented by the attribute _
(CardinalityCode value O_O)

*** For a singular attribute, the default cardinality is N:1. If the attribute is 1:1, it must be stated explicitly. For a collective attribute, the default is 1:N. If the attribute is N:M, it must be stated explicitly.

(InventedName value O_O)

(Optional InventedName value O_O)

how this works with optionality

(Boolean value O_O)

true if the data type is a class or a simple collection of members of a class.

the class which contains, or would contain the inverse attribute

(Optional Class value O_O)

from the data type. Null unless arrribute is invertible.

(Optional Attribute value O_O)

(Optional Attribute value O_O)

The rule or formula for calculating the value, if no value is supplied Now running to a second line with the parenthentical on yet a third line

(Optional Derivation value O_O)

even when an Attribute has a default derivation, there’s no guarantee that every instance will have an assigned value. Example needed.

For derived attributes, the rule or formula for calculating the value _

(Optional Derivation value O_O)

on insert vs on access?

Any validation rules specific to this attribute _

(List of Constraints value O_O)

from Class.constraints

Inverse attribute for Class.attributes from which this was implied.

(Class value M_1)

Class.attributes

Inverse attribute for Key.keyAttributes from which this was implied.

(Key value M_1)

Key.keyAttributes

A link back to the AttributeSection on which this Attribute depends.

(AttributeSection value M_1)

Diagram produced for Attribute
erDiagram
AttributeSection ||--|| Component : subtype_of
Attribute ||--|| Component : subtype_of
Attribute }o--|| AttributeSection : based_on
Attribute |o--o| DataType : dataType
AttributeConstraint }o--|| Attribute : based_on

erDiagram AttributeSection ||--|| Component : subtype_of Attribute ||--|| Component : subtype_of Attribute }o--|| AttributeSection : based_on Attribute |o--o| DataType : dataType AttributeConstraint }o--|| Attribute : based_on

Derivation
A rule or formula for deriving the value of an attribute

Derivations

An English language statement of the derivation rule _
(RichText value O_O)

The formal expression of the derivation in a programming language _
(CodeExpression value O_O)

No diagram produced for Derivation

Constraint
A rule, condition, or validation that must be satisfied by the model

Constraints
Component
ClassConstraint , AttributeConstraint

An English language statement of the constraint _
(RichText value O_O)

The formal expression of the constraint in a programming language
(InventedName value O_O)

(Code value O_O)

```
Warning, nothing fatal; just a caution
Error, serious. Fix now
```

Diagram produced for Constraint
erDiagram
Constraint ||--|| Component : subtype_of
ClassConstraint ||--|| Constraint : subtype_of
AttributeConstraint ||--|| Constraint : subtype_of

erDiagram Constraint ||--|| Component : subtype_of ClassConstraint ||--|| Constraint : subtype_of AttributeConstraint ||--|| Constraint : subtype_of

Message

Messages
RALMessages

Message is trivial; no diagram

ClassConstraint

ClassConstraints
RALClassConstraints
Class
Constraint

A link back to the Class on which this ClassConstraint depends.
(Class value M_1)

Diagram produced for ClassConstraint
erDiagram
Class_ |o--o| Class_ : basedOn
ClassConstraint ||--|| Constraint : subtype_of
ClassConstraint }o--|| Class_ : based_on

erDiagram Class_ |o--o| Class_ : basedOn ClassConstraint ||--|| Constraint : subtype_of ClassConstraint }o--|| Class_ : based_on

AttributeConstraint

AttributeConstraints
RALAttributeConstraints

Attribute
Constraint

A link back to the Attribute on which this AttributeConstraint depends.
(Attribute value M_1)

Diagram produced for AttributeConstraint
erDiagram
AttributeConstraint ||--|| Constraint : subtype_of
AttributeConstraint }o--|| Attribute : based_on

erDiagram AttributeConstraint ||--|| Constraint : subtype_of AttributeConstraint }o--|| Attribute : based_on

CodeExpression

CodeExpressions
RALCodeExpressions

the programming language
(Code value O_O)

```
OCL, Object Constraint Language
Java, Java
```

(String value O_O)

CodeExpression is trivial; no diagram

Methods

Method
A behavior or operation associated with a class

Methods
Component

The input parameters of the method _
(List of Parameters value O_O)

ParameterAnInputToAMethod.inverseOfParameters

The data type of the value returned by the method _
(DataType value O_O)

Inverse attribute for Class.methods from which this was implied.
(Class value M_1)

Class.methods

Diagram produced for Method
erDiagram
Method ||--|| Component : subtype_of
Method |o--o| DataType : returnType

erDiagram Method ||--|| Component : subtype_of Method |o--o| DataType : returnType

ParameterAnInputToAMethod

Parameters

Component

The data type of the parameter _

(DataType value O_O)

The cardinality of the parameter

(InventedName value O_O)

Inverse attribute for Method.parameters from which this was implied.

(Method value M_1)

Method.parameters

Diagram produced for ParameterAnInputToAMethod

erDiagram

ParameterAnInputToAMethod ||--|| Component : subtype_of

ParameterAnInputToAMethod |o--o| DataType : type

erDiagram ParameterAnInputToAMethod ||--|| Component : subtype_of
ParameterAnInputToAMethod |o--o| DataType : type

Data Types

DataType

DataTypes

RALDataTypes

Diagram produced for DataType
erDiagram
Attribute |o--o| DataType : dataType
Method |o--o| DataType : returnType
ParameterAnInputToAMethod |o--o| DataType : type

erDiagram Attribute |o--o| DataType : dataType Method |o--o| DataType : returnType ParameterAnInputToAMethod |o--o| DataType : type

SimpleDataTypeSubtpeOfDataType

SimpleDataTypeSubtpeOfDataTypes

RALSimpleDataTypeSubtpeOfDataTypes

(Class value O_O)

Class.inverseOfCoreClass

SimpleDataTypeSubtpeOfDataType is trivial; no diagram

ComplexDataType

ComplexDataTypes

RALComplexDataTypes

(AggregatingOperator value O_O)

(List of DataTypes value O_O)

Diagram produced for ComplexDataType
erDiagram

erDiagram

AggregatingOperator

AggregatingOperators

RALAggregatingOperators

(Code value O_O)

```
SetOf
ListOf
Mapping
```

(Integer value O_O)

(Template value O_O)

AggregatingOperator is trivial; no diagram

Low level Data Types

insert Camel Case.md

Emoji

Emojis
RALEmojis

Emoji is trivial; no diagram

String

Strings
RALStrings

String is trivial; no diagram

CamelName

A short string without punctuation or spaces, suitable for names, labels, or identifiers and presented in camel case.

CamelNames
RALCamelNames
String
UpperCamel , LowerCamel

(String value O_O)

Must follow the camel case naming convention and not be empty.
"firstName", "orderDate", "customerID"

- *CamelName* is presented here, just after its first usage by another class (Component), to provide context and understanding before it is used further in the model.

CamelName is trivial; no diagram

UpperCamel

a CamelName that begins with a capital letter

_ "Customer", "ProductCategory", "PaymentMethod"
content begins with an upper case letter.
UpperCamels

RALUpperCamels
CamelName

UpperCamel is trivial; no diagram

LowerCamel
a CamelName that begins with a lower case letter

"firstName", "orderTotal", "shippingAddress"
content begins with a lower case letter.
LowerCamels
RALLowerCamels
CamelName

LowerCamel is trivial; no diagram

QualifiedCamel
an expression consisting of Camel Names separated by periods

QualifiedCamels
RALQualifiedCamels
String

content consists of CamelNames, separated by periods. Each of the camel names must be Upper Camel except, possibly, the first.

QualifiedCamel is trivial; no diagram

ValueTypeRichText

A string with markup for block level formatting.

ValueTypeRichTexts

ʀALValueTypeRichTexts

String

the string content

(String value O_O)

the rich text coding language used

(Code value O_O)

```
HTML
MarkDown
```

ValueTypeRichText is trivial; no diagram

OneLiner

String with markup for line level formatting.

OneLiners

ʀALOneLiners

RichText

the string content

(String value O_O)

must not containa line break or new line character

A line can't span two lines

OneLiner is trivial; no diagram

PrimitiveType

A basic, built-in data type

PrimitiveTypes

ʀALPrimitiveTypes

String , Integer , Decimal , Boolean , Date , Time , DateTime

PrimitiveType is trivial; no diagram

String

Strings

RALStrings
[PrimitiveType]
[CamelName], [QualifiedCamel], [ValueTypeRichText]

String is trivial; no diagram

Integer

Integers
RALIntegers
[PrimitiveType]

Integer is trivial; no diagram

Decimal

Decimals
RALDecimals
[PrimitiveType]

Decimal is trivial; no diagram

Boolean

Booleans
RALBooleans
[PrimitiveType]

Boolean is trivial; no diagram

Date

Dates
RALDates
[PrimitiveType]

Date is trivial; no diagram

Time

Times
RALTimes

PrimitiveType

Time is trivial; no diagram

DateTime

DateTimes

RAL DateTimes

PrimitiveType

DateTime is trivial; no diagram

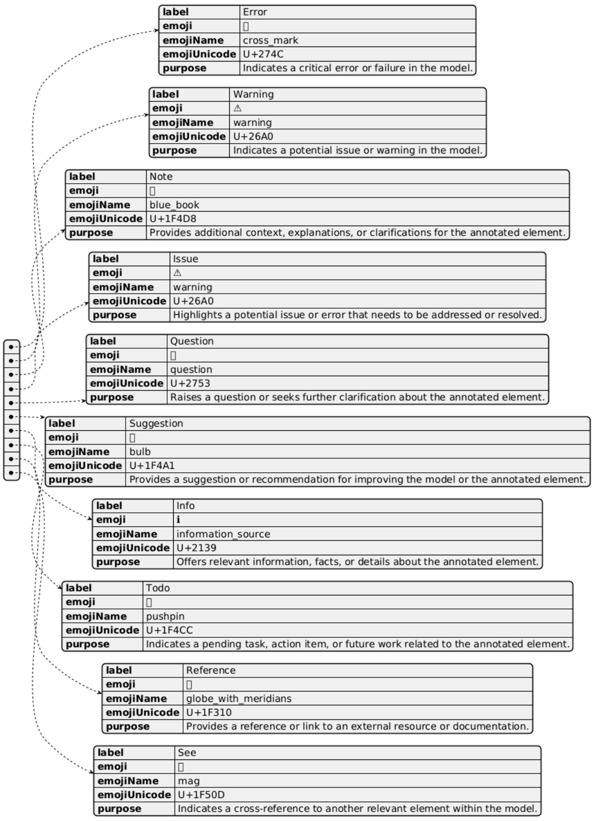
Annotation Types Used

These are the recognized Annotation Types for the LDM model.

And this is how you register the AnnotationTyped for a model. By including this sort of array in the DSL document for the model.

```
@startjson
```

```
[
{
"label": "Error",
"emoji": "❌",
"emojiName": "cross_mark",
"emojiUnicode": "U+274C",
"purpose": "Indicates a critical error or failure in the model."
},
{
"label": "Warning",
"emoji": "⚠️",
"emojiName": "warning",
"emojiUnicode": "U+26A0",
"purpose": "Indicates a potential issue or warning in the model."
},
{
"label": "Note",
"emoji": "📘",
"emojiName": "blue book",
"emojiUnicode": "U+1F4D8",
"purpose": "Provides additional context, explanations, or clarifications for the annotated
element."
},
{
"label": "Issue",
"emoji": "⚠️",
"emojiName": "warning",
"emojiUnicode": "U+26A0",
"purpose": "Highlights a potential issue or error that needs to be addressed or resolved."
},
{
"label": "Question",
"emoji": "❓",
"emojiName": "question",
"emojiUnicode": "U+2753",
"purpose": "Raises a question or seeks further clarification about the annotated element."
},
{
"label": "Suggestion",
"emoji": "💡",
"emojiName": "bulb",
"emojiUnicode": "U+1F4A1",
"purpose": "Provides a suggestion or recommendation for improving the model or the annotated
element."
},
{
"label": "Info",
"emoji": "ℹ️",
"emojiName": "information_source",
"emojiUnicode": "U+2139",
"purpose": "Offers relevant information, facts, or details about the annotated element."
},
{
"label": "Todo",
"emoji": "📌",
"emojiName": "pushpin",
"emojiUnicode": "U+1F4CC",
"purpose": "Indicates a pending task, action item, or future work related to the annotated
element."
},
{
"label": "Reference",
"emoji": "🌐",
"emojiName": "globe_with_meridians",
"emojiUnicode": "U+1F310",
"purpose": "Provides a reference or link to an external resource or documentation."
},
{
"label": "See",
"emoji": "🔍",
"emojiName": "mag",
"emojiUnicode": "U+1F50D",
"purpose": "Indicates a cross-reference to another relevant element within the model."
}
]
@endjson
```



label	Error
emoji	□
emojiName	cross_mark
emojiUnicode	U+274C
purpose	Indicates a critical error or failure in the model.

label	Warning
emoji	⚠
emojiName	warning
emojiUnicode	U+26A0
purpose	Indicates a potential issue or warning in the model.

label	Note
emoji	□
emojiName	blue_book
emojiUnicode	U+1F4D8
purpose	Provides additional context, explanations, or clarifications for the annotated element.

label	Issue
emoji	⚠
emojiName	warning
emojiUnicode	U+26A0
purpose	Highlights a potential issue or error that needs to be addressed or resolved.

label	Question
emoji	□
emojiName	question
emojiUnicode	U+2753
purpose	Raises a question or seeks further clarification about the annotated element.

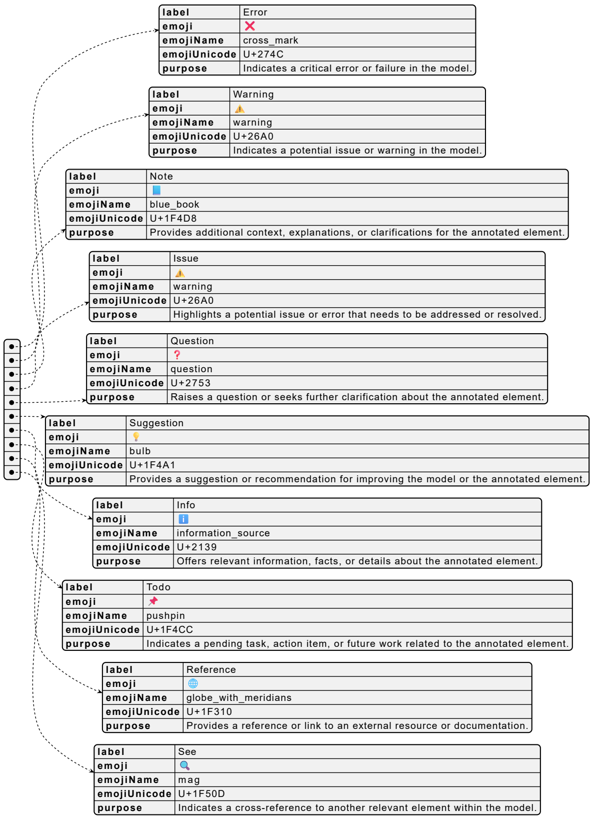
label	Suggestion
emoji	□
emojiName	bulb
emojiUnicode	U+1F4A1
purpose	Provides a suggestion or recommendation for improving the model or the annotated element.

label	Info
emoji	ℹ
emojiName	information_source
emojiUnicode	U+2139
purpose	Offers relevant information, facts, or details about the annotated element.

label	Todo
emoji	□
emojiName	pushpin
emojiUnicode	U+1F4CC
purpose	Indicates a pending task, action item, or future work related to the annotated element.

label	Reference
emoji	□
emojiName	globe_with_meridians
emojiUnicode	U+1F310
purpose	Provides a reference or link to an external resource or documentation.

label	See
emoji	□
emojiName	mag
emojiUnicode	U+1F50D
purpose	Indicates a cross-reference to another relevant element within the model.



label	Error
emoji	❌
emojiName	cross_mark
emojiUnicode	U+274C
purpose	Indicates a critical error or failure in the model.

label	Warning
emoji	⚠️
emojiName	warning
emojiUnicode	U+26A0
purpose	Indicates a potential issue or warning in the model.

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purpose	Raises a question or seeks further clarification about the annotated element.

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label	Info
emoji	ℹ️
emojiName	information_source
emojiUnicode	U+2139
purpose	Offers relevant information, facts, or details about the annotated element.

label	Todo
emoji	📌
emojiName	pushpin
emojiUnicode	U+1F4CC
purpose	Indicates a pending task, action item, or future work related to the annotated element.

label	Reference
emoji	🌐
emojiName	globe_with_meridians
emojiUnicode	U+1F310
purpose	Provides a reference or link to an external resource or documentation.

label	See
emoji	🔍
emojiName	mag
emojiUnicode	U+1F50D
purpose	Indicates a cross-reference to another relevant element within the model.

Annotation types as CSV

```
label,emoji,emojiName,emojiUnicode,purpose
Error,❌,cross mark,U+274C,Indicates a critical error or failure in the model.
Warning,⚠️,warning,U+26A0,Indicates a potential issue or warning in the model.
Note,📘,blue book,U+1F4D8,"Provides additional context, explanations, or clarifications for
the annotated element."
Issue,⚠️,warning,U+26A0,Highlights a potential issue or error that needs to be addressed or
resolved.
Question,❓,question,U+2753,Raises a question or seeks further clarification about the
annotated element.
Suggestion,💡,bulb,U+1F4A1,Provides a suggestion or recommendation for improving the model
or the annotated element.
Info,ℹ️,information_source,U+2139,"Offers relevant information, facts, or details about the
annotated element."
Todo,📌,pushpin,U+1F4CC,"Indicates a pending task, action item, or future work related to
the annotated element."
Reference,🌐,globe with meridians,U+1F310,Provides a reference or link to an external
resource or documentation.
See,🔍,mag,U+1F50D,Indicates a cross-reference to another relevant element within the model.
```

	label	emoji	emojiName	emojiUnicode	purpose
0	Error	❌	cross_mark	U+274C	Indicates a critical error or failure in the model.
1	Warning	⚠️	warning	U+26A0	Indicates a potential issue or warning in the model.
2	Note	📘	blue_book	U+1F4D8	Provides additional context, explanations, or clarifications for the annotated element.
3	Issue	⚠️	warning	U+26A0	Highlights a potential issue or error that needs to be addressed or resolved.
4	Question	❓	question	U+2753	Raises a question or seeks further clarification about the annotated element.
5	Suggestion	💡	bulb	U+1F4A1	Provides a suggestion or recommendation for improving the model or the annotated element.
6	Info	ℹ️	information_source	U+2139	Offers relevant information, facts, or details about the annotated element.
7	Todo	📌	pushpin	U+1F4CC	Indicates a pending task, action item, or future work related to the annotated element.
8	Reference	🌐	globe_with_meridians	U+1F310	Provides a reference or link to an external resource or documentation.
9	See	🔍	mag	U+1F50D	Indicates a cross-reference to another relevant element within the model.

Appendices

various sidebars to include Insert More Sidebars.md Insert Overrides.md insert LDM Intro.md Insert OCL.md Insert Camel Case.md

== content to add