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Literate Data Model

Preliminaries
the basic structure of the model

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

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

Component
An element or building block of the literate data model

Components
RALComponents
Annotation
LiterateModel , Subject , Class , Key , AttributeSection , Attribute , Constraint , Method , Parameter

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

This is a warning with emoji

The name of the component
(CamelName value O_O)

(QualifiedCamel value O_O)

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

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

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

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

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

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

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

(Boolean value O_O)

false

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

mechanical attributes

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

(Boolean value O_O)

false

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

AnnotationType

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

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

AnnotationTypes

RAL AnnotationTypes

LiterateModel

an emoji

(Emoji value O_O)

an emoji

(String value O_O)

the Unicode for the emoji

(String value O_O)

A short label to indicate the purpose of the annotation _

(LowerCamel value O_O)

the plural form of the label

(UpperCamel value O_O)

based on label

the intended reason for the annotation.

(OneLiner value O_O)

created for AnnotationType

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

(LiterateModel value M_1)

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

(Annotation value M_1)

Annotation.annotationType

pe verse attribute for LiterateModel.annotationTypes from which this was implied.

(LiterateModel value M_1)

LiterateModel.annotationTypes

Annotation
A note or comment associated with a model element

Annotations
RALAnnotations
Component

(Optional AnnotationType value O_O)

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

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

But any short label is valid.

from annotationType

(Optional Emoji value O_O)

from annotation type

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

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

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

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

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

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

The Model and its Subjects

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

LiterateModels
AnnotationType , Subject , SubjectArea
Component

(UpperCamel value O_O)

Component.name

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

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

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

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

(List of AnnotationTypes value O_O)

AnnotationType.inverseOfAnnotationTypes

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

Python

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

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

Handlebars

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

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

['aiEnglishPlural()']

(List of AnnotationTypes value O_O)

AnnotationType.inverseOfAnnotationTypes

tge recommended lanquage for expressing derivation, defaults, and constraints

(CodingLanguage value O_O)

Python

ges (Optional List of CodingLanguages value O_O)

tage recommended lanquage for expressing derivation, defaults, and constraints

(TemplateLanguage value O_O)

Handlebars

uages (Optional List of TemplateLanguages value O_O)

A list of functions that require sophisticated AI-powered implementation *

(List of String value O_O)

['aiEnglishPlural()']

Subject
A specific topic or theme within the model

Subjects are the chapters an sections of the model.

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

Subjects
LiterateModel
Component
SubjectArea

(UpperCamel value O_O)

Component.name

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

Subject.inverseOfParentSubject

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

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

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

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

Subject.parentSubject

created for Subject

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

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

Subject.parentSubject

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

parentSubject is absent
SubjectAreas
LiterateModel
Subject

created for SubjectArea

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

Classes

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

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

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

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

- But also might be People for Person.

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

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

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

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

The parent class or classes from which this class inherits attributes
(List of Classes value O_O)

Class.inverseOfSupertypes

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

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

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

(List of Classes value O_O)

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

Class.inverseOfSubtypes

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

(List of Attributes value O_O)

Attribute.inverseOfAttributes

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

(List of AttributeSections value O_O)

AttributeSection.inverseOfAttributeSections

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

(List of Constraints value O_O)

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

Any behaviors or operations associated with this class _

(List of Methods value O_O)

Method.inverseOfMethods

the Classes which are basedOn this Class

(Optional Set of Classes value O_O)

Class.basedOn

(Optional Set of UniqueKeys value O_O)

UniqueKey.basedOn

the Classes which are basedOn this Class

(Optional Set of Classes value O_O)

Class.basedOn

(Optional Set of UniqueKeys value O_O)

UniqueKey.basedOn

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

(LiterateModel value M_1)

LiterateModel.allSubjects

Inverse attribute for LiterateModel.allClasses from which this was implied.
(LiterateModel value M_1)

LiterateModel.allClasses

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

Subject.classes

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

Class.basedOn

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

Class.supertypes

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

Class.subtypes

Inverse attribute for Subtyping.classes from which this was implied.
(Subtyping value M_1)

Subtyping.classes

Inverse attribute for Attribute.inverseClass from which this was implied.
(Attribute value M_1)

Attribute.inverseClass

Inverse attribute for SimpleDataTypeSubtpeOfDataType.coreClass from which this was implied.
(SimpleDataTypeSubtpeOfDataType value M_1)

SimpleDataTypeSubtpeOfDataType.coreClass

Subtyping
a way in which subtypes of a Class may be classified

Subtypings
RALSubtypings
Class

(LowerCamel value O_O)

(Boolean value O_O)

true

(Boolean value O_O)

true

(List of Classes value O_O)

DSL : Shown in the DSL as

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

every class can have an unnamed subtyping.
Class.inverseOfClasses

created for Subtyping

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

Class.subtypings

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

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

ReferenceTypes
RALReferenceTypes
Class

CodeType
A data type or enumeration used in the model

CodeTypes
RALCodeTypes
CodeValue

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

CodeValue
A possible value for an enumerated data class

CodeValues
RALCodeValues
CodeType

A short code or abbreviation for the value _
(String value O_O)

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

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

created for CodeValue

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

Key
a list of attributes of a class

Keys
RALKeys
Class
Component
UniqueKey

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

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

👍 **Issue** : introduce PureLists?

need ascending descending to support index keys or ordering keys.

created for Key

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.

order unimportant for Unique Keys.
UniqueKeys
RALUniqueKeys
Key

Attributes

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

AttributeSections
RALAttributeSections
Class
Attribute
Component

whether the attributes in this section, taken together, are optional.
(Boolean value O_O)

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

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

created for AttributeSection

bwverse attribute for Class.attributeSections from which this was implied.
(Class value M_1)

Class.attributeSections

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

Attribute
A property or characteristic of a class

Attributes
AttributeSection
AttributeConstraint
Component

(LowerCamel value O_O)

Component.name

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

But,

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

the section below on Data Type Specifiers.

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

*** False

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

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

(Boolean value O_O)

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

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

Class.inverseOfInverseClass

from the data type. Null unless arrribute is invertible.

(Optional Attribute value O_O)

Attribute.inverseOfInverseAttribute

(Optional Attribute value O_O)

Attribute.inverseOfInverseIsOptional

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

(Optional Derivation value O_O)

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

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

(Optional Derivation value O_O)

on insert vs on access?

Any validation rules specific to this attribute _

(List of Constraints value O_O)

from Class.constraints

the higher level attribute which this one overrides - for type or ...

(Attribute value O_O)

Attribute.inverseOfOverrides

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

(Boolean value O_O)

*** False

The cardinality of the relationship represented by the attribute _

(Cardinality value O_O)

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

how this works with optionality

(Boolean value O_O)

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

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

Class.inverseOfInverseClass
from the data type. Null unless arrribute is invertible.

(Optional Attribute value O_O)

Attribute.inverseOfInverseAttribute

(Optional Attribute value O_O)

Attribute.inverseOfInverseIsOptional

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

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

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

on insert vs on access?

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

from Class.constraints

the higher level attribute which this one overrides - for type or ...
(Attribute value O_O)

Attribute.inverseOfOverrides

created for Attribute

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

Class.attributes

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

Key.keyAttributes

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

Inverse attribute for Attribute.inverseAttribute from which this was implied.
(Attribute value M_1)

Attribute.inverseAttribute

Inverse attribute for Attribute.inverseIsOptional from which this was implied.
(Attribute value M_1)

Attribute.inverseIsOptional

Inverse attribute for Attribute.overrides from which this was implied.
(Attribute value M_1)

Attribute.overrides

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

Derivations

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

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

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

Constraints
Component
ClassConstraint , AttributeConstraint

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

The formal expression of the constraint in a programming language, for example: OCL or Python. _
(CodeExpression value O_O)

(Code value O_O)

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

ClassConstraint

ClassConstraints

RALClassConstraints
Class
Constraint

created for ClassConstraint

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

AttributeConstraint

AttributeConstraints
RALAttributeConstraints
Attribute
Constraint

created for AttributeConstraint

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

Methods

Method
A behavior or operation associated with a class

Methods
Component

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

Parameter.inverseOfParameters

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

created for Method

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

Class.methods

Parameter
An input to a method

Parameters
Component

The data type of the parameter
(DataType value O_O)

The cardinality of the parameter. e.g., optional, required.
(Cardinality value O_O)

created for Parameter

Inverse attribute for Method.parameters from which this was implied.
(Method value M_1)

Method.parameters

Trivial Data Types

Message

Messages

RALMessages

CodeExpression

CodeExpressions

RALCodeExpressions

the programming language

(Code value O_O)

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

(String value O_O)

DataType

DataTypes

RALDataTypes

SimpleDataTypeSubtpeOfDataType

SimpleDataTypeSubtpeOfDataTypes

RALSimpleDataTypeSubtpeOfDataTypes

(Class value O_O)

Class.inverseOfCoreClass

ComplexDataType

ComplexDataTypes

RALComplexDataTypes

(AggregatingOperator value O_O)

(List of DataTypes value O_O)

AggregatingOperator

AggregatingOperators

RALAggregatingOperators

(Code value O_O)

```
 SetOf
ListOf
Mapping
```

(Integer value O_O)
(Template value O_O)

Trivial Low level Data Types

insert Camel Case.md

Emoji

Emojis
RALEmojis

String

Strings
RALStrings

CamelName

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

CamelNames
RALCamelNames
String
UpperCamel , LowerCamel

(String value O_O)

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

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

UpperCamel
a CamelName that begins with a capital letter

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

LowerCamel
a CamelName that begins with a lower case letter

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

QualifiedCamel
an expression consisting of Camel Names separated by periods

QualifiedCamels
RAL QualifiedCamels
String

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

RichText
A string with markup for block level formatting.

RichTexts
RAL RichTexts
String
OneLiner

the string content
(String value O_O)

the rich text coding language used
(Code value O_O)

HTML
MarkDown

OneLiner
String with markup for line level formatting.

OneLiners
RAL OneLiners
RichText

the string content
(String value O_O)

RichText.value
must not containa line break or new line character
A line can't span two lines

PrimitiveType
A basic, built-in data type

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

String

Strings

RALStrings

PrimitiveType

CamelName , QualifiedCamel , RichText

Integer

Integers

RALIntegers

PrimitiveType

Decimal

Decimals

RALDecimals

PrimitiveType

Boolean

Booleans

RALBooleans

PrimitiveType

Date

Dates

RALDates

PrimitiveType

Time

Times

RALTimes

PrimitiveType

DateTime

DateTimes

RALDateTimes

PrimitiveType

CodingLanguage

CodingLanguages

RALCodingLanguages

Cardinality

Cardinalitys

RALCardinalitys

TemplateLanguage

TemplateLanguages

RALTemplateLanguages

Template

Templates

RALTemplates

Code

Codes

RALCodes

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.

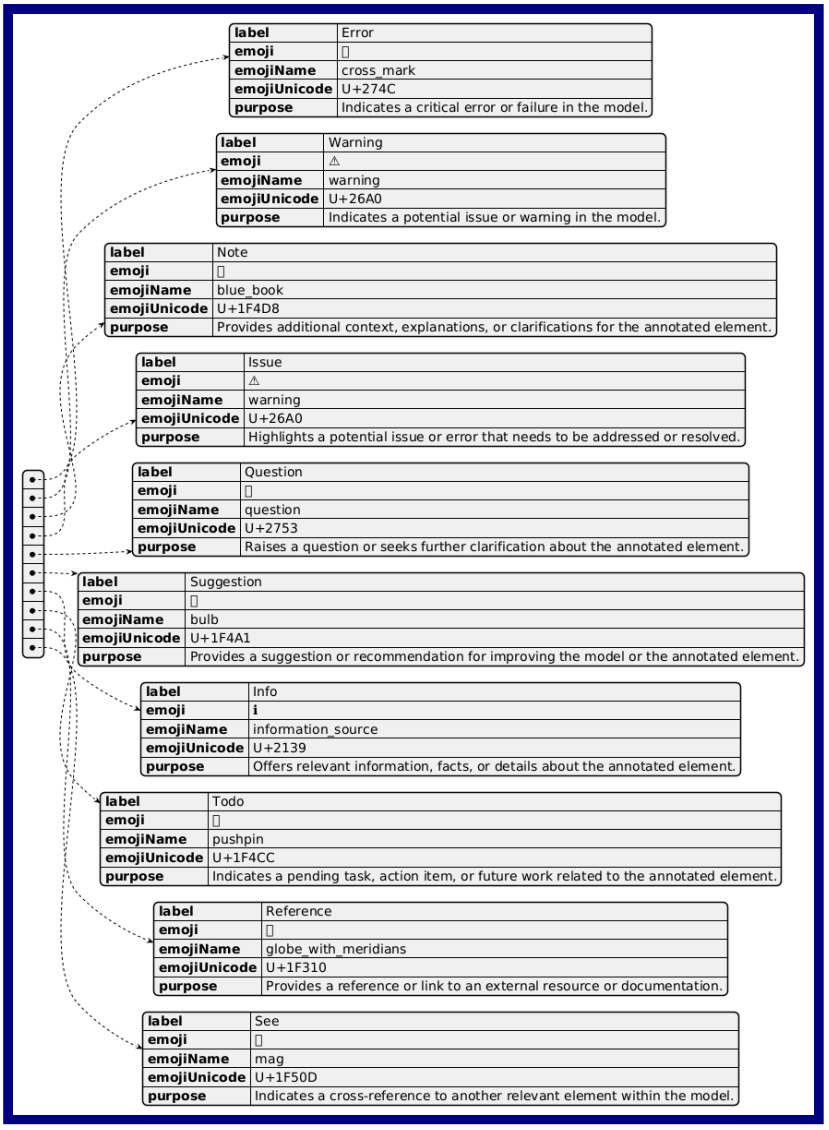
PlantUML Diagram - Inert

```
@startjson

[
{
"label": "Error",
"emoji": "❌",
"emojiName": "cross_mark",
"emojiUnicode": "U+274C",
"purpose": "Indicates a critical error or failure in
the model."
},
{
"label": "Warning",
"emoji": "⚠️",
"emojiName": "warning",
"emojiUnicode": "U+26A0",
"purpose": "Indicates a potential issue or warning
in the model."
},
{
"label": "Note",
"emoji": "📘",
"emojiName": "blue_book",
"emojiUnicode": "U+1F4D8",
"purpose": "Provides additional context,
explanations, or clarifications for the annotated
element."
},
{
"label": "Issue",
"emoji": "⚠️",
"emojiName": "warning",
"emojiUnicode": "U+26A0",
```

"purpose": "Highlights a potential issue or error that needs to be addressed or resolved."
},
{
"label": "Question",
"emoji": "❓",
"emojiName": "question",
"emojiUnicode": "U+2753",
"purpose": "Raises a question or seeks further clarification about the annotated element."
},
{
"label": "Suggestion",
"emoji": "💡",
"emojiName": "bulb",
"emojiUnicode": "U+1F4A1",
"purpose": "Provides a suggestion or recommendation for improving the model or the annotated element."
},
{
"label": "Info",
"emoji": "ℹ️",
"emojiName": "information_source",
"emojiUnicode": "U+2139",
"purpose": "Offers relevant information, facts, or details about the annotated element."
},
{
"label": "Todo",
"emoji": "📌",
"emojiName": "pushpin",
"emojiUnicode": "U+1F4CC",
"purpose": "Indicates a pending task, action item, or future work related to the annotated element."
},
{
"label": "Reference",
"emoji": "🌐",
"emojiName": "globe_with_meridians",
"emojiUnicode": "U+1F310",

"purpose": "Provides a reference or link to an external resource or documentation."
},
{
"label": "See",
"emoji": "🔍",
"emojiName": "mag",
"emojiUnicode": "U+1F50D",
"purpose": "Indicates a cross-reference to another relevant element within the model."
}
]
@endjson


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

Annotation types as CSV

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

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

Appendices

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

== content to add