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Literate Data Model

Component

An element or building block of the literate data model

LURAL Components

EDPLURAL Components

DENTS [Annotation](#)

TYPES [LiterateDataModel](#) , [Subject](#) , [Class](#) , [Key](#) , [AttributeSection](#) , [Attribute](#) , [Constraint](#) , [Method](#) , [ParameterAnInputToAMethod](#)

me the name of the component, not in camel case

(String value O_O)

arning This is a warning with emoji

me The name of the component

(CamelName value O_O)

me *(QualifiedCamel value O_O)*

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

(CamelName value O_O)

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

EFAULT name - how do you say name in english?

OCL x.name == y

RAINTS the abbreviated name should be shorter than the actual name

OCL len(abbreviatedName) < len(name)

ESSAGE Why have an abbreviation longer than the name?

VERITY Warning

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

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

(OneLiner value O_O)

on A more detailed explanation or discussion of the component _

(RichText value O_O)

mechanical attributes

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

(Boolean value O_O)

EFAULT false

note

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.

AnnotationType

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

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

LURAL AnnotationTypes

EDPLURAL AnnotationTypes

SEDON LiterateDataModel

oji an emoji
(Emoji value O_O)

me an emoji
(String value O_O)

de the Unicode for the emoji
(String value O_O)

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

ral the plural form of the label
(UpperCamel value O_O)

EFAULT based on label

se the intended reason for the annotation.
(OneLiner value O_O)

s

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

s

tionType Inverse attribute for Annotation.annotationType from which this was implied.
(Annotation value M_1)

VERSE Annotation.annotationType

s

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

s

tionType Inverse attribute for Annotation.annotationType from which this was implied.
(Annotation value M_1)

INVERSE Annotation.annotationType

Annotation

A note or comment associated with a model element

PLURAL Annotations

UMEDPLURAL Annotations

BASEDON Component

nType ***(Optional AnnotationType value O_O)***

note An Annotation is considered to *recognized* if the label is associated with an Annotation Type. otherwise it is *ad hoc* .

note Should be a Value Type

INVERSE AnnotationType.inverseOfAnnotationType

label A short label to indicate the purpose of the annotation _

(CamelName value O_O)

But any short label is valid.

DEFAULT from annotationType

emoji ***(Optional Emoji value O_O)***

DEFAULT from annotation type

ontent The content or body of the annotation

(RichText value O_O)

y

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

(Boolean value O_O)

DEFAULT false

note 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.

utes

onent A link back to the Component on which this Annotation depends.

(Component value M_1)

onent A link back to the Component on which this Annotation depends.

(Component value M_1)

LiterateDataModel

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

LURAL LiterateDataModels

DENTS AnnotationType , Subject

YPEOF Component

me ***(UpperCamel value O_O)***

RRIDES Component.name

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

VERSE Class.inverseOfAllSubjects

VATION gathering s.allSubjects over s in subjectAreas

RAINTS Subject names must be unique across the model.

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

VERSE Class.inverseOfAllClasses

VATION gathering s.allClasses over s in allSubjects.

RAINTS Class names must be unique across the model.

es ***(List of AnnotationTypes value O_O)***

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

EFAULT OCL

anguages ***(Optional List of CodingLanguages value O_O)***

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

EFAULT Handlebars

eLanguages ***(Optional List of TemplateLanguages value O_O)***

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

VATION ['aiEnglishPlural()']

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.

PLURAL	Subjects
BASEDON	LiterateDataModel
BTYPEOF	Component
UBTYPES	SubjectArea

name (*UpperCamel* *value O_O*)

VERRIDES Component.name

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

INVERSE Subject.inverseOfParentSubject

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

issue define chapter, section, subsection as levels?

INVERSE Class.inverseOfClasses

bjects 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.

INVERSE Subject.inverseOfChildSubjects

utes

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

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

INVERSE Subject.parentSubject

dSubjects Inverse attribute for Subject.childSubjects from which this was implied.
(Subject *value M_1)*

VERSE Subject.childSubjects

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

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

VERSE Subject.parentSubject

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

VERSE Subject.childSubjects

SubjectArea

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

VHERE parentSubject is absent

LURAL SubjectAreas

SEDON LiterateModel , Xyz

YPEOF Subject

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

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

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

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

Class

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

PLURAL Classes

ENDENTS Subtyping , Key , AttributeSection , ClassConstraint

BTYPEOF Component

SUBTYPES ReferenceType

STRAINTS Within each Class, attribute names must be unique.

lForm

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.

note When inputting a model, you will rarely need to specify the plural form. The input program will just look it up.

DEFAULT the regular plural, formed by adding "s" or "es".

sedOn

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.

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

INVERSE Class.inverseOfBasedOn

types

The parent class

(Es value O_O)

pings

the criteria, or dimensions, by which the class can be divided into subtypes

(List of Subtypings value O_O)

example 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).

INVERSE Subtyping.inverseOfSubtypings

types

Any subtypes or specializations of this class based on it's subtypings.

(List of Classes value O_O)

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

VERSE Class.inverseOfSubtypes

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

(List of Attributes value O_O)

VERSE Attribute.inverseOfAttributes

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

(List of AttributeSections value O_O)

VERSE AttributeSection.inverseOfAttributeSections

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

(List of Constraints value O_O)

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

ds Any behaviors or operations associated with this class _

(List of Methods value O_O)

VERSE Method.inverseOfMethods

s

nts the Classes which are basedOn this Class

(Optional Set of Classes value O_O)

VERSE Class.basedOn

ys *(Optional Set of UniqueKeys value O_O)*

VERSE UniqueKey.basedOn

s

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

(LiterateDataModel value M_1)

VERSE LiterateDataModel.allSubjects

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

(LiterateDataModel value M_1)

VERSE LiterateDataModel.allClasses

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

(Subject value M_1)

INVERSE Subject.classes

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

(Class value M_1)

INVERSE Class.basedOn

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

(Class value M_1)

INVERSE Class.subtypes

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

(Subtyping value M_1)

INVERSE Subtyping.classes

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

(SimpleDataTypeSubtpeOfDataType value M_1)

INVERSE SimpleDataTypeSubtpeOfDataType.coreClass

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

(LiterateDataModel value M_1)

INVERSE LiterateDataModel.allSubjects

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

(LiterateDataModel value M_1)

INVERSE LiterateDataModel.allClasses

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

(Subject value M_1)

INVERSE Subject.classes

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

(Class value M_1)

INVERSE Class.basedOn

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

(Class value M_1)

INVERSE Class.subtypes

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

(Subtyping value M_1)

INVERSE Subtyping.classes

On

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

(Class value M_1)

VERSE Class.basedOn

es

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

(Class value M_1)

VERSE Class.subtypes

es

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

(Subtyping value M_1)

VERSE Subtyping.classes

ass

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

(SimpleDataTypeSubtpeOfDataType value M_1)

VERSE SimpleDataTypeSubtpeOfDataType.coreClass

Subtyping

a way in which subtypes of a Class may be classified

PLURAL Subtypings

UMEDPLURAL Subtypings

BASEDON Class

name (*LowerCamel* value O_O)

lusive (*Boolean* value O_O)

DEFAULT true

ustive (*Boolean* value O_O)

DEFAULT true

asses (*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.

note every class can have an unnamed subtyping.

INVERSE Class.inverseOfClasses

utes

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

(*Class* value M_1)

INVERSE Class.subtypings

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

(*Class* value M_1)

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

(*Class* value M_1)

INVERSE Class.subtypings

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

(*Class* value M_1)

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

VERSE Class.subtypings

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

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

LURAL ReferenceTypes

EDPLURAL ReferenceTypes

YPEOF Class

Type **CodeType** A data type or enumeration used in the model

LURAL CodeTypes

EDPLURAL CodeTypes

DENTS CodeValue

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

Type **CodeValue** A possible value for an enumerated data class

LURAL CodeValues

EDPLURAL CodeValues

SEDON CodeType

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

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

note 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:

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

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

utes

eType

A link back to the CodeType on which this CodeValue depends.

(CodeType value M_1)

Key

a list of attributes of a class

PLURAL	Keys
UMEDPLURAL	Keys
BASEDON	Class
BTYPEOF	Component
SUBTYPES	UniqueKey

ibutes

the attributes of the base Class.

(List of Attributes value O_O)

INVERSE	Attribute.inverseOfKeyAttributes
STRAINTS	each attribute must be a direct or inherited of the base class.
STRAINTS	no repetitions allowed in keyAttributes

☛ **Issue** : introduce PureLists?

issue need ascending descending to support index keys or ordering keys.

utes

Class

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

(Class value M_1)

Class

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

(Class value M_1)

Class

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

(Class value M_1)

UniqueKey

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

note order unimportant for Unique Keys.

PLURAL	UniqueKeys
UMEDPLURAL	UniqueKeys
BTYPEOF	Key

AttributeSection

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

LURAL AttributeSections

EDPLURAL AttributeSections

SEDON [Class]

DENTS [Attribute]

YPEOF [Component]

nal

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.

s
teSections

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

(Class value M_1)

VERSE Class.attributeSections

s
ss

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

(Class value M_1)

s
teSections

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

(Class value M_1)

VERSE Class.attributeSections

s
teSections

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

(Class value M_1)

VERSE Class.attributeSections

s
ss

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

(Class value M_1)

Attribute

A property or characteristic of a class

PLURAL Attributes

BASEDON AttributeSection

PENDENTS AttributeConstraint

BTYPEOF Component

name ***(LowerCamel value O_O)***

VERRIDES Component.name

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

But,

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

see the section below on Data Type Specifiers.

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

DEFAULT *** False

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

DEFAULT

*** 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.

rExample

uthor ***(InventedName value O_O)***

books ***(Optional InventedName value O_O)***

note how this works with optionality

utes

ertible ***(Boolean value O_O)***

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

ss the class which contains, or would contain the inverse attribute

(Optional Class value O_O)

VATION from the data type. Null unless arrribute is invertible.

ute (Optional Attribute value O_O)

nal (Optional Attribute value O_O)

ult 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)

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

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

(Optional Derivation value O_O)

issue on insert vs on access?

nts Any validation rules specific to this attribute _

(List of Constraints value O_O)

note from Class.constraints

q

les

s

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

(Class value M_1)

VERSE Class.attributes

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

(Key value M_1)

VERSE Key.keyAttributes

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

(AttributeSection value M_1)

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

(Class value M_1)

VERSE Class.attributes

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

(Key value M_1)

VERSE Key.keyAttributes

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

(Class value M_1)

INVERSE Class.attributes

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

(Key value M_1)

INVERSE Key.keyAttributes

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

(AttributeSection value M_1)

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

PLURAL Derivations

ement An English language statement of the derivation rule _

(RichText value O_O)

ession The formal expression of the derivation in a programming language _

(CodeExpression value O_O)

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

PLURAL Constraints

JBTYPEOF Component

SUBTYPES ClassConstraint , AttributeConstraint

ement An English language statement of the constraint _

(RichText value O_O)

ession The formal expression of the constraint in a programming language

(InventedName value O_O)

verity ***(Code value O_O)***

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

lue Type **Message**

PLURAL Messages

JMEDPLURAL Messages

lue Type **ClassConstraint**

PLURAL ClassConstraints

JMEDPLURAL ClassConstraints

SEDON Class
YPEOF Constraint

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

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

Type **AttributeConstraint**

LURAL AttributeConstraints
EDPLURAL AttributeConstraints
SEDON Attribute
YPEOF Constraint

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

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

Type **CodeExpression**

LURAL CodeExpressions
EDPLURAL CodeExpressions

ge the programming language
*(**Code** value O_O)*

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

on *(**String** value O_O)*

Method

A behavior or operation associated with a class

PLURAL Methods

BTYPEOF Component

neters The input parameters of the method _

(List of Parameters value O_O)

INVERSE ParameterAnInputToAMethod.inverseOfParameters

nType The data type of the value returned by the method _

(DataType value O_O)

utes

thods Inverse attribute for Class.methods from which this was implied.

(Class value M_1)

INVERSE Class.methods

thods Inverse attribute for Class.methods from which this was implied.

(Class value M_1)

INVERSE Class.methods

thods Inverse attribute for Class.methods from which this was implied.

(Class value M_1)

INVERSE Class.methods

ParameterAnInputToAMethod

PLURAL Parameters

BTYPEOF Component

type The data type of the parameter _

(DataType value O_O)

inality The cardinality of the parameter

(InventedName value O_O)

utes

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

thod

(Method value M_1)

INVERSE Method.parameters

utes

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

thod

(Method value M_1)

INVERSE Method.parameters

Type **DataType**

LURAL DataTypes

EDPLURAL DataTypes

Type **SimpleDataTypeSubtpeOfDataType**

LURAL SimpleDataTypeSubtpeOfDataTypes

EDPLURAL SimpleDataTypeSubtpeOfDataTypes

ss ***(Class value O_O)***

VERSE Class.inverseOfCoreClass

Type **ComplexDataType**

LURAL ComplexDataTypes

EDPLURAL ComplexDataTypes

on ***(AggregatingOperator value O_O)***

es ***(List of DataTypes value O_O)***

Type **AggregatingOperator**

LURAL AggregatingOperators

EDPLURAL AggregatingOperators

me ***(Code value O_O)***

```
SetOf
ListOf
Mapping
```

ity ***(Integer value O_O)***

ng ***(Template value O_O)***

Type **Emoji**

LURAL Emojis

EDPLURAL Emojis

Type **String**

LURAL Strings

EDPLURAL Strings

Type **CamelName**

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

PLURAL CamelNames

UMEDPLURAL CamelNames

BTYPEOF String

SUBTYPES UpperCamel , LowerCamel

String ***(String value O_O)***

STRAINTS Must follow the camel case naming convention and not be empty.

example "firstName", "orderDate", "customerID"

elingNote

- *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.

lue Type **UpperCamel** a CamelName that begins with a capital letter

example _ "Customer", "ProductCategory", "PaymentMethod"

WHERE content begins with an upper case letter.

PLURAL UpperCamels

UMEDPLURAL UpperCamels

BTYPEOF CamelName

lue Type **LowerCamel** a CamelName that begins with a lower case letter

example "firstName", "orderTotal", "shippingAddress"

WHERE content begins with a lower case letter.

PLURAL LowerCamels

UMEDPLURAL LowerCamels

BTYPEOF CamelName

lue Type **QualifiedCamel**
an expression consisting of Camel Names separated by periods

PLURAL QualifiedCamels

UMEDPLURAL QualifiedCamels

BTYPEOF String

STRAINTS

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

ValueTypeRichText
A string with markup for block level formatting.

LURAL ValueTypeRichTexts

EDPLURAL ValueTypeRichTexts

YPEOF String

ue the string content
(String value O_O)

nat the rich text coding language used
(Code value O_O)

```
HTML
MarkDown
```

Type **OneLiner** String with markup for line level formatting.

LURAL OneLiners

EDPLURAL OneLiners

YPEOF RichText

ue the string content
(String value O_O)

RAINTS must not containa line break or new line character

ESSAGE A line can't span two lines

Type **PrimitiveType** A basic, built-in data type

LURAL PrimitiveTypes

EDPLURAL PrimitiveTypes

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

Type **String**

LURAL Strings

EDPLURAL Strings

YPEOF PrimitiveType

TYPES CamelName , QualifiedCamel , ValueTypeRichText

Type **Integer**

LURAL Integers

EDPLURAL Integers

YPEOF PrimitiveType

Type **Decimal**

PLURAL	Decimals
UMEDPLURAL	Decimals
BTYPEOF	PrimitiveType
lue Type	**Boolean**
PLURAL	Booleans
UMEDPLURAL	Booleans
BTYPEOF	PrimitiveType
lue Type	**Date**
PLURAL	Dates
UMEDPLURAL	Dates
BTYPEOF	PrimitiveType
lue Type	**Time**
PLURAL	Times
UMEDPLURAL	Times
BTYPEOF	PrimitiveType
lue Type	**DateTime**
PLURAL	DateTimes
UMEDPLURAL	DateTimes
BTYPEOF	PrimitiveType

Component

An element or building block of the literate data model

LURAL Components

EDPLURAL Components

DENTS Annotation

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

me the name of the component, not in camel case

(String value O_O)

arning This is a warning with emoji

me The name of the component

(CamelName value O_O)

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

(CamelName value O_O)

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

EFAULT name - how do you say name in english?

OCL x.name == y

RAINTS the abbreviated name should be shorter than the actual name

OCL len(abbreviatedName) < len(name)

ESSAGE Why have an abbreviation longer than the name?

VERITY Warning

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

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

(OneLiner value O_O)

on A more detailed explanation or discussion of the component _

(RichText value O_O)

mechanical attributes

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

(Boolean value O_O)

EFAULT false

note

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.

AnnotationType

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

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

LURAL AnnotationTypes

EDPLURAL AnnotationTypes

SEDON LiterateDataModel

oji an emoji

(Emoji value O_O)

me an emoji

(String value O_O)

de the Unicode for the emoji

(String value O_O)

bel A short label to indicate the purpose of the annotation _

(LowerCamel value O_O)

ral the plural form of the label

(UpperCamel value O_O)

EFAULT based on label

se the intended reason for the annotation.

(OneLiner value O_O)

s

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

(LiterateDataModel value M_1)

s

tionTyp verse attribute for Annotation.annotationType from which this was implied.

(Annotation value M_1)

VERSE Annotation.annotationType

s

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

(LiterateDataModel value M_1)

s

tionTyp verse attribute for Annotation.annotationType from which this was implied.

(Annotation value M_1)

INVERSE Annotation.annotationType

Annotation

A note or comment associated with a model element

PLURAL Annotations

UMEDPLURAL Annotations

BASEDON Component

nType ***(Optional AnnotationType value O_O)***

note An Annotation is considered to *recognized* if the label is associated with an Annotation Type. otherwise it is *ad hoc* .

note Should be a Value Type

INVERSE AnnotationType.inverseOfAnnotationType

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

But any short label is valid.

DEFAULT from annotationType

emoji ***(Optional Emoji value O_O)***

DEFAULT from annotation type

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

y

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

DEFAULT false

note 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.

utes

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

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

LiterateDataModel

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

LURAL LiterateDataModels

DENTS AnnotationType , Subject

YPEOF Component

me ***(UpperCamel value O_O)***

RRIDES Component.name

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

VERSE Class.inverseOfAllSubjects

VATION gathering s.allSubjects over s in subjectAreas

RAINTS Subject names must be unique across the model.

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

VERSE Class.inverseOfAllClasses

VATION gathering s.allClasses over s in allSubjects.

RAINTS Class names must be unique across the model.

es ***(List of AnnotationTypes value O_O)***

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

EFAULT OCL

anguages ***(Optional List of CodingLanguages value O_O)***

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

EFAULT Handlebars

eLanguages ***(Optional List of TemplateLanguages value O_O)***

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

VATION ['aiEnglishPlural()']

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.

PLURAL Subjects

BASEDON LiterateDataModel

BTYPEOF Component

UBTYPES SubjectArea

name ***(UpperCamel value O_O)***

VERRIDES Component.name

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

INVERSE Subject.inverseOfParentSubject

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

issue define chapter, section, subsection as levels?

INVERSE Class.inverseOfClasses

bjects 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.

INVERSE Subject.inverseOfChildSubjects

utes

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

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

INVERSE Subject.parentSubject

dSubjects Inverse attribute for Subject.childSubjects from which this was implied. ***(Subject value M_1)***

VERSE Subject.childSubjects

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

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

VERSE Subject.parentSubject

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

VERSE Subject.childSubjects

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

VHERE parentSubject is absent
LURAL SubjectAreas
SEDON LiterateModel , Xyz
YPEOF Subject

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

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

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

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

Class

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

PLURAL Classes

PENDENTS [Subtyping](), [Key](), [AttributeSection](), [ClassConstraint]()

BTYPEOF [Component]()

SUBTYPES [ReferenceType]()

STRAINTS Within each Class, attribute names must be unique.

lForm

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.

note When inputting a model, you will rarely need to specify the plural form. The input program will just look it up.

DEFAULT the regular plural, formed by adding "s" or "es".

sedOn

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.

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

INVERSE [Class.inverseOfBasedOn]()

rtypes

The parent class

(Es value O_O)

pings

the criteria, or dimensions, by which the class can be divided into subtypes

(List of Subtypings value O_O)

example 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).

INVERSE [Subtyping.inverseOfSubtypings]()

types

Any subtypes or specializations of this class based on it's subtypings.

(List of Classes value O_O)

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

VERSE Class.inverseOfSubtypes

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

(List of Attributes value O_O)

VERSE Attribute.inverseOfAttributes

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

(List of AttributeSections value O_O)

VERSE AttributeSection.inverseOfAttributeSections

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

(List of Constraints value O_O)

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

ds Any behaviors or operations associated with this class _

(List of Methods value O_O)

VERSE Method.inverseOfMethods

s

nts the Classes which are basedOn this Class

(Optional Set of Classes value O_O)

VERSE Class.basedOn

ys *(Optional Set of UniqueKeys value O_O)*

VERSE UniqueKey.basedOn

s

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

(LiterateDataModel value M_1)

VERSE LiterateDataModel.allSubjects

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

(LiterateDataModel value M_1)

VERSE LiterateDataModel.allClasses

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

(Subject value M_1)

INVERSE Subject.classes

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

(Class value M_1)

INVERSE Class.basedOn

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

(Class value M_1)

INVERSE Class.subtypes

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

(Subtyping value M_1)

INVERSE Subtyping.classes

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

(SimpleDataTypeSubtpeOfDataType value M_1)

INVERSE SimpleDataTypeSubtpeOfDataType.coreClass

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

(LiterateDataModel value M_1)

INVERSE LiterateDataModel.allSubjects

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

(LiterateDataModel value M_1)

INVERSE LiterateDataModel.allClasses

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

(Subject value M_1)

INVERSE Subject.classes

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

(Class value M_1)

INVERSE Class.basedOn

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

(Class value M_1)

INVERSE Class.subtypes

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

(Subtyping value M_1)

INVERSE Subtyping.classes

On

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

(Class value M_1)

VERSE Class.basedOn

es

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

(Class value M_1)

VERSE Class.subtypes

es

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

(Subtyping value M_1)

VERSE Subtyping.classes

ass

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

(SimpleDataTypeSubtpeOfDataType value M_1)

VERSE SimpleDataTypeSubtpeOfDataType.coreClass

Subtyping

a way in which subtypes of a Class may be classified

PLURAL Subtypings

UMEDPLURAL Subtypings

BASEDON Class

name ***(LowerCamel value O_O)***

lusive ***(Boolean value O_O)***

DEFAULT true

ustive ***(Boolean value O_O)***

DEFAULT true

asses ***(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.

note every class can have an unnamed subtyping.

INVERSE Class.inverseOfClasses

utes

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

(Class value M_1)

INVERSE Class.subtypings

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

(Class value M_1)

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

(Class value M_1)

INVERSE Class.subtypings

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

(Class value M_1)

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

VERSE Class.subtypings

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

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

LURAL ReferenceTypes

EDPLURAL ReferenceTypes

YPEOF Class

Type **CodeType** A data type or enumeration used in the model

LURAL CodeTypes

EDPLURAL CodeTypes

DENTS CodeValue

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

Type **CodeValue** A possible value for an enumerated data class

LURAL CodeValues

EDPLURAL CodeValues

SEDON CodeType

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

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

note 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:

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

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

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

Key
a list of attributes of a class

PLURAL	Keys
JMEDPLURAL	Keys
BASEDON	Class
JBTYPEOF	Component
SUBTYPES	UniqueKey

ibutes the attributes of the base Class.
(List of Attributes value O_O)

INVERSE	Attribute.inverseOfKeyAttributes
STRAINTS	each attribute must be a direct or inherited of the base class.
STRAINTS	no repetitions allowed in keyAttributes

☛ **Issue** : introduce PureLists?

issue need ascending descending to support index keys or ordering keys.

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

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

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

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

note order unimportant for Unique Keys.

PLURAL	UniqueKeys
JMEDPLURAL	UniqueKeys
JBTYPEOF	Key

Class

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

LURAL Classes

DENTS Subtyping , Key , AttributeSection , ClassConstraint

YPEOF Component

TYPES ReferenceType

RAINTS Within each Class, attribute names must be unique.

rm 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.

note When inputting a model, you will rarely need to specify the plural form. The input program will just look it up.

EFAULT the regular plural, formed by adding "s" or "es".

On 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.

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

VERSE Class.inverseOfBasedOn

es The parent class

(Es value O_O)

gs the criteria, or dimensions, by which the class can be divided into subtypes

(List of Subtypings value O_O)

ample 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).

VERSE Subtyping.inverseOfSubtypings

es Any subtypes or specializations of this class based on it’s subtypings.

(List of Classes value O_O)

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

INVERSE Class.inverseOfSubtypes

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

(List of Attributes value O_O)

INVERSE Attribute.inverseOfAttributes

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

(List of AttributeSections value O_O)

INVERSE AttributeSection.inverseOfAttributeSections

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

(List of Constraints value O_O)

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

thods Any behaviors or operations associated with this class _

(List of Methods value O_O)

INVERSE Method.inverseOfMethods

utes

dents the Classes which are basedOn this Class

(Optional Set of Classes value O_O)

INVERSE Class.basedOn

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

INVERSE UniqueKey.basedOn

utes

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

(LiterateDataModel value M_1)

INVERSE LiterateDataModel.allSubjects

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

(LiterateDataModel value M_1)

INVERSE LiterateDataModel.allClasses

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

(Subject value M_1)

VERSE Subject.classes

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

(Class value M_1)

VERSE Class.basedOn

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

(Class value M_1)

VERSE Class.subtypes

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

(Subtyping value M_1)

VERSE Subtyping.classes

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

(SimpleDataTypeSubtpeOfDataType value M_1)

VERSE SimpleDataTypeSubtpeOfDataType.coreClass

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

(LiterateDataModel value M_1)

VERSE LiterateDataModel.allSubjects

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

(LiterateDataModel value M_1)

VERSE LiterateDataModel.allClasses

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

(Subject value M_1)

VERSE Subject.classes

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

(Class value M_1)

VERSE Class.basedOn

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

(Class value M_1)

VERSE Class.subtypes

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

(Subtyping value M_1)

VERSE Subtyping.classes

sedOn

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

(Class value M_1)

INVERSE Class.basedOn

types

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

(Class value M_1)

INVERSE Class.subtypes

asses

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

(Subtyping value M_1)

INVERSE Subtyping.classes

eClass

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

(SimpleDataTypeSubtpeOfDataType value M_1)

INVERSE SimpleDataTypeSubtpeOfDataType.coreClass

Subtyping

a way in which subtypes of a Class may be classified

LURAL Subtypings

EDPLURAL Subtypings

SEDON Class

me ***(LowerCamel value O_O)***

ive ***(Boolean value O_O)***

EFAULT true

ive ***(Boolean value O_O)***

EFAULT true

es ***(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.

note every class can have an unnamed subtyping.

VERSE Class.inverseOfClasses

s

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

(Class value M_1)

VERSE Class.subtypings

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

(Class value M_1)

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

(Class value M_1)

VERSE Class.subtypings

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

(Class value M_1)

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

(Class value M_1)

INVERSE Class.subtypings

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

(Class value M_1)

ReferenceType

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

PLURAL ReferenceTypes

UMEDPLURAL ReferenceTypes

BTYPEOF Class

lue Type **CodeType** A data type or enumeration used in the model

PLURAL CodeTypes

UMEDPLURAL CodeTypes

PENDENTS CodeValue

aptive the code type was implied by use in an attribute and is only used for that attribute

(Boolean value O_O)

lue Type **CodeValue** A possible value for an enumerated data class

PLURAL CodeValues

UMEDPLURAL CodeValues

BASEDON CodeType

code A short code or abbreviationi for the value _

(NameString value O_O)

iption an explanation of what the code means

(RichText value O_O)

note 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:

utes
eType A link back to the CodeType on which this CodeValue depends.

(CodeType value M_1)

utes
eType A link back to the CodeType on which this CodeValue depends.

(CodeType value M_1)

s

pe

A link back to the CodeType on which this CodeValue depends.

(CodeType value M_1)

Key

a list of attributes of a class

LURAL Keys

EDPLURAL Keys

SEDON Class

YPEOF Component

TYPES UniqueKey

tes

the attributes of the base Class.

(List of Attributes value O_O)

VERSE Attribute.inverseOfKeyAttributes

RAINTS each attribute must be a direct or inherited of the base class.

RAINTS no repetitions allowed in keyAttributes

☛ **Issue** : introduce PureLists?

issue need ascending descending to support index keys or ordering keys.

s

ss

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

(Class value M_1)

ss

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

(Class value M_1)

ss

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

(Class value M_1)

UniqueKey

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

note order unimportant for Unique Keys.

LURAL UniqueKeys

EDPLURAL UniqueKeys

YPEOF Key

AttributeSection

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

PLURAL AttributeSections

UMEDPLURAL AttributeSections

BASEDON Class

PENDENTS Attribute

BTYPEOF Component

tional 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.

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

(Class value M_1)

INVERSE Class.attributeSections

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

(Class value M_1)

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

(Class value M_1)

INVERSE Class.attributeSections

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

(Class value M_1)

INVERSE Class.attributeSections

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

(Class value M_1)

Attribute

A property or characteristic of a class

LURAL Attributes

SEDON AttributeSection

DENTS AttributeConstraint

YPEOF Component

me ***(LowerCamel value O_O)***

RRIDES Component.name

pe The kind of object to which the attribute refers. _

(DataType value O_O)

But,

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

see the section below on Data Type Specifiers.

nal Indicates whether the attribute must have a value for every instance of the class _

(Boolean value O_O)

EFAULT *** False

lity The cardinality of the relationship represented by the attribute _

(CardinalityCode value O_O)

EFAULT

*** 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.

xample

nor ***(InventedName value O_O)***

ks ***(Optional InventedName value O_O)***

note how this works with optionality

s

ble ***(Boolean value O_O)***

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

Class the class which contains, or would contain the inverse attribute

(Optional Class value O_O)

ERIVATION from the data type. Null unless arrribute is invertible.

ribute *(Optional Attribute value O_O)*

tional *(Optional Attribute value O_O)*

efault 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)

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

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

(Optional Derivation value O_O)

issue on insert vs on access?

raints Any validation rules specific to this attribute _

(List of Constraints value O_O)

note from Class.constraints

king
rrides
utes
ibutes Inverse attribute for Class.attributes from which this was implied.

(Class value M_1)

INVERSE Class.attributes

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

(Key value M_1)

INVERSE Key.keyAttributes

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

(AttributeSection value M_1)

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

(Class value M_1)

INVERSE Class.attributes

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

(Key value M_1)

INVERSE Key.keyAttributes

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

(Class value M_1)

VERSE Class.attributes

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

(Key value M_1)

VERSE Key.keyAttributes

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

(AttributeSection value M_1)

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

LURAL Derivations

ent An English language statement of the derivation rule _

(RichText value O_O)

on The formal expression of the derivation in a programming language _

(CodeExpression value O_O)

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

LURAL Constraints

YPEOF Component

TYPES ClassConstraint , AttributeConstraint

ent An English language statement of the constraint _

(RichText value O_O)

on The formal expression of the constraint in a programming language

(InventedName value O_O)

ity ***(Code value O_O)***

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

Type **Message**

LURAL Messages

EDPLURAL Messages

Type **ClassConstraint**

LURAL ClassConstraints

EDPLURAL ClassConstraints

BasedOn Class

btypeOf Constraint

utes

Class

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

(Class value M_1)

utes

Class

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

(Class value M_1)

lue Type **AttributeConstraint**

Plural AttributeConstraints

umedPlural AttributeConstraints

BasedOn Attribute

btypeOf Constraint

utes

ribute

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

(Attribute value M_1)

utes

ribute

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

(Attribute value M_1)

lue Type **CodeExpression**

Plural CodeExpressions

umedPlural CodeExpressions

guage

the programming language

(Code value O_O)

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

ssion

(String value O_O)

Method

A behavior or operation associated with a class

LURAL Methods

YPEOF Component

ers The input parameters of the method _

(List of Parameters value O_O)

VERSE ParameterAnInputToAMethod.inverseOfParameters

pe The data type of the value returned by the method _

(DataType value O_O)

s

ds Inverse attribute for Class.methods from which this was implied.

(Class value M_1)

VERSE Class.methods

ds Inverse attribute for Class.methods from which this was implied.

(Class value M_1)

VERSE Class.methods

ds Inverse attribute for Class.methods from which this was implied.

(Class value M_1)

VERSE Class.methods

ParameterAnInputToAMethod

LURAL Parameters

YPEOF Component

pe The data type of the parameter _

(DataType value O_O)

ity The cardinality of the parameter

(InventedName value O_O)

s

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

d

(Method value M_1)

VERSE Method.parameters

s

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

d

(Method value M_1)

VERSE Method.parameters

lue Type DataType

PLURAL DataTypes

JMEDPLURAL DataTypes

lue Type SimpleDataTypeSubtpeOfDataType

PLURAL SimpleDataTypeSubtpeOfDataTypes

JMEDPLURAL SimpleDataTypeSubtpeOfDataTypes

Class (*Class* *value O_O*)

INVERSE Class.inverseOfCoreClass

lue Type ComplexDataType

PLURAL ComplexDataTypes

JMEDPLURAL ComplexDataTypes

gation (*AggregatingOperator* *value O_O*)

Types (*List of* *DataTypes* *value O_O*)

lue Type AggregatingOperator

PLURAL AggregatingOperators

JMEDPLURAL AggregatingOperators

name (*Code* *value O_O*)

```
 SetOf
ListOf
Mapping
```

arity (*Integer* *value O_O*)

elling (*Template* *value O_O*)

lue Type Emoji

PLURAL Emojis

JMEDPLURAL Emojis

lue Type String

PLURAL Strings

JMEDPLURAL Strings

lue Type CamelName

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

LURAL CamelNames

EDPLURAL CamelNames

YPEOF String

TYPES UpperCamel , LowerCamel

ng ***(String value O_O)***

RAINTS Must follow the camel case naming convention and not be empty.

xample "firstName", "orderDate", "customerID"

ngNote

- *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.

Type **UpperCamel** a CamelName that begins with a capital letter

ample _ "Customer", "ProductCategory", "PaymentMethod"

VHERE content begins with an upper case letter.

LURAL UpperCamels

EDPLURAL UpperCamels

YPEOF CamelName

Type **LowerCamel** a CamelName that begins with a lower case letter

ample "firstName", "orderTotal", "shippingAddress"

VHERE content begins with a lower case letter.

LURAL LowerCamels

EDPLURAL LowerCamels

YPEOF CamelName

Type **QualifiedCamel**
an expression consisting of Camel Names separated by periods

LURAL QualifiedCamels

EDPLURAL QualifiedCamels

YPEOF String

RAINTS

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

ValueTypeRichText
A string with markup for block level formatting.

PLURAL ValueTypeRichTexts

UMEDPLURAL ValueTypeRichTexts

BTYPEOF String

value the string content

*(**String** value O_O)*

ormat the rich text coding language used

*(**Code** value O_O)*

```
HTML
MarkDown
```

lue Type **OneLiner** String with markup for line level formatting.

PLURAL OneLiners

UMEDPLURAL OneLiners

BTYPEOF RichText

value the string content

*(**String** value O_O)*

STRAINTS must not containa line break or new line character

MESSAGE A line can't span two lines

lue Type **PrimitiveType** A basic, built-in data type

PLURAL PrimitiveTypes

UMEDPLURAL PrimitiveTypes

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

lue Type **String**

PLURAL Strings

UMEDPLURAL Strings

BTYPEOF PrimitiveType

UBTYPES CamelName , QualifiedCamel , ValueTypeRichText

lue Type **Integer**

PLURAL Integers

UMEDPLURAL Integers

BTYPEOF PrimitiveType

lue Type **Decimal**

LURAL	Decimals
EDPLURAL	Decimals
YPEOF	PrimitiveType

Type	Boolean
LURAL	Booleans
EDPLURAL	Booleans
YPEOF	PrimitiveType

Type	Date
LURAL	Dates
EDPLURAL	Dates
YPEOF	PrimitiveType

Type	Time
LURAL	Times
EDPLURAL	Times
YPEOF	PrimitiveType

Type	DateTime
LURAL	DateTimes
EDPLURAL	DateTimes
YPEOF	PrimitiveType

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

PLURAL Components
UMEDPLURAL Components
PENDENTS Annotation
SUBTYPES LiterateDataModel , Subject , Class , Key , AttributeSection , Attribute , Constraint , Method , ParameterAnInputToAMethod

Name the name of the component, not in camel case
(String value O_O)

warning This is a warning with emoji

name The name of the component
(CamelName value O_O)

Name *(QualifiedCamel value O_O)*

Name a short form of the component's name, used for cross references and improved readability.
(CamelName value O_O)

example "LDM" is the short form of "Literate Data Model".
DEFAULT name - how do you say name in english?
OCL x.name == y
STRAINTS the abbreviated name should be shorter than the actual name
OCL len(abbreviatedName) < len(name)
MESSAGE Why have an abbreviation longer than the name?
SEVERITY Warning
note Does this annotation find it's way to the Constraint? YES! It's fixed!

eLiner A brief, one-line definition or description of the component, suitable for use in a descriptive table of contents. _
(OneLiner value O_O)

ration A more detailed explanation or discussion of the component _
(RichText value O_O)

y mechanical attributes

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

DEFAULT false
note

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.

AnnotationType

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

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

PLURAL AnnotationTypes

UMEDPLURAL AnnotationTypes

BASEDON LiterateDataModel

emoji an emoji

(Emoji value O_O)

Name an emoji

(String value O_O)

icode the Unicode for the emoji

(String value O_O)

label A short label to indicate the purpose of the annotation _

(LowerCamel value O_O)

plural the plural form of the label

(UpperCamel value O_O)

DEFAULT based on label

rpose the intended reason for the annotation.

(OneLiner value O_O)

utes

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

(LiterateDataModel value M_1)

utes

otationType Inverse attribute for Annotation.annotationType from which this was implied.

(Annotation value M_1)

INVERSE Annotation.annotationType

utes

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

(LiterateDataModel value M_1)

utes

otationType Inverse attribute for Annotation.annotationType from which this was implied.

(Annotation value M_1)

VERSE Annotation.annotationType

Annotation

A note or comment associated with a model element

LURAL Annotations

EDPLURAL Annotations

SEDON Component

pe ***(Optional AnnotationType value O_O)***

note An Annotation is considered to *recognized* if the label is associated with an Annotation Type. otherwise it is *ad hoc* .

note Should be a Value Type

VERSE AnnotationType.inverseOfAnnotationType

bel A short label to indicate the purpose of the annotation _

(CamelName value O_O)

But any short label is valid.

EFAULT from annotationType

oji ***(Optional Emoji value O_O)***

EFAULT from annotation type

ent The content or body of the annotation

(RichText value O_O)

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

(Boolean value O_O)

EFAULT false

note 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.

s
ent A link back to the Component on which this Annotation depends.

(Component value M_1)

ent A link back to the Component on which this Annotation depends.

(Component value M_1)

The Model and its Subjects

LiterateDataModel

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

LURAL LiterateDataModels

DENTS AnnotationType , Subject

YPEOF Component

me ***(UpperCamel value O_O)***

RIDES Component.name

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

VERSE Class.inverseOfAllSubjects

VATION gathering s.allSubjects over s in subjectAreas

RAINTS Subject names must be unique across the model.

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

VERSE Class.inverseOfAllClasses

VATION gathering s.allClasses over s in allSubjects.

RAINTS Class names must be unique across the model.

es ***(List of AnnotationTypes value O_O)***

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

EFAULT OCL

anguages ***(Optional List of CodingLanguages value O_O)***

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

EFAULT Handlebars

eLanguages ***(Optional List of TemplateLanguages value O_O)***

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

VATION ['aiEnglishPlural()']

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.

PLURAL	Subjects
BASEDON	LiterateDataModel
BTYPEOF	Component
SUBTYPES	SubjectArea

name *(UpperCamel value O_O)*

VERRIDES Component.name

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

INVERSE Subject.inverseOfParentSubject

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

issue define chapter, section, subsection as levels?

INVERSE Class.inverseOfClasses

bjects 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.

INVERSE Subject.inverseOfChildSubjects

utes

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

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

INVERSE Subject.parentSubject

dSubjects Inverse attribute for Subject.childSubjects from which this was implied. *(Subject value M_1)*

VERSE Subject.childSubjects

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

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

VERSE Subject.parentSubject

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

VERSE Subject.childSubjects

SubjectArea

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

VHERE parentSubject is absent
LURAL SubjectAreas
SEDON LiterateModel , Xyz
YPEOF Subject

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

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

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

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

Class

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

PLURAL Classes

PENDENTS Subtyping , Key , AttributeSection , ClassConstraint

BTYPEOF Component

SUBTYPES ReferenceType

STRAINTS Within each Class, attribute names must be unique.

lForm 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.

note When inputting a model, you will rarely need to specify the plural form. The input program will just look it up.

DEFAULT the regular plural, formed by adding "s" or "es".

sedOn 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.

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

INVERSE Class.inverseOfBasedOn

rtypes The parent class

(Es value O_O)

pings the criteria, or dimensions, by which the class can be divided into subtypes

(List of Subtypings value O_O)

example 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).

INVERSE Subtyping.inverseOfSubtypings

types Any subtypes or specializations of this class based on it's subtypings.

(List of Classes value O_O)

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

VERSE Class.inverseOfSubtypes

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

(List of Attributes value O_O)

VERSE Attribute.inverseOfAttributes

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

(List of AttributeSections value O_O)

VERSE AttributeSection.inverseOfAttributeSections

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

(List of Constraints value O_O)

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

ds Any behaviors or operations associated with this class _

(List of Methods value O_O)

VERSE Method.inverseOfMethods

s

nts the Classes which are basedOn this Class

(Optional Set of Classes value O_O)

VERSE Class.basedOn

eys *(Optional Set of UniqueKeys value O_O)*

VERSE UniqueKey.basedOn

s

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

(LiterateDataModel value M_1)

VERSE LiterateDataModel.allSubjects

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

(LiterateDataModel value M_1)

VERSE LiterateDataModel.allClasses

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

(Subject value M_1)

INVERSE Subject.classes

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

(Class value M_1)

INVERSE Class.basedOn

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

(Class value M_1)

INVERSE Class.subtypes

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

(Subtyping value M_1)

INVERSE Subtyping.classes

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

(SimpleDataTypeSubtpeOfDataType value M_1)

INVERSE SimpleDataTypeSubtpeOfDataType.coreClass

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

(LiterateDataModel value M_1)

INVERSE LiterateDataModel.allSubjects

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

(LiterateDataModel value M_1)

INVERSE LiterateDataModel.allClasses

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

(Subject value M_1)

INVERSE Subject.classes

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

(Class value M_1)

INVERSE Class.basedOn

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

(Class value M_1)

INVERSE Class.subtypes

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

(Subtyping value M_1)

INVERSE Subtyping.classes

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

(Class value M_1)

VERSE Class.basedOn

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

(Class value M_1)

VERSE Class.subtypes

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

(Subtyping value M_1)

VERSE Subtyping.classes

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

(SimpleDataTypeSubtpeOfDataType value M_1)

VERSE SimpleDataTypeSubtpeOfDataType.coreClass

Subtyping

a way in which subtypes of a Class may be classified

PLURAL Subtypings

UMEDPLURAL Subtypings

BASEDON [Class]

name ***(LowerCamel value O_O)***

lusive ***(Boolean value O_O)***

DEFAULT true

ustive ***(Boolean value O_O)***

DEFAULT true

asses ***(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.

note every class can have an unnamed subtyping.

INVERSE Class.inverseOfClasses

utes

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

(Class value M_1)

INVERSE Class.subtypings

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

(Class value M_1)

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

(Class value M_1)

INVERSE Class.subtypings

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

(Class value M_1)

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

(Class value M_1)

VERSE Class.subtypings

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

(Class value M_1)

ReferenceType

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

LURAL ReferenceTypes

EDPLURAL ReferenceTypes

YPEOF Class

Type **CodeType**

A data type or enumeration used in the model

LURAL CodeTypes

EDPLURAL CodeTypes

DENTS CodeValue

ive the code type was implied by use in an attribute and is only used for that attribute

(Boolean value O_O)

Type **CodeValue**

A possible value for an enumerated data class

LURAL CodeValues

EDPLURAL CodeValues

SEDON CodeType

de A short code or abbreviationi for the value _

(NameString value O_O)

on an explanation of what the code means

(RichText value O_O)

note 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:

s

pe A link back to the CodeType on which this CodeValue depends.

(CodeType value M_1)

s

pe A link back to the CodeType on which this CodeValue depends.

(CodeType value M_1)

utes
eType

A link back to the CodeType on which this CodeValue depends.

(CodeType value M_1)

Key

a list of attributes of a class

PLURAL	Keys
UMEDPLURAL	Keys
BASEDON	Class
BTYPEOF	Component
SUBTYPES	UniqueKey

butes

the attributes of the base Class.

(List of Attributes value O_O)

INVERSE	Attribute.inverseOfKeyAttributes
STRAINTS	each attribute must be a direct or inherited of the base class.
STRAINTS	no repetitions allowed in keyAttributes

☛ **Issue** : introduce PureLists?

issue need ascending descending to support index keys or ordering keys.

utes
Class

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

(Class value M_1)

Class

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

(Class value M_1)

Class

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

(Class value M_1)

UniqueKey

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

note order unimportant for Unique Keys.

PLURAL	UniqueKeys
UMEDPLURAL	UniqueKeys
BTYPEOF	Key

Class

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

LURAL Classes

DENTS Subtyping , Key , AttributeSection , ClassConstraint

YPEOF Component

TYPES ReferenceType

RAINTS Within each Class, attribute names must be unique.

rm 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.

note When inputting a model, you will rarely need to specify the plural form. The input program will just look it up.

EFAULT the regular plural, formed by adding "s" or "es".

On 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.

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

VERSE Class.inverseOfBasedOn

es The parent class

(Es value O_O)

gs the criteria, or dimensions, by which the class can be divided into subtypes

(List of Subtypings value O_O)

ample 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).

VERSE Subtyping.inverseOfSubtypings

es Any subtypes or specializations of this class based on it’s subtypings.

(List of Classes value O_O)

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

INVERSE Class.inverseOfSubtypes

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

(List of Attributes value O_O)

INVERSE Attribute.inverseOfAttributes

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

(List of AttributeSections value O_O)

INVERSE AttributeSection.inverseOfAttributeSections

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

(List of Constraints value O_O)

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

thods Any behaviors or operations associated with this class _

(List of Methods value O_O)

INVERSE Method.inverseOfMethods

utes

dents the Classes which are basedOn this Class

(Optional Set of Classes value O_O)

INVERSE Class.basedOn

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

INVERSE UniqueKey.basedOn

utes

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

(LiterateDataModel value M_1)

INVERSE LiterateDataModel.allSubjects

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

(LiterateDataModel value M_1)

INVERSE LiterateDataModel.allClasses

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

(Subject value M_1)

VERSE Subject.classes

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

(Class value M_1)

VERSE Class.basedOn

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

(Class value M_1)

VERSE Class.subtypes

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

(Subtyping value M_1)

VERSE Subtyping.classes

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

(SimpleDataTypeSubtpeOfDataType value M_1)

VERSE SimpleDataTypeSubtpeOfDataType.coreClass

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

(LiterateDataModel value M_1)

VERSE LiterateDataModel.allSubjects

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

(LiterateDataModel value M_1)

VERSE LiterateDataModel.allClasses

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

(Subject value M_1)

VERSE Subject.classes

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

(Class value M_1)

VERSE Class.basedOn

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

(Class value M_1)

VERSE Class.subtypes

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

(Subtyping value M_1)

VERSE Subtyping.classes

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

(Class value M_1)

INVERSE Class.basedOn

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

(Class value M_1)

INVERSE Class.subtypes

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

(Subtyping value M_1)

INVERSE Subtyping.classes

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

(SimpleDataTypeSubtpeOfDataType value M_1)

INVERSE SimpleDataTypeSubtpeOfDataType.coreClass

Subtyping

a way in which subtypes of a Class may be classified

LURAL Subtypings

EDPLURAL Subtypings

SEDON Class

me ***(LowerCamel value O_O)***

ive ***(Boolean value O_O)***

EFAULT true

ive ***(Boolean value O_O)***

EFAULT true

es ***(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.

note every class can have an unnamed subtyping.

VERSE Class.inverseOfClasses

s

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

(Class value M_1)

VERSE Class.subtypings

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

(Class value M_1)

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

(Class value M_1)

VERSE Class.subtypings

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

(Class value M_1)

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

INVERSE Class.subtypings

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

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

PLURAL ReferenceTypes
UMEDPLURALReferenceTypes
BTYPEOF Class

lue Type **CodeType**
A data type or enumeration used in the model

PLURAL CodeTypes
UMEDPLURALCodeTypes
PENDENTS CodeValue

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

lue Type **CodeValue**
A possible value for an enumerated data class

PLURAL CodeValues
UMEDPLURALCodeValues
BASEDON CodeType

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

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

note 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:

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

utes
eType A link back to the CodeType on which this CodeValue depends.

(CodeType value M_1)

s
pe

A link back to the CodeType on which this CodeValue depends.

(CodeType value M_1)

Key

a list of attributes of a class

LURAL Keys

EDPLURAL Keys

SEDON Class

YPEOF Component

TYPES UniqueKey

tes

the attributes of the base Class.

(List of Attributes value O_O)

VERSE Attribute.inverseOfKeyAttributes

RAINTS each attribute must be a direct or inherited of the base class.

RAINTS no repetitions allowed in keyAttributes

☛ **Issue** : introduce PureLists?

issue need ascending descending to support index keys or ordering keys.

s
ss

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

(Class value M_1)

ss

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

(Class value M_1)

ss

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

(Class value M_1)

UniqueKey

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

note order unimportant for Unique Keys.

LURAL UniqueKeys

EDPLURAL UniqueKeys

YPEOF Key

Classes

Class

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

LURAL Classes

DENTS Subtyping , Key , AttributeSection , ClassConstraint

YPEOF Component

TYPES ReferenceType

RAINTS Within each Class, attribute names must be unique.

rm 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.

note When inputting a model, you will rarely need to specify the plural form. The input program will just look it up.

EFAULT the regular plural, formed by adding "s" or "es".

On 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.

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

VERSE Class.inverseOfBasedOn

es The parent class

(Es value O_O)

gs the criteria, or dimensions, by which the class can be divided into subtypes

(List of Subtypings value O_O)

ample 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).

VERSE Subtyping.inverseOfSubtypings

es Any subtypes or specializations of this class based on it’s subtypings.

(List of Classes value O_O)

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

INVERSE Class.inverseOfSubtypes

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

(List of Attributes value O_O)

INVERSE Attribute.inverseOfAttributes

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

(List of AttributeSections value O_O)

INVERSE AttributeSection.inverseOfAttributeSections

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

(List of Constraints value O_O)

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

thods Any behaviors or operations associated with this class _

(List of Methods value O_O)

INVERSE Method.inverseOfMethods

utes

dents the Classes which are basedOn this Class

(Optional Set of Classes value O_O)

INVERSE Class.basedOn

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

INVERSE UniqueKey.basedOn

utes

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

(LiterateDataModel value M_1)

INVERSE LiterateDataModel.allSubjects

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

(LiterateDataModel value M_1)

INVERSE LiterateDataModel.allClasses

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

(Subject value M_1)

VERSE Subject.classes

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

(Class value M_1)

VERSE Class.basedOn

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

(Class value M_1)

VERSE Class.subtypes

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

(Subtyping value M_1)

VERSE Subtyping.classes

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

(SimpleDataTypeSubtpeOfDataType value M_1)

VERSE SimpleDataTypeSubtpeOfDataType.coreClass

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

(LiterateDataModel value M_1)

VERSE LiterateDataModel.allSubjects

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

(LiterateDataModel value M_1)

VERSE LiterateDataModel.allClasses

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

(Subject value M_1)

VERSE Subject.classes

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

(Class value M_1)

VERSE Class.basedOn

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

(Class value M_1)

VERSE Class.subtypes

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

(Subtyping value M_1)

VERSE Subtyping.classes

sedOn

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

(Class value M_1)

INVERSE Class.basedOn

types

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

(Class value M_1)

INVERSE Class.subtypes

asses

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

(Subtyping value M_1)

INVERSE Subtyping.classes

eClass

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

(SimpleDataTypeSubtpeOfDataType value M_1)

INVERSE SimpleDataTypeSubtpeOfDataType.coreClass

Subtyping

a way in which subtypes of a Class may be classified

LURAL Subtypings

EDPLURAL Subtypings

SEDON Class

me ***(LowerCamel value O_O)***

ive ***(Boolean value O_O)***

EFAULT true

ive ***(Boolean value O_O)***

EFAULT true

es ***(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.

note every class can have an unnamed subtyping.

VERSE Class.inverseOfClasses

s

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

(Class value M_1)

VERSE Class.subtypings

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

(Class value M_1)

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

(Class value M_1)

VERSE Class.subtypings

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

(Class value M_1)

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

INVERSE Class.subtypings

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

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

PLURAL ReferenceTypes
UMEDPLURAL ReferenceTypes
BTYPEOF Class

lue Type **CodeType**
A data type or enumeration used in the model

PLURAL CodeTypes
UMEDPLURAL CodeTypes
PENDENTS CodeValue

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

lue Type **CodeValue**
A possible value for an enumerated data class

PLURAL CodeValues
UMEDPLURAL CodeValues
BASEDON CodeType

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

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

note 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:

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

utes
eType A link back to the CodeType on which this CodeValue depends.

(CodeType value M_1)

s
pe

A link back to the CodeType on which this CodeValue depends.

(CodeType value M_1)

Key

a list of attributes of a class

LURAL Keys

EDPLURAL Keys

SEDON Class

YPEOF Component

TYPES UniqueKey

es

the attributes of the base Class.

(List of Attributes value O_O)

VERSE Attribute.inverseOfKeyAttributes

RAINTS each attribute must be a direct or inherited of the base class.

RAINTS no repetitions allowed in keyAttributes

☛ **Issue** : introduce PureLists?

issue need ascending descending to support index keys or ordering keys.

s
ss

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

(Class value M_1)

ss

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

(Class value M_1)

ss

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

(Class value M_1)

UniqueKey

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

note order unimportant for Unique Keys.

LURAL UniqueKeys

EDPLURAL UniqueKeys

YPEOF Key

Attributes

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

LURAL AttributeSections

EDPLURAL AttributeSections

SEDON Class

DENTS Attribute

YPEOF Component

nal 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.

s
teSections Inverse attribute for Class.attributeSections from which this was implied.
(Class value M_1)

VERSE Class.attributeSections

s
ss A link back to the Class on which this AttributeSection depends.
(Class value M_1)

s
teSections Inverse attribute for Class.attributeSections from which this was implied.
(Class value M_1)

VERSE Class.attributeSections

s
teSections Inverse attribute for Class.attributeSections from which this was implied.
(Class value M_1)

VERSE Class.attributeSections

s
ss A link back to the Class on which this AttributeSection depends.
(Class value M_1)

Attribute

A property or characteristic of a class

PLURAL Attributes

ASEDON AttributeSection

PENDENTS AttributeConstraint

BTYPEOF Component

name ***(LowerCamel value O_O)***

VERRIDES Component.name

aType The kind of object to which the attribute refers. _

(DataType value O_O)

But,

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

see the section below on Data Type Specifiers.

tional Indicates whether the attribute must have a value for every instance of the class _

(Boolean value O_O)

DEFAULT *** False

inality The cardinality of the relationship represented by the attribute _

(CardinalityCode value O_O)

DEFAULT

*** 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.

rExample

uthor ***(InventedName value O_O)***

books ***(Optional InventedName value O_O)***

note how this works with optionality

utes

ertible ***(Boolean value O_O)***

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

ss the class which contains, or would contain the inverse attribute
(Optional Class value O_O)

ATION from the data type. Null unless arrribute is invertible.

ute *(Optional Attribute value O_O)*

nal *(Optional Attribute value O_O)*

ult 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)

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

on For derived attributes, the rule or formula for calculating the value _
(Optional Derivation value O_O)

issue on insert vs on access?

nts Any validation rules specific to this attribute _
(List of Constraints value O_O)

note from Class.constraints

q
les
s
tes Inverse attribute for Class.attributes from which this was implied.
(Class value M_1)

VERSE Class.attributes

ributes Inverse attribute for Key.keyAttributes from which this was implied.
(Key value M_1)

VERSE Key.keyAttributes

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

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

VERSE Class.attributes

ributes Inverse attribute for Key.keyAttributes from which this was implied.
(Key value M_1)

VERSE Key.keyAttributes

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

INVERSE Class.attributes

Attributes Inverse attribute for Key.keyAttributes from which this was implied.
(Key value M_1)

INVERSE Key.keyAttributes

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

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

PLURAL Derivations

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

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

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

PLURAL Constraints
BTYPEOF Component
SUBTYPES ClassConstraint , AttributeConstraint

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

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

verity ***(Code value O_O)***

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

lue Type **Message**

PLURAL Messages
UMEDPLURAL Messages

lue Type **ClassConstraint**

LURAL ClassConstraints

EDPLURAL ClassConstraints

SEDON Class

YPEOF Constraint

s
ss

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

(Class value M_1)

s
ss

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

(Class value M_1)

Type AttributeConstraint

LURAL AttributeConstraints

EDPLURAL AttributeConstraints

SEDON Attribute

YPEOF Constraint

s
ute

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

(Attribute value M_1)

s
ute

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

(Attribute value M_1)

Type CodeExpression

LURAL CodeExpressions

EDPLURAL CodeExpressions

ge

the programming language

(Code value O_O)

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

on

(String value O_O)

Methods

Method

A behavior or operation associated with a class

LURAL Methods

YPEOF Component

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

VERSE ParameterAnInputToAMethod.inverseOfParameters

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

s

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

VERSE Class.methods

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

VERSE Class.methods

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

VERSE Class.methods

ParameterAnInputToAMethod

PLURAL Parameters

BTYPEOF Component

type The data type of the parameter _

(DataType value O_O)

inality The cardinality of the parameter

(InventedName value O_O)

utes

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

thod *(Method value M_1)*

INVERSE Method.parameters

utes

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

thod *(Method value M_1)*

INVERSE Method.parameters

BLANK

Data Types

Type DataType

LURAL DataTypes

EDPLURAL DataTypes

Type SimpleDataTypeSubtpeOfDataType

LURAL SimpleDataTypeSubtpeOfDataTypes

EDPLURAL SimpleDataTypeSubtpeOfDataTypes

ss ***(Class value O_O)***

VERSE Class.inverseOfCoreClass

Type ComplexDataType

LURAL ComplexDataTypes

EDPLURAL ComplexDataTypes

on ***(AggregatingOperator value O_O)***

es ***(List of DataTypes value O_O)***

Type AggregatingOperator

LURAL AggregatingOperators

EDPLURAL AggregatingOperators

me ***(Code value O_O)***

```
 SetOf
ListOf
Mapping
```

ity ***(Integer value O_O)***

ng ***(Template value O_O)***

Low level Data Types

insert Camel Case.md

Type **Emoji**

LURAL Emojis

EDPLURAL Emojis

Type **String**

LURAL Strings

EDPLURAL Strings

Type **CamelName**

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

LURAL CamelNames

EDPLURAL CamelNames

YPEOF String

TYPES UpperCamel , LowerCamel

ng ***(String value O_O)***

RAINTS Must follow the camel case naming convention and not be empty.

xample "firstName", "orderDate", "customerID"

ngNote

- *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.

Type **UpperCamel**
a CamelName that begins with a capital letter

ample _ "Customer", "ProductCategory", "PaymentMethod"

VHERE content begins with an upper case letter.

LURAL UpperCamels

EDPLURAL UpperCamels

YPEOF CamelName

Type **LowerCamel**
a CamelName that begins with a lower case letter

ample "firstName", "orderTotal", "shippingAddress"

VHERE content begins with a lower case letter.

LURAL LowerCamels

EDPLURAL LowerCamels

BTYPEOF CamelName

lue Type **QualifiedCamel**

an expression consisting of Camel Names separated by periods

PLURAL QualifiedCamels

JMEDPLURAL QualifiedCamels

BTYPEOF String

STRAINTS

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

ValueTypeRichText

A string with markup for block level formatting.

PLURAL ValueTypeRichTexts

JMEDPLURAL ValueTypeRichTexts

BTYPEOF String

value the string content

(String value O_O)

ormat the rich text coding language used

(Code value O_O)

```
HTML
MarkDown
```

lue Type **OneLiner**

String with markup for line level formatting.

PLURAL OneLiners

JMEDPLURAL OneLiners

BTYPEOF RichText

value the string content

(String value O_O)

STRAINTS must not containa line break or new line character

MESSAGE A line can't span two lines

lue Type **PrimitiveType**

A basic, built-in data type

PLURAL PrimitiveTypes

JMEDPLURAL PrimitiveTypes

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

Type String

LURAL Strings
EDPLURAL Strings
YPEOF PrimitiveType
TYPES CamelName , QualifiedCamel , ValueTypeRichText

Type Integer

LURAL Integers
EDPLURAL Integers
YPEOF PrimitiveType

Type Decimal

LURAL Decimals
EDPLURAL Decimals
YPEOF PrimitiveType

Type Boolean

LURAL Booleans
EDPLURAL Booleans
YPEOF PrimitiveType

Type Date

LURAL Dates
EDPLURAL Dates
YPEOF PrimitiveType

Type Time

LURAL Times
EDPLURAL Times
YPEOF PrimitiveType

Type DateTime

LURAL DateTimes
EDPLURAL DateTimes
YPEOF PrimitiveType

Annotation Types Used

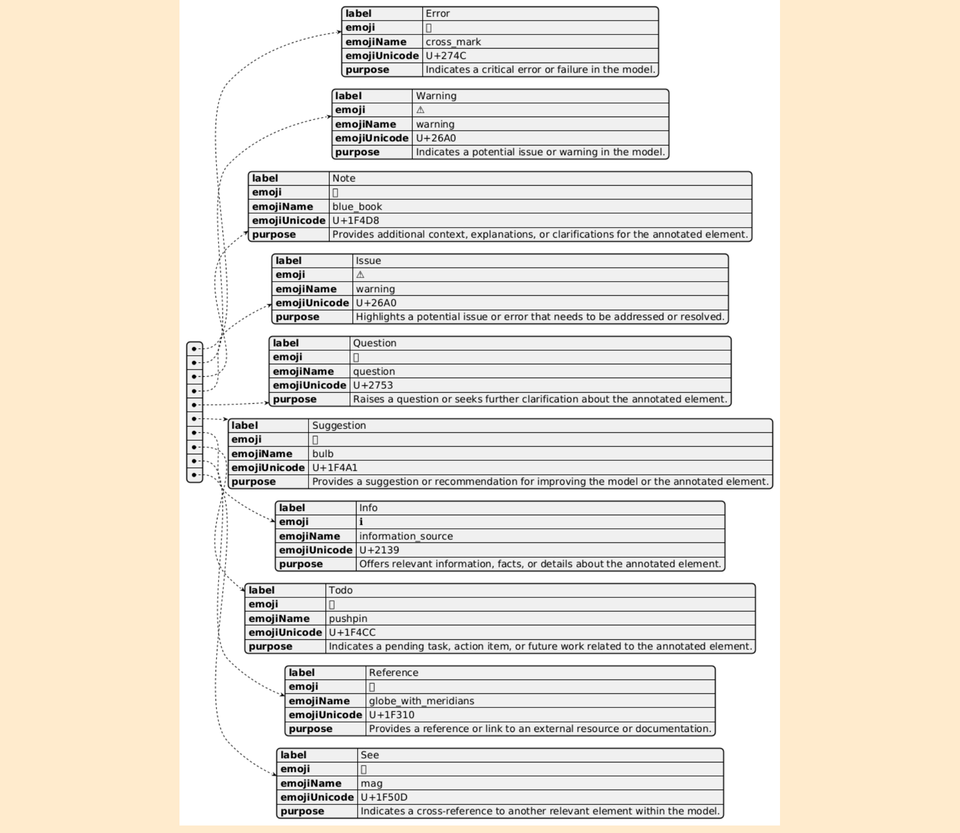
These are the recognized Annotation Types for the LDM model.

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": "💡",
```

Annotation Types Used



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.

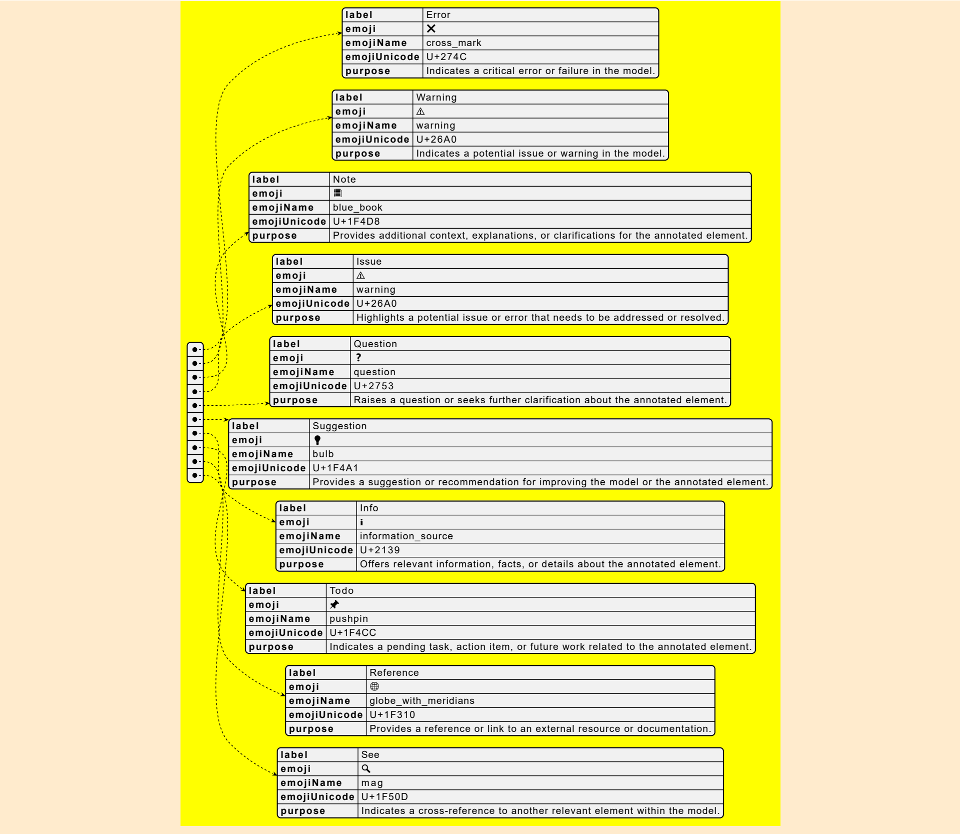
label	Suggestion
emoji	□
emojiName	bulb
emojiUnicode	U+1F4A1
purpose	Provides a suggestion or recommendation for improving the model or the annotated element.

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.

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.

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,ℹ,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.
					Highlights a potential issue

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