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Information technology — CDIF semantic metamodel —

Part 2: **Common**

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Partie 2: Commun

Reference number
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Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work. In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

The main task of the joint technical committee is to prepare International Standards. Draft International Standards adopted by the joint technical committee are circulated to national bodies for voting. Publication as an International Standard requires approval by at least 75 % of the national bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this part of ISO/IEC 15476 may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights.

ISO/IEC 15476-2 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 7, *Software and system engineering*.

ISO/IEC 15476 consists of the following parts, under the general title *Information technology — CDIF semantic metamodel*:

— *Part 1: Foundation*

— *Part 2: Common*

— *Part 3: Data definition*

— *Part 4: Data models*

— *Part 5: Data flow models*

— *Part 6: State/event models*

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Introduction

This standard will assist the vendors and users of modelling tools and meta-data repositories in developing mechanisms for interchanging information. This standard specifies an element of a family of related standards. When used together, these standards specify a mechanism for transferring information between tools.

ISO/IEC 15474-1:2002, *Information technology — CDIF framework — Part 1: Overview*, and ISO/IEC 15474-2:2002, *Information technology — CDIF framework — Part 2: Modelling and extensibility*, should be read first when initially exploring CDIF. The first explains the overall CDIF architecture and how the family of standards fits together. The second explains the scope, and modelling approach in CDIF. The CDIF meta-metamodel and extensibility mechanism are also defined in that document.

This standard explains the Common subject area of the CDIF semantic metamodel, that defines information common to all other objects in the semantic Meta-model. The CDIF semantic metamodel is used to ensure that the information transferred by tools communicating using CDIF is expressed with an agreed meaning.

This standard has been developed with the wide support and participation of vendors, users, academia and government involved in or familiar with the CASE industry, its products and the general requirements associated with interchanging information between these products.

This document is organized into the following Clauses:

— Clauses 1 to 5 are prescribed ISO/IEC Clauses

— Clause 6: Subject area overview

  This Clause gives an overview of the coverage of this subject area.

— Clause 7: Subject area summary

  This Clause gives an overview of the content of this subject area.

— Clause 8: Subject area specification

  This Clause gives the formal specification of all the objects defined in the subject area, and the formal reference to those used, but not defined in the subject area.

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Information technology — CDIF semantic metamodel —

Part 2: **Common**

1 Scope

The CDIF family of standards is primarily designed to be used as a description of a mechanism for transferring information between modelling tools. It facilitates a successful transfer when the authors of the importing and exporting tools have nothing in common except an agreement to conform to CDIF. The language that is defined for the transfer format also has applicability as a general language for import/export from repositories. The CDIF semantic metamodel defined for CASE also has applicability as the basis of standard definitions for use in repositories.

The standards which form the complete family of CDIF standards are documented in ISO/IEC 15474-1:2002, *Information technology — CDIF framework — Part 1: Overview.* These standards cover the overall framework, the transfer format and the CDIF semantic metamodel.

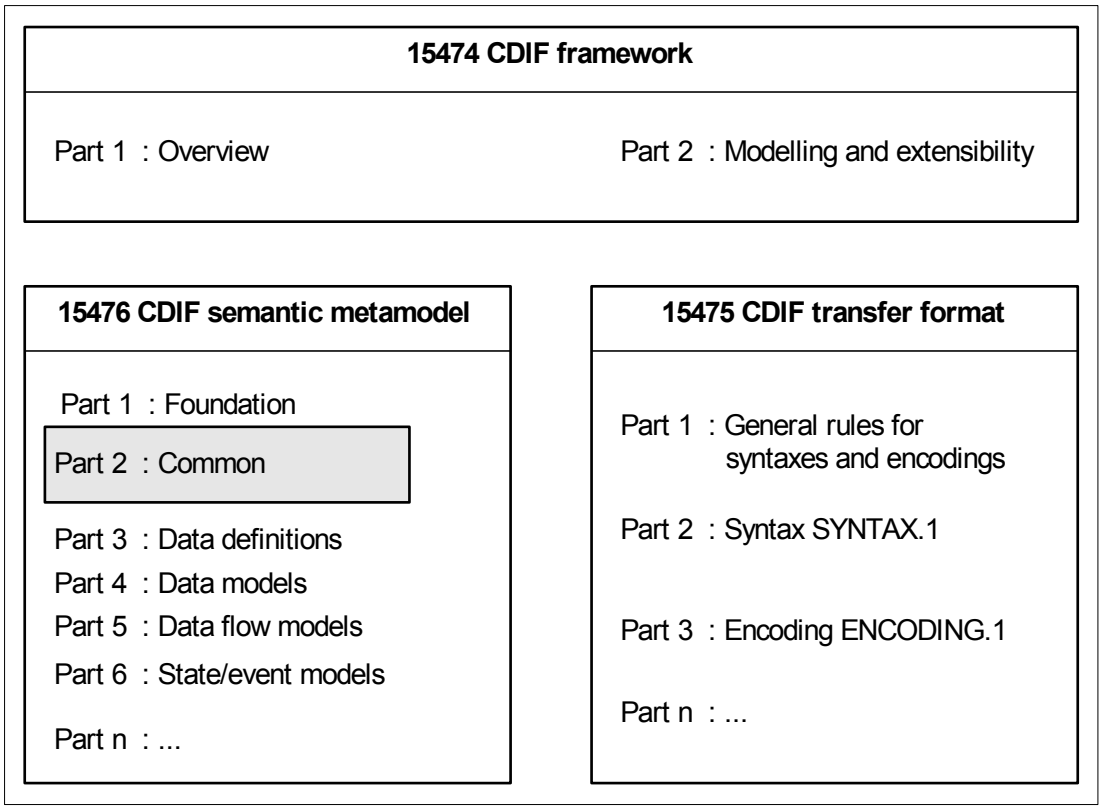


Figure 1 – CDIF family of standards

The diagram in Figure 1 depicts the various standards that comprise the CDIF family of standards. The shaded box depicts this Standard and its position in the CDIF family of standards.

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This standard defines the Common Subject Area of the CDIF semantic metamodel. This subject area contains meta-objects that are used as the basis of the other subject area standards, and also meta-relationships and meta-attributes that are applicable to all meta-objects.

This document is intended to be used by anyone wishing to understand and/or use CDIF. This document provides a definition of a single subject area of the CDIF semantic metamodel. It is suitable for:

— Those evaluating CDIF,

— Those who wish to understand the principles and concepts of a CDIF transfer, and

— Those developing importers and exporters.

This document, ISO/IEC 15474-1:2002*, Information technology — CDIF framework — Part 1: Overview*, and the Framework document ISO/IEC 15474-2:2002*, Information technology — CDIF framework — Part 2: Modelling and extensibility*, should be read first when initially exploring CDIF and before attempting to read other documents in the CDIF family of standards.

While there are no specific prerequisites for reading this document, it will be helpful for the reader to have familiarity with the following:

— Entity-Relationship-Attribute modelling;

— Modelling (CASE) tools;

— Information repositories;

— Data dictionaries;

— Multiple meta-layer modelling.

2 Conformance

A product is fully standards conformant to a CDIF subject area standard if and only if it is input-conformant, output-conformant and round-trip conformant to each and every *MetaEntity*, *MetaRelationship*, *MetaAttribute*, and *AttributableMetaObject* which is defined and/or used in that standard, and it is also CDIF architecture conformant. A product may be partially input-conformant, and/or partially output-conformant, and/or partially round-trip conformant to a CDIF subject area standard.

2.1 Input conformance

Input conformance for a specific *MetaEntity*, *MetaRelationship*, *MetaAttribute*, or *AttributableMetaObject* (short: *CollectableMetaObject*) is determined by applying the following test:

A set of meta-data containing all meanings and structures standardized by a CDIF subject area is imported by the product under test. Then the meta-data which has arrived in the product is examined. The following options exist for the relation between the input (CDIF) meta-data and the imported (product) meta-data:

For a specific *CollectableMetaObject*:

1 The product is input conformant if each instance of the specific *CollectableMetaObject* has arrived in the product without change of meaning or structure. If the *CollectableMetaObject* is a meta-entity or meta-relationship, its structural relationships to other *CollectableMetaObjects* have been preserved. If the *CollectableMetaObjec*t is a meta-attribute, the value of the meta-attribute has been preserved.

2 The product is input morphing conformant if each instance of the specific *CollectableMetaObject* has arrived in the product, but with some changes in meaning or structure. If the *CollectableMetaObject* is a meta-attribute, the value(s) for some instances of the meta-attribute have changed.

3 The product is not input conformant for that *CollectableMetaObject* if neither of the previous tests is satisfied.

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2.2 Output conformance

Output conformance for a specific *CollectableMetaObject* is determined by applying the following test:

For the product being tested, a set of meta-data that includes all possible meanings and structures representable in that product is exported. Then the meta-data that has been exported is examined. The following options exist for the relation between the product's meta-data and the exported (CDIF) meta-data:

For a specific *CollectableMetaObject*:

1 The product is output conformant if all of the meaning and structure for the specific *CollectableMetaObject* has been represented as meta-data in the product and has been exported as one or more instances of that *CollectableMetaObject*. If the *CollectableMetaObject* is a meta-attribute, the correct value of the meta-attribute has been exported.

2 The product is output morphing conformant if each instance of meta-data in the product that has the same meaning and structure as the *CollectableMetaObject* has been exported, but some instances have been exported as a different *CollectableMetaObject* or some of the meaning and structure has been changed.

3 If the product does not represent the meaning and structure associated with the *CollectableMetaObject*, output conformance for that *CollectableMetaObject* is not applicable to the product.

4 In all other cases, the product is not output conformant for that *CollectableMetaObject*.

2.3 Round-trip conformance

Round-trip conformance for a specific *CollectableMetaObject* is determined by applying the following test:

A set of meta-data containing all meanings and structures standardized by a CDIF subject area is imported by the product under test. Then the meta-data is exported again. The following options exist for the relation between the input meta-data and the output meta-data:

For a specific *CollectableMetaObject*:

1 The product is round-trip conformant if the meaning and structure of each instance of the *CollectableMetaObject* is preserved without changes during the round-trip. For a vendor to claim round-trip conformance, it is also necessary for the tool to be able to perform create, read, update, and delete operations on the imported (product) meta-data corresponding to the instances of the *CollectableMetaObject*.

2 The product is round-trip morphing conformant if each instance of the input *CollectableMetaObject* is preserved, but with some changes in meaning and/or structure. If the *CollectableMetaObject* is a meta-entity or meta-relationship, some of its instances' structural relationships to other *CollectableMetaObjects* have changed, or some instances have been transformed into other *CollectableMetaObjects*, or instances of other *CollectableMetaObjects* have been transformed into instances of the *CollectableMetaObject.* If the *CollectableMetaObject* is a meta-attribute, the values of some instances of the meta-attribute have changed or the domain of the meta-attribute has changed.

3 In all other cases, the product is not round-trip conformant for that CollectableMetaObject.

3 Normative references

The following normative documents contain provisions, which, through reference in this text, constitute provisions of this part of ISO/IEC 15476. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of ISO/IEC 15476 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

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ISO/IEC 13238-1:—[1)], *Information technology — Data management export/import — Part 1: Standardization framework*

ISO/IEC 15474-1:2002, *Information technology — CDIF framework — Part 1: Overview*

ISO/IEC 15474-2:2002, *Information technology — CDIF framework — Part 2: Modelling and extensibility*

ISO/IEC 15476-1:2002, *Information technology — CDIF semantic metamodel — Part 1: Foundation*

4 Terms and definitions

For the purposes of this part of ISO/IEC 15476, the following definitions apply. Unless otherwise noted, the definitions are specific to this part of ISO/IEC 15476.

4.1 From other standards

4.1.1 ISO/IEC 15474-1

This part of ISO/IEC 15476 makes use of the following terms defined in ISO/IEC 15474-1:

CDIF
CDIF family of standards
CDIF semantic metamodel
CDIF meta-metamodel
CDIF transfer
Instance
Meta-attribute
Meta-entity
Metamodel
Meta-object
Meta-relationship
Model
Subject area
Transfer
Transfer format

4.1.2 ISO/IEC 13238-1

This part of ISO/IEC 15476 makes use of the following terms from ISO/IEC 13238-1:

Exporter
Importer

4.1.3 For this standard

For the purposes of this part of ISO/IEC 15476 new terms are defined when introduced. Double quotes are used to introduce new terms (e.g., “model layer”)

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5 Symbols (and abbreviated terms)

5.1 Naming, diagramming and definition conventions

Conventions for naming, diagramming, describing and defining meta-objects can be found in Clause 7 of the framework document (ISO/IEC 15474-2:2002*, Information technology — CDIF framework — Part 2: Modelling and extensibility*).

5.2 Abbreviations

The following abbreviation is used in this international standard:

CDIF CASE Data Interchange Format (originally)

6 Common subject area overview

6.1 Introduction

The Common subject area is intended to cover concepts such as synonyms, decomposition, and audit data, that are common or useful to all of the CDIF semantic metamodel. The Common subject area covers aspects required for all objects described in a CDIF transfer. Concepts defined here include alternate names, details of the tool user who created or updated any object, and constraints on objects.

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6.2 Diagram

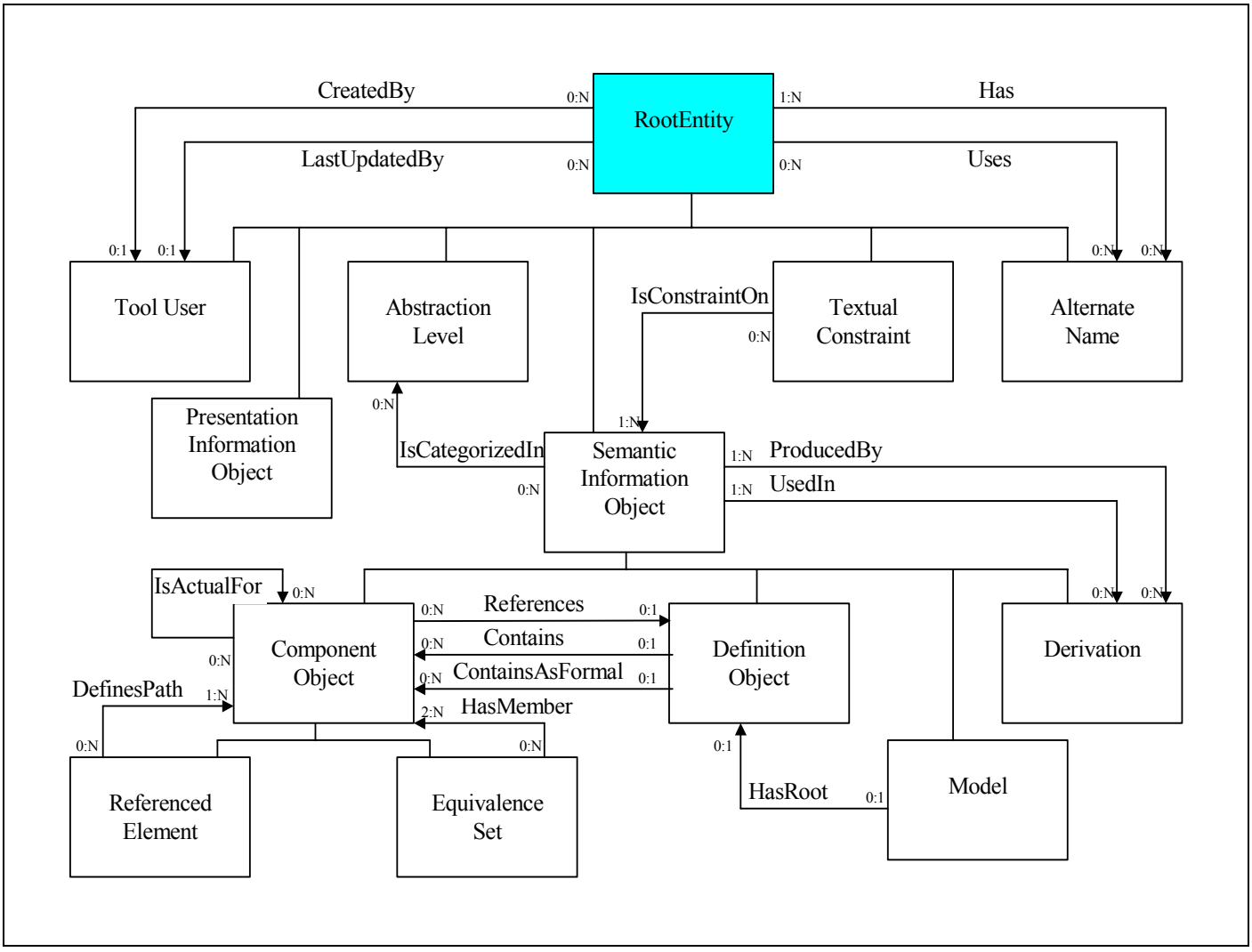


Figure 2 – Common subject area

6.3 Classification

The CDIF semantic metamodel is hierarchical in nature. The top of the semantic metamodel is *RootEntity*. *RootEntity* establishes a set of common meta-attributes and meta-relationships to be inherited by all meta-objects. *RootEntity* is an abstract supertype that should not be instantiated and shall not have any supertypes defined.

There are two main subtypes defined for *RootEntity* — *SemanticInformationObject* and *PresentationInformationObject*. The other subtypes are *AbstractionLevel*, *AlternateName*, *TextualConstraint,* and *ToolUser*. These are all described in the following sub-clauses.

6.4 Semantic information

SemanticInformationObject is the supertype of all meta-entities defined within the semantic information portion of the CDIF semantic metamodel. These describe model objects (e.g., objects in a general business model). All meta-entities that convey semantic information, defined in the set of standards forming the CDIF semantic metamodel,

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other than *RootEntity* and *SemanticInformationObject*, are defined as either direct or indirect subtypes of *SemanticInformationObject*.

The meta-entity *SemanticInformationObject* is given local meta-attributes of *BriefDescription* and *FullDescription*.

6.5 Presentation information

PresentationInformationObject is the supertype for all the meta-entities defined within the presentation information portion of the CDIF semantic metamodel. These contain the graphical information about the associated semantic models. For example, the location and shape of an object in the semantic model.

6.6 Naming

The concept of a "Name" for an object varies considerably from method to method and object to object. In some cases, an object can have a short name, a long name and alternates or synonyms for each. In other cases, no distinct name is required. Due to these differences, no *Name* meta-attributes have been provided at a high level in the *AttributableMetaObject* hierarchy to be automatically inherited. Name meta-attributes have been added specifically as required. These meta-attributes have been called *Name* and *LongName* when used.

Often objects can be given alternate names, or synonyms. These are optional, and there may be more than one provided. To cater for this in a standard manner, an *AlternateName* meta-entity has been provided which can be related to any instance of *RootEntity* and its other subtypes, except *AlternateName*. This provides a simple way of defining such alternates, but it shall only be used where either *Name*, *LongName,* or both, are provided as meta-attributes of the meta-entity to which it is related. Alternatives for *Name* and *LongName* are recorded in the *OtherName* and *OtherLongName* meta-attributes of *AlternateName,* respectively. *AlternateName* shall not be used to provide a name for an object where no *Name* or *LongName* meta-attribute has been provided since a name is only **alternate** where there is one already defined. When it is necessary to add a name to an unnamed object, such naming should be done through the use of extensibility by adding an explicit *Name* meta-attribute.

Consider a data type called ***CustomerNumber***; it may also be known by other names in the system being modeled, including ***CustomerNo*** and ***CustNo***. These are synonyms for the same data type. The name ***CustomerNumber*** would be held in the *Name* meta-attribute of the instance of *DataType*. Each of the synonyms would be held in a separate instance of *AlternateName* in the *OtherName* meta-attribute. These two instances of *AlternateName* would be related to the instance of *DataType* by the meta-relationship *RootEntity.Has.AlternateName*. This set of meta-objects records that the data type has two synonyms.

Now consider how to record which synonym is being used in any particular context - this is where the meta-relationship *RootEntity.Uses.AlternateName* is required. The following example, where different organizations refer to vendors as either Vendors, Contractors, or Suppliers, shows how the CDIF semantic metamodel supports this concept. Assume that the part of a subject area dealing with contracts includes the *Organization* and *Resource* meta-entities and a meta-relationship called *Organization.Utilizes.Resource*. Assume, also, that the ***Vendor*** instance of *Resource* has two *AlternateName*s: ***Supplier*** and ***Contractor***. If an organization, say Reprographics, uses the term ***Vendor*** to refer to those it relies on for service, this would be recorded with an instance of *Organization.Utilizes.Resource* from the ***Reprographics*** instance of *Organization* to the ***Vendor*** instance of *Resource*. If another organization, FoodServices, refers to the vendor for cafeteria operations as a ***Supplier***, this would be recorded via an instance of *Organization.Utilizes.Resource* relating the ***FoodServices*** instance of *Organization* to the ***Vendor*** instance of *Resource*. But an instance of *RootEntity.Uses.AlternateName* between ***FoodServices*** and ***Supplier*** is used to indicate that the ***Supplier*** *AlternateName* is what FoodServices calls vendors. Figure 3 shows both the subject area fragment and a depiction of the instances discussed in this example.

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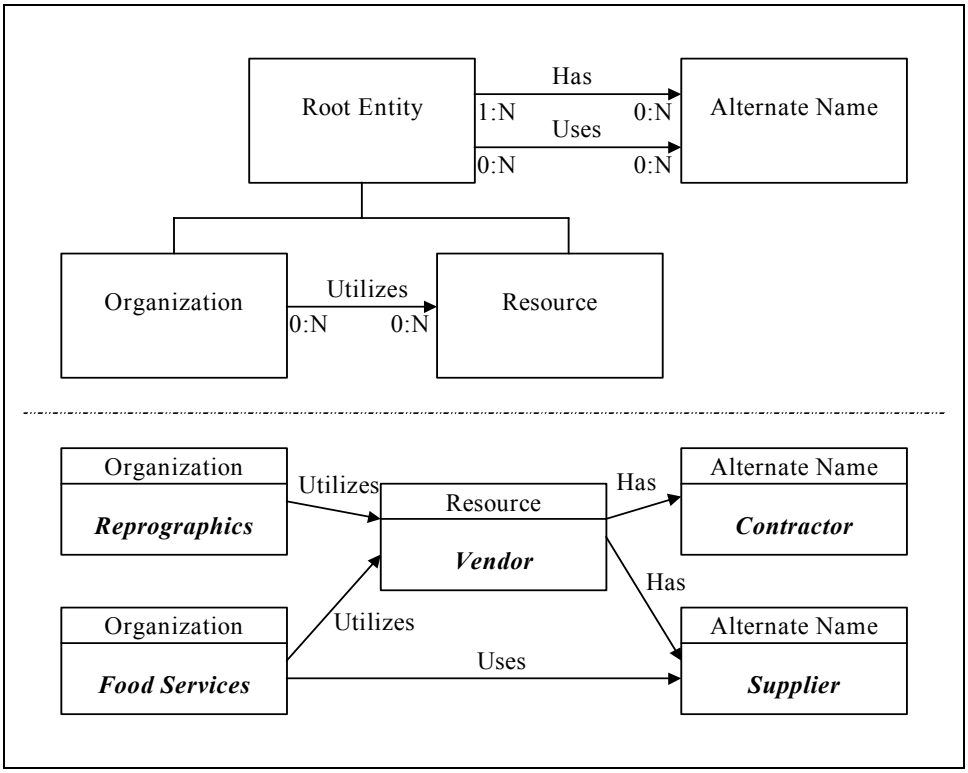


Figure 3 – AlternateName example

6.7 Audit data

The audit data supported by the Common subject area are the details of who created and updated any object. This is represented through meta-relationships from *RootEntity* to the *ToolUser* meta-entity.

6.8 Constraints

The *TextualConstraint* meta-entity enables constraints to be attached to any semantic object or set of objects. The constraint is expressed in text, either in one of a set of computable languages or in some other formal or informal language. The supported set of languages is defined in Clause 6.12 Computable languages.

6.9 Derivation

Derivations between objects can be represented through use of the *Derivation* meta-entity, using the *UsedIn* and *ProducedBy* meta-relationships to associate the objects. The *Derivation* meta-entity can be used to describe a weak form of derivation, such as instances of *Entity* being derived from instances of *Store* on a *DataFlowModel.* Stronger forms of derivation can also be described, for example where one object is an implementation of another. The derivation is expressed in text, either in one of a set of computable languages or in some other formal or informal language. These are defined in Clause 6.11, Computable Languages.

6.10 Abstraction levels

The abstraction level at which any object is used or defined in a user model can be defined through the use of the meta-entity *AbstractionLevel*. The name of the abstraction, for example ***Conceptual***, ***Logical*** or ***Physical***, is held in the *Name* meta-attribute of an instance of *AbstractionLevel*. All the meta-entities used at that level are then connected to it through the meta-relationship *SemanticInformationObject.IsCategorizedIn.AbstractionLevel*. A given meta-entity instance can be used in multiple abstraction levels; for example the same definition of Entity ***Customer*** may be valid at both a conceptual and logical level.

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Where an object at a lower level of abstraction is a more concrete description or implementation of an object at a higher level of abstraction, this is recorded using the derivation mechanism described in Clause 6.9 Derivation. The meta-attribute *IsRealizationOf* on the *Derivation* meta-entity indicates this form of derivation.

6.11 General structuring mechanism

6.11.1 Introduction

Support for the decomposition and structuring of objects into other objects, and the reuse of definitions, is provided by a general structuring mechanism. This mechanism is used in many other CDIF subject areas. For example in a subject area addressing data flow models the following concepts may be structured: processes, stores, external agents, and flows. Structuring of those concepts is performed using the general structuring mechanism because their definitions may be used for several objects in different contexts.

6.11.2 Diagram

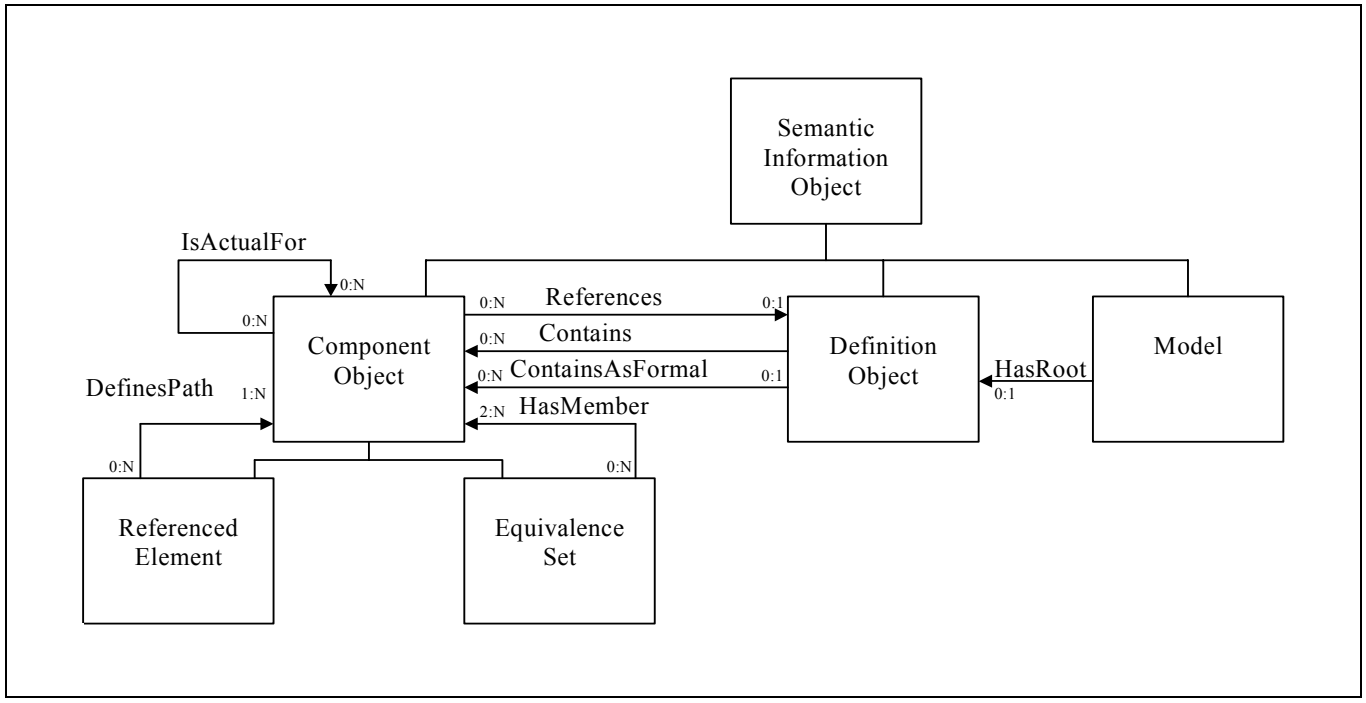


Figure 4 – General structuring mechanism

6.11.3 Decomposition and structure definitions

DefinitionObject serves as an abstract supertype for all decomposition and structure definitions that may be reused. A *DefinitionObject* represents the definition of a *ComponentObject*, using meta-relationship *ComponentObject.References.DefinitionObject*. A *DefinitionObject* may contain *ComponentObjects*, using the *DefinitionObject.Contains.ComponentObject* meta-relationship. The *ComponentObjects* contained in a *DefinitionObject* represent the components of the definition.

Both *ComponentObject* and *DefinitionObject* represent abstract concepts and thus shall not be instantiated. Instead, appropriate subtypes, provided by other subject areas, are used. A subtype of *DefinitionObject* may be referenced by any number of *ComponentObjects* indicating that all those *ComponentObjects* share the same definition. For example, if a structure is built containing two components that share the same definition, the structured *DefinitionObject* will contain two distinct *ComponentObjects* which refer to the same shared *DefinitionObject*.

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Instances of subtypes of *ComponentObject* are used to describe the structure of a *DefinitionObject*. There may be any number of *ComponentObjects* per *DefinitionObject*. Subtypes of *DefinitionObject* may define textual constraints which outline what subtypes of *ComponentObject* are allowed to participate in the *DefinitionObject.Contains.ComponentObject* meta-relationship.

6.11.4 Accessing a specific component in a shared definition

If a *ComponentObject* in a shared *DefinitionObject* needs to be referenced from outside the context of the definition object, a simple reference is not sufficient because definitions can be shared and it would be not clear whose structured object's component is meant if its definition is reused. Instead, the full path to the *ComponentObject*, traversing the loop *ComponentObject*, *ComponentObject.References.DefinitionObject*, *DefinitionObject*, *DefinitionObject.Contains.ComponentObject*, is needed to uniquely identify a specific instance. This path is formed by the associative meta-entity *ReferencedElement* and the meta-relationship *ReferencedElement.DefinesPath.ComponentObject*. The *ReferencedElement* is the *ComponentObject* which refers to the specific *ComponentObject* contained in a shared *DefinitionObject*. The meta-relationship *ReferencedElement.DefinesPath.ComponentObject* carries a meta-attribute *SequenceNumber* which describes the sequence in which the path is traversed.

An example of this is shown in Figure 5 for the case of structured data flows, for this example *Flow* is a subtype of *ComponentObject* and *FlowDefinition* is a subtype *of DefinitionObject*. There are two instances of the ***x*** component flow in this example, one in *Flow* ***a*** (called ***a.x***), and one in *Flow* ***b*** (called ***b.x***). In order to refer to the ***x*** component of ***a*** (as opposed to the ***x*** component of ***b***) a *ReferencedElement* is created which identifies the complete path consisting of ***a*** and ***x***, using instances of the meta-relationship *ReferencedElement.DefinesPath.ComponentObject*. Paths define a top-down hierarchical navigation of a structure. This is done using the meta-attribute *SequenceNumber* of the meta-relationship *ReferencedElement.DefinesPath.ComponentObject*. Sequence numbers must be consecutive to properly specify the navigation.

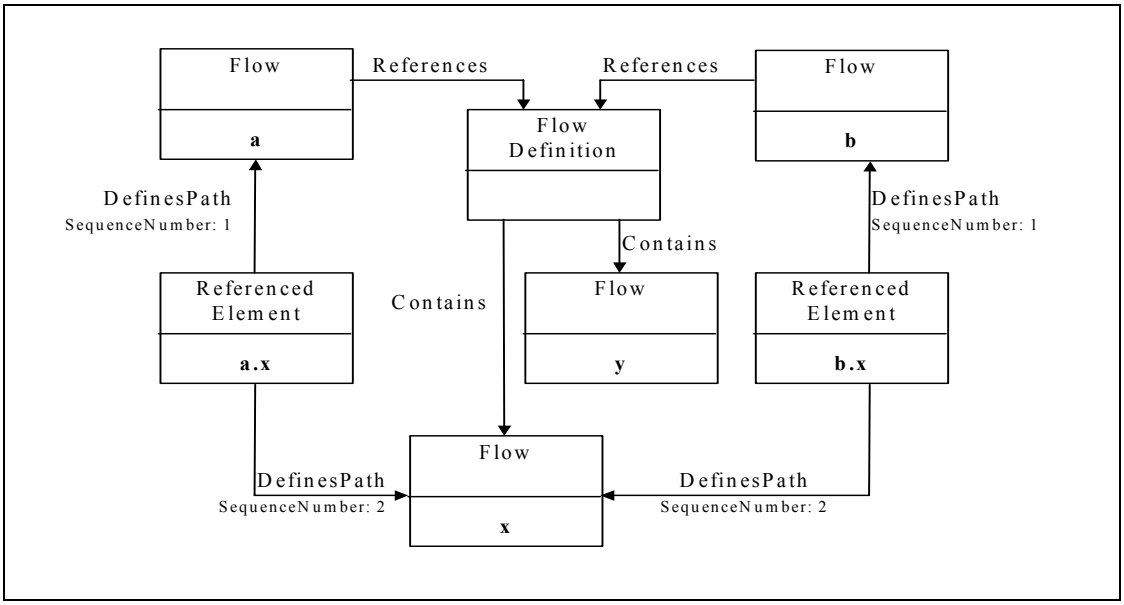


Figure 5 – Referring to a specific instance inside a shared definition

6.11.5 Identical instances in shared definitions

When two or more *ComponentObjects* are identical, they are specified as such using the mechanism of the meta-entity *EquivalenceSet* and the meta-relationship *EquivalenceSet.HasMember.ComponentObject*. By using the meta-relationship *EquivalenceSet.HasMember.ComponentObject*, an *EquivalenceSet* groups all *ComponentObjects* which represent the same object instance although they may be represented by different

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instances of potentially different subtypes of *ComponentObject*. An *EquivalenceSet* may also contain *ReferencedElements*. This allows specific components in specific reuse situations of shared definitions to be equivalent. An *EquivalenceSet* must be contained in a *DefinitionObject*, except for the case of an incomplete model. It may only have members which are contained by the same *DefinitionObject* or are not contained by any *DefinitionObject* (in case of an incomplete model). If a *ComponentObject* is member of an *EquivalenceSet*, and this *ComponentObject* is contained in another *DefinitionObject*, the *ReferencedElement* mechanism must be used for referencing components in shared definitions.

6.11.6 Defining interfaces

Interface definition is achieved by using the *DefinitionObject.ContainsAsFormal.ComponentObject* meta relationship. Any subclass of *ComponentObject* that is to be part of the interface to a subclass of *DefintionObject* must take part in the *DefinitionObject.ContainsAsFormal.ComponentObject* meta relationship. When a subclass of *DefinitionObject* gets reused a new *ReferencedElement* will define the path for each *ComponentObject* found in the *DefinitionObject.ContainsAsFormal.ComponentObject* meta relationship.

6.11.7 Model

Model is an abstract class that is used to indicate the root *DefinitionObject* for those model techniques that require a handle object for a model.

6.12 Computable languages

Where meta-attributes may contain definitions of algorithmic processes, the languages that can be used to define the algorithms have been limited to a small set, covering the most appropriate ones for the problem domain. Any other language, either computable or natural, may be used, but the type of the language will not be specified unless extensibility has been used.

The set of allowable languages is defined in Table 1.

Table 1 – Allowable values for computable languages and appropriate references

ADA	ANSI/MIL-STD-1815A, American National Standard for Information Systems - Reference Manual for the Ada® Programming Language
C	ISO/IEC 9899, International Standard for Programming Languages - C
COBOL	ISO 1989, International Standard - for information systems - programming language - COBOL
FORTRAN	ISO 1539
MUMPS	ANSI/MDC X11.1
PASCAL	ANSI/IEEE 770/X8.97 and ANSI/IEEE 770/X8.160
PL1	ANSI X8.58
SQL	ISO/IEC 9075, Information technology - Database Languages - SQL
OTHER	Any language other than those indicated by explicit values of the enumerated type.

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7 Common subject area summary

7.1 AttributableMetaObject classification hierarchy

MetaObject Name	SubjectArea Name
RootEntity	Foundation
AbstractionLevel	Common
AlternateName	Common
PresentationInformationObject	Common
SemanticInformationObject	Common
ComponentObject	Common
EquivalenceSet	Common
ReferencedElement	Common
DefinitionObject	Common
Derivation	Common
Model	Common
TextualConstraint	Common
ToolUser	Common
RootEntity.IsRelatedTo.RootEntity	Foundation
ComponentObject.References.DefinitionObject	Common
ComponentObject.IsActualFor.ComponentObject	Common
References.DefinitionObject	Common
DefinitionObject.Contains.ComponentObject	Common
DefinitionObject.ContainsAsFormal.ComponentObject	Common
EquivalenceSet.HasMember.ComponentObject	Common
Model.HasRoot.DefinitionObject	Common
ReferencedElement.DefinesPath.ComponentObject	Common
RootEntity.CreatedBy.ToolUser	Common
RootEntity.Has.AlternateName	Common
RootEntity.LastUpdatedBy.ToolUser	Common
RootEntity.Uses.AlternateName	Common
SemanticInformationObject.IsCategorizedIn.AbstractionLevel	Common
SemanticInformationObject.ProducedBy.Derivation	Common
SemanticInformationObject.UsedIn.Derivation	Common
TextualConstraint.IsConstraintOn.SemanticInformationObject	Common

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7.2 MetaEntity summary

AbstractionLevel	
CDIFIdentifier	*Mandatory*
DateCreated	*Optional*
DateUpdated	*Optional*
TimeCreated	*Optional*
TimeUpdated	*Optional*
Name	Mandatory
Level	Optional

AlternateName	
CDIFIdentifier	*Mandatory*
DateCreated	*Optional*
DateUpdated	*Optional*
TimeCreated	*Optional*
TimeUpdated	*Optional*
OtherLongName	Optional
OtherName	Optional

ComponentObject	
CDIFIdentifier	*Mandatory*
DateCreated	*Optional*
DateUpdated	*Optional*
TimeCreated	*Optional*
TimeUpdated	*Optional*
BriefDescription	*Optional*
FullDescription	*Optional*
Name	Optional

DefinitionObject	
CDIFIdentifier	*Mandatory*
DateCreated	*Optional*
DateUpdated	*Optional*
TimeCreated	*Optional*
TimeUpdated	*Optional*
BriefDescription	*Optional*
FullDescription	*Optional*
Name	Optional
Operator	Optional
Specification Language	Optional
Specification Text	Optional

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Derivation	
CDIFIdentifier	*Mandatory*
DateCreated	*Optional*
DateUpdated	*Optional*
TimeCreated	*Optional*
TimeUpdated	*Optional*
BriefDescription	*Optional*
FullDescription	*Optional*
DerivationLanguage	Optional
DerivationText	Optional
IsRealizationOf	Optional

EquivalenceSet	
CDIFIdentifier	*Mandatory*
DateCreated	*Optional*
DateUpdated	*Optional*
Name	*Optional*
TimeCreated	*Optional*
TimeUpdated	*Optional*
BriefDescription	*Optional*
FullDescription	*Optional*

Model	
CDIFIdentifier	*Mandatory*
DateCreated	*Optional*
DateUpdated	*Optional*
TimeCreated	*Optional*
TimeUpdated	*Optional*
BriefDescription	*Optional*
FullDescription	*Optional*
Name	Optional

RootEntity	
CDIFIdentifier	*Mandatory*
DateCreated	*Optional*
DateUpdated	*Optional*
TimeCreated	*Optional*
TimeUpdated	*Optional*
BriefDescription	*Optional*
FullDescription	*Optional*

PresentationInformationObject	
CDIFIdentifier	*Mandatory*
DateCreated	*Optional*
DateUpdated	*Optional*
TimeCreated	*Optional*
TimeUpdated	*Optional*

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ReferencedElement	
CDIFIdentifier	*Mandatory*
DateCreated	*Optional*
DateUpdated	*Optional*
Name	*Optional*
TimeCreated	*Optional*
TimeUpdated	*Optional*
BriefDescription	*Optional*
FullDescription	*Optional*

SemanticInformationObject	
CDIFIdentifier	*Mandatory*
DateCreated	*Optional*
DateUpdated	*Optional*
TimeCreated	*Optional*
TimeUpdated	*Optional*
BriefDescription	Optional
FullDescription	Optional

TextualConstraint	
CDIFIdentifier	*Mandatory*
DateCreated	*Optional*
DateUpdated	*Optional*
TimeCreated	*Optional*
TimeUpdated	*Optional*
BriefDescription	Optional
ConstraintExpression	Optional
ConstraintLanguage	Optional
FullDescription	Optional

ToolUser	
CDIFIdentifier	*Mandatory*
DateCreated	*Optional*
DateUpdated	*Optional*
TimeCreated	*Optional*
TimeUpdated	*Optional*
FullName	Optional
SystemName	Mandatory

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7.3 MetaRelationship summary

ComponentObject.IsActualFor.ComponentObject	
CDIFIdentifier	*Mandatory*
DateCreated	*Optional*
DateUpdated	*Optional*
TimeCreated	*Optional*
TimeUpdated	*Optional*

ComponentObject.References.DefinitionObject	
CDIFIdentifier	*Mandatory*
DateCreated	*Optional*
DateUpdated	*Optional*
TimeCreated	*Optional*
TimeUpdated	*Optional*

DefinitionObject.Contains.ComponentObject	
CDIFIdentifier	*Mandatory*
DateCreated	*Optional*
DateUpdated	*Optional*
TimeCreated	*Optional*
TimeUpdated	*Optional*
SequenceNumber	Mandatory

DefinitionObject.ContainsAsFormal.ComponentObject	
CDIFIdentifier	*Mandatory*
DateCreated	*Optional*
DateUpdated	*Optional*
TimeCreated	*Optional*
TimeUpdated	*Optional*

EquivalenceSet.HasMember.ComponentObject	
CDIFIdentifier	*Mandatory*
DateCreated	*Optional*
DateUpdated	*Optional*
TimeCreated	*Optional*
TimeUpdated	*Optional*

Model.HasRoot.DefinitionObject	
CDIFIdentifier	*Mandatory*
DateCreated	*Optional*
DateUpdated	*Optional*
TimeCreated	*Optional*
TimeUpdated	*Optional*

ReferencedElement.DefinesPath.ComponentObject	
CDIFIdentifier	*Mandatory*

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DateCreated	*Optional*
DateUpdated	*Optional*
TimeCreated	*Optional*
TimeUpdated	*Optional*
SequenceNumber	Mandatory

RootEntity.CreatedBy.ToolUser

CDIFIdentifier	*Mandatory*
DateCreated	*Optional*
DateUpdated	*Optional*
TimeCreated	*Optional*
TimeUpdated	*Optional*

RootEntity.Has.AlternateName

CDIFIdentifier	*Mandatory*
DateCreated	*Optional*
DateUpdated	*Optional*
TimeCreated	*Optional*
TimeUpdated	*Optional*

RootEntity.LastUpdatedBy.ToolUser

CDIFIdentifier	*Mandatory*
DateCreated	*Optional*
DateUpdated	*Optional*
TimeCreated	*Optional*
TimeUpdated	*Optional*

RootEntity.Uses.AlternateName

CDIFIdentifier	*Mandatory*
DateCreated	*Optional*
DateUpdated	*Optional*
TimeCreated	*Optional*
TimeUpdated	*Optional*

SemanticInformationObject.IsCategorizedIn.AbstractionLevel

CDIFIdentifier	*Mandatory*
DateCreated	*Optional*
DateUpdated	*Optional*
TimeCreated	*Optional*
TimeUpdated	*Optional*

SemanticInformationObject.ProducedBy.Derivation

CDIFIdentifier	*Mandatory*
DateCreated	*Optional*
DateUpdated	*Optional*
TimeCreated	*Optional*
TimeUpdated	*Optional*

SemanticInformationObject.UsedIn.Derivation

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CDIFIdentifier	*Mandatory*
DateCreated	*Optional*
DateUpdated	*Optional*
TimeCreated	*Optional*
TimeUpdated	*Optional*

TextualConstraint.IsConstraintOn.SemanticInformationObject

CDIFIdentifier	*Mandatory*
DateCreated	*Optional*
DateUpdated	*Optional*
TimeCreated	*Optional*
TimeUpdated	*Optional*

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8 Common subject area specification

8.1 Introduction

This clause provides the full definition of each object used in the Common subject area of the CDIF semantic metamodel.

8.2 Subject area definition

SUBJECT AREA DEFINITION	
NAME	**Common**
VERSIONNUMBER	15476-2:2002
CDIFMETAIDENTIFIER	11
DESCRIPTION	The Common Subject Area is intended to cover aspects that are common or useful to all CASE objects.
USAGE	It provides objects that are used as the basis of the remainder of the CDIF semantic metamodel. Some of the objects provided are generally useful as specific meta-entities and meta-relationships, such as *ToolUser*; others are useful as supertypes to be subtyped in other subject areas, such as *DefinitionObject*.
ALIASES	
CONSTRAINTS	

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8.3 Meta-entity definitions

8.3.1 AbstractionLevel

META-ENTITY DEFINITION	
NAME	**AbstractionLevel**
CDIFMETAIDENTIFIER	12
SUBJECTAREANAME	Common
SUBJECTAREAVERSION	15476-2:2002
DESCRIPTION	A level of abstraction.
USAGE	
ALIASES	All objects defined in a level of abstraction are linked to the instance of this meta-entity that names the level. For example, a conceptual data model would be related to an instance of this meta-entity with a *Name* value of ***Conceptual***. If the tool models the abstraction levels of detailed objects within the data model, these would also be related to the same instance of the meta-entity *AbstractionLevel*. Where an object is used in more than one abstraction level, the instance is related to more than one instance of *AbstractionLevel*.
CONSTRAINTS	
TYPE	Kernel
ISABSTRACT	False
LOCAL SUBTYPES	
LOCAL METARELATIONSHIPS	SemanticInformationObject.IsCategorizedIn.AbstractionLevel
LOCAL METAATTRIBUTES	Name

META-ATTRIBUTE DEFINITION	META-ATTRIBUTE OF AbstractionLevel
NAME	**Name**
CDIFMETAIDENTIFIER	13
SUBJECTAREANAME	Common
SUBJECTAREAVERSION	15476-2:2002
DESCRIPTION	The name of the abstraction level.
USAGE	Can be used to identify levels such as conceptual, logical, physical
ALIASES	
CONSTRAINTS	
DATA TYPE	String
DOMAIN	
LENGTH	256
ISOPTIONAL	True

META-ATTRIBUTE DEFINITION	META-ATTRIBUTE OF AbstractionLevel
NAME	**Level**
CDIFMETAIDENTIFIER	61
SUBJECTAREANAME	Common
SUBJECTAREAVERSION	15476-2:2002
DESCRIPTION	This is the number assigned to the level.
USAGE	
ALIASES	
CONSTRAINTS	
DATA TYPE	Integer
DOMAIN	
LENGTH	
ISOPTIONAL	True

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8.3.2 AlternateName

META-ENTITY DEFINITION	
NAME	**AlternateName**
CDIFMETAIDENTIFIER	14
SUBJECTAREANAME	Common
SUBJECTAREAVERSION	15476-2:2002
DESCRIPTION	An alternate name for an object.
USAGE	Where an object has more than one name, for example ***Customer-Number*** that is also known as ***Cust-No*** and ***CUSTOMER-ID***, instances of *AlternateName* are used to hold all names except the first or primary name. All the alternate names by which an object can be known should be connected to the object using the *RootEntity.Has.AlternateName* meta-relationship. Where a different object refers to the object with the set of alternate names, and it is required to state which specific alternate name has been used, the other object is connected to the appropriate alternate name by an instance of the *RootEntity.Uses.AlternateName* meta-relationship. This is in addition to the relevant meta-relationship connecting the two objects.
ALIASES	Alias, AlsoKnownAs, AKA, Synonym, Pseudonym
CONSTRAINTS	At least one of the meta-attributes *OtherName* or *OtherLongName* shall have a value supplied.
TYPE	Characteristic
ISABSTRACT	False
LOCAL SUBTYPES	
LOCAL METARELATIONSHIPS	RootEntity.Has.AlternateName RootEntity.Uses.AlternateName
LOCAL METAATTRIBUTES	OtherLongName OtherName

META-ATTRIBUTE DEFINITION	META-ATTRIBUTE OF AlternateName
NAME	**OtherLongName**
CDIFMETAIDENTIFIER	15
SUBJECTAREANAME	Common
SUBJECTAREAVERSION	15476-2:2002
DESCRIPTION	An alternate long descriptive string by which the object may be known to the user.
USAGE	This is used where a long descriptive name is required in addition to the *OtherName* meta-attribute.
ALIASES	FullName
CONSTRAINTS	A value shall be supplied when no value is supplied for *OtherName*.
DATA TYPE	String
DOMAIN	
LENGTH	1024
ISOPTIONAL	True

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META-ATTRIBUTE DEFINITION	META-ATTRIBUTE OF AlternateName
NAME	**OtherName**
CDIFMETAIDENTIFIER	16
SUBJECTAREANAME	Common
SUBJECTAREAVERSION	15476-2:2002
DESCRIPTION	An alternate string by which the object is known to the user.
USAGE	This is used for the meta-attribute that the end tool user expects to be used to name the object. This should be used where possible in preference to *OtherLongName.*
ALIASES	Label
CONSTRAINTS	A value shall be supplied when no value is supplied for *OtherLongName*
DATA TYPE	String
DOMAIN	
LENGTH	256
ISOPTIONAL	True

8.3.3 ComponentObject

META-ENTITY DEFINITION	
NAME	**ComponentObject**
CDIFMETAIDENTIFIER	8000
SUBJECTAREANAME	Common
SUBJECTAREAVERSION	15476-2:2002
DESCRIPTION	This Meta-entity is an abstract supertype for components in a structured definition which can be shared.
USAGE	
ALIASES	
CONSTRAINTS	
TYPE	Kernel
ISABSTRACT	True
LOCAL SUBTYPES	EquivalenceSet ReferencedElement
LOCAL METARELATIONSHIPS	ComponentObject.References.DefinitionObject ComponentObject.IsActualFor.ComponentObject DefinitionObject.Contains.ComponentObject DefinitionObject.ContainsAsFormal.ComponentObject EquivalenceSet.HasMember.ComponentObject ReferencedElement.DefinesPath.ComponentObject
LOCAL METAATTRIBUTES	Name

META-ATTRIBUTE DEFINITION	META-ATTRIBUTE OF ComponentObject
NAME	**Name**
CDIFMETAIDENTIFIER	7623
SUBJECTAREANAME	Common
SUBJECTAREAVERSION	15476-2:2002
DESCRIPTION	This is the name of the *ComponentObject.*
USAGE	
ALIASES	
CONSTRAINTS	
DATA TYPE	String
DOMAIN	
LENGTH	256
ISOPTIONAL	True

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8.3.4 DefinitionObject

META-ENTITY DEFINITION	
NAME	**DefinitionObject**
CDIFMETAIDENTIFIER	8002
SUBJECTAREANAME	Common
SUBJECTAREAVERSION	15476-2:2002
DESCRIPTION	*DefinitionObject* serves as an abstract supertype for all definitions which might be reused. A *DefinitionObject* may contain *ComponentObjects*, indicating that the definition is structured. The *ComponentObjects* contained in a *DefinitionObject* form the components of the structured definition.
USAGE	
ALIASES	
CONSTRAINTS	An instance of a subtype of *DefinitionObject* that is the destination of an instance of *Model.HasRoot.DefinitionObject* may not be the source of an instance of *DefinitionObject.Contains.ComponentObject*.
TYPE	Kernel
ISABSTRACT	True
LOCAL SUBTYPES	EquivalenceSet ReferencedElement
LOCAL METARELATIONSHIPS	ComponentObject.Reference.DefinitionObject DefinitionObject.Contains.ComponentObject DefinitionObject.ContainsAsFormal.ComponentObject Model.HasRoot.DefinitionObject
LOCAL METAATTRIBUTES	Name Operator SpecificationLanguage SpecificationText

META-ATTRIBUTE DEFINITION	META-ATTRIBUTE OF DefinitionObject
NAME	**Name**
CDIFMETAIDENTIFIER	1119
SUBJECTAREANAME	Common
SUBJECTAREAVERSION	15476-2:2002
DESCRIPTION	This is the name of the *DefinitionObject.*
USAGE	
ALIASES	
CONSTRAINTS	
DATA TYPE	String
DOMAIN	
LENGTH	256
ISOPTIONAL	True

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META-ATTRIBUTE DEFINITION	META-ATTRIBUTE OF DefinitionObject
NAME	**Operator**
CDIFMETAIDENTIFIER	1118
SUBJECTAREANAME	Common
SUBJECTAREAVERSION	15476-2:2002
DESCRIPTION	This records whether the components of the *DefinitionObject* are all present or mutually exclusive alternatives.
USAGE	For example, the representation of a C "struct" would use a value of AND, while that of a C "union" would have a value of XOR. If the value of *Operator* is XOR, then the contained *ComponentObjects* are not a real part of the structure, but are a grouping mechanism for defining the alternate structure.
ALIASES	
CONSTRAINTS	
DATA TYPE	Enumerated
DOMAIN	AND,XOR,OR
LENGTH	
ISOPTIONAL	True

META-ATTRIBUTE DEFINITION	META-ATTRIBUTE OF DefinitionObject
NAME	**SpecificationLanguage**
CDIFMETAIDENTIFIER	1141
SUBJECTAREANAME	Common
SUBJECTAREAVERSION	15476-2:2002
DESCRIPTION	This states what language has been used for the *SpecificationText* meta-attribute.
USAGE	
ALIASES	
CONSTRAINTS	If *SpecificationText* is given, there shall be a *SpecificationLanguage* given.
DATA TYPE	Enumerated
DOMAIN	See the table in the computable language sub-clause 6.12 if applicable, or add using extension mechanisms.
LENGTH	
ISOPTIONAL	True

META-ATTRIBUTE DEFINITION	META-ATTRIBUTE OF DefinitionObject
NAME	**SpecificationText**
CDIFMETAIDENTIFIER	1140
SUBJECTAREANAME	Common
SUBJECTAREAVERSION	15476-2:2002
DESCRIPTION	This is used to record text which specifies the DefinitionObject.
USAGE	
ALIASES	
CONSTRAINTS	If a *SpecificationText* is given, a *SpecificationLanguage* shall be given.
DATA TYPE	Text
DOMAIN	
LENGTH	
ISOPTIONAL	True

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8.3.5 Derivation

META-ENTITY DEFINITION	
NAME	**Derivation**
CDIFMETAIDENTIFIER	26
SUBJECTAREANAME	Common
SUBJECTAREAVERSION	15476-2:2002
DESCRIPTION	This links together a set of derived objects with the objects from which they are in some way derived. It may also define the derivation process itself.
USAGE	This is used as a general derivation link. It can be used to describe a weak form of derivation, such as *Entities* being derived from *Stores* on a *DataFlowModel.* Stronger forms of derivation can also be described, for example where one object is an implementation of another. This can be used for relating objects defined in different *AbstractionLevels*.
ALIASES	
CONSTRAINTS	When multiple subject areas are being used, the other subject areas should be checked for the existence of subtypes of *Derivation* that more precisely classify the derivation. Where these exist, the appropriate subtype of *Derivation* should be used.
TYPE	Associative
ISABSTRACT	False
LOCAL SUBTYPES	
LOCAL METARELATIONSHIPS	SemanticInformationObject.ProducedBy.Derivation SemanticInformationObject.UsedIn.Derivation
LOCAL METAATTRIBUTES	DerivationLanguage DerivationText IsRealizationOf

META-ATTRIBUTE DEFINITION	**META-ATTRIBUTE OF** Derivation
NAME	**DerivationLanguage**
CDIFMETAIDENTIFIER	29
SUBJECTAREANAME	Common
SUBJECTAREAVERSION	15476-2:2002
DESCRIPTION	This is the language used for the body of the *DerivationText* meta-attribute.
USAGE	
ALIASES	
CONSTRAINTS	This shall be supplied when there is a *DerivationText* value given.
DATA TYPE	Enumerated
DOMAIN	See the table in the computable language sub-clause 6.12 if applicable, or add using extension mechanisms.
LENGTH	
ISOPTIONAL	True

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META-ATTRIBUTE DEFINITION	META-ATTRIBUTE OF Derivation
NAME	**DerivationText**
CDIFMETAIDENTIFIER	27
SUBJECTAREANAME	Common
SUBJECTAREAVERSION	15476-2:2002
DESCRIPTION	This describes the relationship between the values of the objects used in the derivation and the derived objects. The language used is defined in the meta-attribute *DerivationLanguage*.
USAGE	
ALIASES	
CONSTRAINTS	When a value is provided for this meta-attribute, the language used shall be defined in the meta-attribute *DerivationLanguage.*
DATA TYPE	Text
DOMAIN	
LENGTH	
ISOPTIONAL	True

META-ATTRIBUTE DEFINITION	META-ATTRIBUTE OF Derivation
NAME	**IsRealizationOf**
CDIFMETAIDENTIFIER	185
SUBJECTAREANAME	Common
SUBJECTAREAVERSION	15476-2:2002
DESCRIPTION	If set to ***TRUE***, this indicates that the derived object(s) are at a lower level of abstraction than the objects from which they are derived.
USAGE	For example, where *AbstractionLevels* are being used, a Data Model at a ***Logical*** abstraction level may be recorded as being derived from a data model at a ***Conceptual*** abstraction level. Its use is not limited to when *AbstractionLevels* are being used.
ALIASES	
CONSTRAINTS	When a value is provided for this meta-attribute, the language used shall be defined in the meta-attribute *DerivationLanguage.*
DATA TYPE	Boolean
DOMAIN	
LENGTH	
ISOPTIONAL	True

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8.3.6 EquivalenceSet

META-ENTITY DEFINITION	
NAME	**EquivalenceSet**
CDIFMETAIDENTIFIER	1113
SUBJECTAREANAME	Common
SUBJECTAREAVERSION	15476-2:2002
DESCRIPTION	This is used to indicate that *ComponentObjects* represent identical instances.
USAGE	When a *ComponentObject* to be referenced is contained in a *DefinitionObject* other than the one containing this *EquivalenceSet* a *ReferencedElement* shall be used to refer to that *ComponentObject* and must be contained in the same *DefinitionObject* as this *EquivalenceSet*.
ALIASES	
CONSTRAINTS	An instance of this meta-entity shall not participate in an instance of the *ComponentObject.References.DefinitionObject* meta-relationship. An *EquivalenceSet* shall not have *ComponentObjects* as members which are contained in *DefinitionObject* other than the one the *EquivalenceSet* is contained in.
TYPE	Associative
ISABSTRACT	False
LOCAL SUBTYPES	
LOCAL METARELATIONSHIPS	EquivalenceSet.HasMember.ComponentObject
LOCAL METAATTRIBUTES	

8.3.7 Model

META-ENTITY DEFINITION	
NAME	**Model**
CDIFMETAIDENTIFIER	59
SUBJECTAREANAME	Common
SUBJECTAREAVERSION	15476-2:2002
DESCRIPTION	This exists to define a model in terms of the objects is contains.
USAGE	This meta-entity maps to any modelling techniques where a central container is required for all of the objects in the model.
ALIASES	
CONSTRAINTS	
TYPE	Kernel
ISABSTRACT	True
LOCAL SUBTYPES	
LOCAL METARELATIONSHIPS	Model.HasRoot.DefinitionObject
LOCAL METAATTRIBUTES	Name

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META-ATTRIBUTE DEFINITION	META-ATTRIBUTE OF Model
NAME	**Name**
CDIFMETAIDENTIFIER	60
SUBJECTAREANAME	Common
SUBJECTAREAVERSION	15476-2:2002
DESCRIPTION	This is the name of the Model.
USAGE	
ALIASES	
CONSTRAINTS	
DATA TYPE	String
DOMAIN	
LENGTH	256
ISOPTIONAL	True

8.3.8 PresentationInformationObject

META-ENTITY DEFINITION	
NAME	**PresentationInformationObject**
CDIFMETAIDENTIFIER	30
SUBJECTAREANAME	Common
SUBJECTAREAVERSION	15476-2:2002
DESCRIPTION	This object is the supertype for the definition of presentation information, which describes the graphical information about the representation of the underlying semantic model.
USAGE	
ALIASES	
CONSTRAINTS	
TYPE	Kernel
ISABSTRACT	True
LOCAL SUBTYPES	
LOCAL METARELATIONSHIPS	
LOCAL METAATTRIBUTES	

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8.3.9 ReferencedElement

META-ENTITY DEFINITION	
NAME	**ReferencedElement**
CDIFMETAIDENTIFIER	8020
SUBJECTAREANAME	Common
SUBJECTAREAVERSION	15476-2:2002
DESCRIPTION	This is used as an associative meta-entity which represents a reference to a *ComponentObject* inside a shared definition.
USAGE	This shall be used every time a reference to a *ComponentObject* is made where the *ComponentObject* is contained by a different *DefinitionObject*. Meta-relationships between *ComponentObjects*, except *ReferencedElement.DefinesPath.ComponentObject*, shall not be instantiated between *ComponentObjects* contained by different *DefinitionObjects*.
ALIASES	
CONSTRAINTS	There shall be an instance of *ReferencedElement.DefinesPath.ComponentObject* to each *ComponentObject* in the path.
TYPE	Kernel
ISABSTRACT	False
LOCAL SUBTYPES	
LOCAL METARELATIONSHIPS	ReferencedElement.DefinesPath.ComponentObject
LOCAL METAATTRIBUTES	

8.3.10 RootEntity

META-ENTITY REFERENCE	
NAME	**RootEntity**
CDIFMETAIDENTIFIER	2
SUBJECTAREANAME	Foundation
SUBJECTAREAVERSION	15476-1:2002
LOCAL SUBTYPES	AbstractionLevel AlternateName PresentationInformationObject SemanticInformationObject TextualConstraint ToolUser
LOCAL METARELATIONSHIPS	RootEntity.CreatedBy.ToolUser RootEntity.Has.AlternateName RootEntity.LastUpdatedBy.ToolUser RootEntity.Uses.AlternateName
LOCAL METAATTRIBUTES	

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8.3.11 SemanticInformationObject

META-ENTITY DEFINITION	
NAME	**SemanticInformationObject**
CDIFMETAIDENTIFIER	4
SUBJECTAREANAME	Common
SUBJECTAREAVERSION	15476-2:2002
DESCRIPTION	This is used to categorize all meta-entities in the CDIF Semantic metamodel that contain information about the objects being modelled.
USAGE	
ALIASES	
CONSTRAINTS	
TYPE	Kernel
ISABSTRACT	True
LOCAL SUBTYPES	ComponentObject DataObject DefinitionObject Derivation Model
LOCAL METARELATIONSHIPS	SemanticInformationObject.IsCategorizedIn.AbstractionLevel SemanticInformationObject.ProducedBy.Derivation SemanticInformationObject.UsedIn.Derivation TextualConstraint.IsConstraintOn.SemanticInformationObject
LOCAL METAATTRIBUTES	BriefDescription FullDescription

META-ATTRIBUTE DEFINITION	META-ATTRIBUTE OF SemanticInformationObject
NAME	**BriefDescription**
CDIFMETAIDENTIFIER	44
SUBJECTAREANAME	Common
SUBJECTAREAVERSION	15476-2:2002
DESCRIPTION	A brief unformatted description of the meta-entity instance
USAGE	A summary of the purpose and function of the meta-entity instance.
ALIASES	Summary
CONSTRAINTS	
DATA TYPE	String
DOMAIN	
LENGTH	1024
ISOPTIONAL	True

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META-ATTRIBUTE DEFINITION	META-ATTRIBUTE OF SemanticInformationObject
NAME	**FullDescription**
CDIFMETAIDENTIFIER	45
SUBJECTAREANAME	Common
SUBJECTAREAVERSION	15476-2:2002
DESCRIPTION	Detailed textual description of the meta-entity instance, with formatting included if required.
USAGE	This is used for long descriptive text, explaining the reasons for the existence of the meta-entity instance and its usage and purpose. It is not used for specifications, etc., which should have explicit meta-attributes.
ALIASES	Comment, Definition
CONSTRAINTS	When a value is provided for this meta-attribute, the language used shall be defined in the meta-attribute *DerivationLanguage.*
DATA TYPE	Text
DOMAIN	
LENGTH	
ISOPTIONAL	True

8.3.12 TextualConstraint

META-ENTITY DEFINITION	
NAME	**TextualConstraint**
CDIFMETAIDENTIFIER	51
SUBJECTAREANAME	Common
SUBJECTAREAVERSION	15476-2:2002
DESCRIPTION	This defines any constraint on a *SemanticInformationObject* or set of *SemanticInformationObjects* in a textual form.
USAGE	This is used to capture constraints and rules not explicitly modelled within the meta-model, such as time-based constraints.
ALIASES	Rule
CONSTRAINTS	
TYPE	Characteristic
ISABSTRACT	False
LOCAL SUBTYPES	
LOCAL METARELATIONSHIPS	TextualConstraint.IsConstraintOn.SemanticInformationObject
LOCAL METAATTRIBUTES	BriefDescription ConstraintExpression ConstraintLanguage FullDescription

META-ATTRIBUTE DEFINITION	META-ATTRIBUTE OF TextualConstraint
NAME	**BriefDescription**
CDIFMETAIDENTIFIER	52
SUBJECTAREANAME	Common
SUBJECTAREAVERSION	15476-2:2002
DESCRIPTION	A brief unformatted description of the purpose of the constraint.
USAGE	
ALIASES	Summary
CONSTRAINTS	
DATA TYPE	String
DOMAIN	
LENGTH	1024
ISOPTIONAL	True

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META-ATTRIBUTE DEFINITION	META-ATTRIBUTE OF TextualConstraint
NAME	**ConstraintExpression**
CDIFMETAIDENTIFIER	53
SUBJECTAREANAME	Common
SUBJECTAREAVERSION	15476-2:2002
DESCRIPTION	Detailed specification of the *TextualConstraint.*
USAGE	
ALIASES	
CONSTRAINTS	If a value is supplied for this meta-attribute, the language used shall be specified in the meta-attribute *ConstraintLanguage.*
DATA TYPE	Text
DOMAIN	
LENGTH	
ISOPTIONAL	True

META-ATTRIBUTE DEFINITION	META-ATTRIBUTE OF TextualConstraint
NAME	**ConstraintLanguage**
CDIFMETAIDENTIFIER	55
SUBJECTAREANAME	Common
SUBJECTAREAVERSION	15476-2:2002
DESCRIPTION	This is the language used for the body of the *ConstraintExpression* meta-attribute.
USAGE	
ALIASES	
CONSTRAINTS	This shall be supplied when there is a *ConstraintExpression* value given
DATA TYPE	Enumerated
DOMAIN	See the table in the computable language sub-clause 6.12 if applicable, or add using extension mechanisms
LENGTH	
ISOPTIONAL	True

META-ATTRIBUTE DEFINITION	META-ATTRIBUTE OF TextualConstraint
NAME	**FullDescription**
CDIFMETAIDENTIFIER	54
SUBJECTAREANAME	Common
SUBJECTAREAVERSION	15476-2:2002
DESCRIPTION	Detailed textual description of the purpose of the constraint.
USAGE	
ALIASES	
CONSTRAINTS	
DATA TYPE	Text
DOMAIN	
LENGTH	
ISOPTIONAL	True

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8.3.13 ToolUser

META-ENTITY DEFINITION	
NAME	**ToolUser**
CDIFMETAIDENTIFIER	56
SUBJECTAREANAME	Common
SUBJECTAREAVERSION	15476-2:2002
DESCRIPTION	A person, team, project, department, etc. who can be the creator/updater of objects. These are the users of the CASE environment, rather than the end-users of the systems being represented.
USAGE	For example, a *ProcessObject* may be created by ***Fred Bloggs*** and last updated by ***John Doe***.
ALIASES	Department, Team, Project, Person, Group, LoginId
CONSTRAINTS	
TYPE	Kernel
ISABSTRACT	False
LOCAL SUBTYPES	
LOCAL METARELATIONSHIPS	RootEntity.CreatedBy.ToolUser RootEntity.LastUpdatedBy.ToolUser
LOCAL METAATTRIBUTES	FullName SystemName

META-ATTRIBUTE DEFINITION	META-ATTRIBUTE OF ToolUser
NAME	**FullName**
CDIFMETAIDENTIFIER	57
SUBJECTAREANAME	Common
SUBJECTAREAVERSION	15476-2:2002
DESCRIPTION	The full name of the *ToolUser.* This will be the name of the person, team, department, etc.
USAGE	
ALIASES	
CONSTRAINTS	
DATA TYPE	String
DOMAIN	
LENGTH	256
ISOPTIONAL	True

META-ATTRIBUTE DEFINITION	META-ATTRIBUTE OF ToolUser
NAME	**SystemName**
CDIFMETAIDENTIFIER	58
SUBJECTAREANAME	Common
SUBJECTAREAVERSION	15476-2:2002
DESCRIPTION	The name by which the *ToolUser* is known to the system.
USAGE	
ALIASES	UserId, UserName, LoginId
CONSTRAINTS	
DATA TYPE	String
DOMAIN	
LENGTH	32
ISOPTIONAL	False

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8.4 Meta-relationship definitions

8.4.1 ComponentObject.IsActualFor.ComponentObject

META-RELATIONSHIP DEFINITION	
NAME	**ComponentObject.IsActualFor.ComponentObject**
CDIFMETAIDENTIFIER	7621
SUBJECTAREANAME	Common
SUBJECTAREAVERSION	15476-2:2002
DESCRIPTION	
USAGE	
ALIASES	
CONSTRAINTS	
ISABSTRACT	False
MINSOURCECARD	0
MAXSOURCECARD	N
MINDESTCARD	0
MAXDESTCARD	N
LOCAL SUBTYPES	
LOCAL METAATTRIBUTES	

8.4.2 ComponentObject.References.DefinitionObject

META-RELATIONSHIP DEFINITION	
NAME	**ComponentObject.References.DefinitionObject**
CDIFMETAIDENTIFIER	8022
SUBJECTAREANAME	Common
SUBJECTAREAVERSION	15476-2:2002
DESCRIPTION	Relates a *ComponentObject* to its shareable definition.
USAGE	
ALIASES	
CONSTRAINTS	
ISABSTRACT	False
MINSOURCECARD	0
MAXSOURCECARD	N
MINDESTCARD	0
MAXDESTCARD	1
LOCAL SUBTYPES	
LOCAL METAATTRIBUTES	

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8.4.3 DefinitionObject.Contains.ComponentObject

META-RELATIONSHIP DEFINITION	
NAME	**DefinitionObject.Contains.ComponentObject**
CDIFMETAIDENTIFIER	1131
SUBJECTAREANAME	Common
SUBJECTAREAVERSION	15476-2:2002
DESCRIPTION	Relates a *DefinitionObject* to those *ComponentObjects* which form its structure or decomposition.
USAGE	
ALIASES	
CONSTRAINTS	
ISABSTRACT	False
MINSOURCECARD	0
MAXSOURCECARD	1
MINDESTCARD	0
MAXDESTCARD	N
LOCAL SUBTYPES	
LOCAL METAATTRIBUTES	SequenceNumber

META-ATTRIBUTE DEFINITION	META-ATTRIBUTE OF DefinitionObject.Contains.ComponentObject
NAME	**SequenceNumber**
CDIFMETAIDENTIFIER	8026
SUBJECTAREANAME	Common
SUBJECTAREAVERSION	15476-2:2002
DESCRIPTION	This indicates the sequence of the components in the *DefinitionObject*. If this meta-attribute is not provided, then the order is undefined.
USAGE	
ALIASES	
CONSTRAINTS	No two components within the same *DefinitionObject* shall have the same value for *SequenceNumber*.
DATA TYPE	Integer
DOMAIN	Positive Integer
LENGTH	
ISOPTIONAL	False

8.4.4 DefinitionObject.ContainsAsFormal.ComponentObject

META-RELATIONSHIP DEFINITION	
NAME	**DefinitionObject.ContainsAsFormal.ComponentObject**
CDIFMETAIDENTIFIER	7622
SUBJECTAREANAME	Common
SUBJECTAREAVERSION	15476-2:2002
DESCRIPTION	Relates a *DefinitionObject* to those *ComponentObjects* which form its structure or decomposition.
USAGE	
ALIASES	
CONSTRAINTS	
ISABSTRACT	False
MINSOURCECARD	0
MAXSOURCECARD	1
MINDESTCARD	0
MAXDESTCARD	N
LOCAL SUBTYPES	
LOCAL METAATTRIBUTES	

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8.4.5 EquivalenceSet.HasMember.ComponentObject

META-RELATIONSHIP DEFINITION	
NAME	**EquivalenceSet.HasMember.ComponentObject**
CDIFMETAIDENTIFIER	1114
SUBJECTAREANAME	Common
SUBJECTAREAVERSION	15476-2:2002
DESCRIPTION	Instances of this meta-relationship group those *ComponentObjects* which are considered to be the same into an *EquivalenceSet.*
USAGE	This meta-relationship may be used for audit trails, change tracking, etc.
ALIASES	
CONSTRAINTS	Any two instances of *ComponentObject* which are related to the same *EquivalenceSet* using this meta-relationship shall not be contained in different *DefinitionObjects*. The *EquivalenceSet* shall be contained in the same *DefinitionObject* as the *ComponentObjects*.
ISABSTRACT	False
MINSOURCECARD	0
MAXSOURCECARD	N
MINDESTCARD	2
MAXDESTCARD	N
LOCAL SUBTYPES	
LOCAL METAATTRIBUTES	

8.4.6 Model.HasRoot.DefinitionObject

META-RELATIONSHIP DEFINITION	
NAME	**Model.HasRoot.DefinitionObject**
CDIFMETAIDENTIFIER	6026
SUBJECTAREANAME	Common
SUBJECTAREAVERSION	15476-2:2002
DESCRIPTION	This references the *DefinitionObject* subtype which is the root of the decomposition hierarchy for the *Model* subtype.
USAGE	The instance of *DefinitionObject* subtype participating in this meta-relationship may be part of a decomposition of a higher level *DefinitionObject* subtype that is the root of another *Model* subtype.
ALIASES	
CONSTRAINTS	
ISABSTRACT	False
MINSOURCECARD	0
MAXSOURCECARD	1
MINDESTCARD	0
MAXDESTCARD	1
LOCAL SUBTYPES	
LOCAL METAATTRIBUTES	

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8.4.7 ReferencedElement.DefinesPath.ComponentObject

META-RELATIONSHIP DEFINITION	
NAME	**ReferencedElement.DefinesPath.ComponentObject**
CDIFMETAIDENTIFIER	8025
SUBJECTAREANAME	Common
SUBJECTAREAVERSION	15476-2:2002
DESCRIPTION	This meta-relationship is instantiated to reference all the elements in the path to a specific *ComponentObject* inside a shared *DefinitionObject*.
USAGE	
ALIASES	
CONSTRAINTS	
ISABSTRACT	False
MINSOURCECARD	0
MAXSOURCECARD	N
MINDESTCARD	1
MAXDESTCARD	N
LOCAL SUBTYPES	
LOCAL METAATTRIBUTES	SequenceNumber

META-ATTRIBUTE DEFINITION	META-ATTRIBUTE OF ReferencedElement.DefinesPath.ComponentObject
NAME	**SequenceNumber**
CDIFMETAIDENTIFIER	6040
SUBJECTAREANAME	Common
SUBJECTAREAVERSION	15476-2:2002
DESCRIPTION	This defines the order in which the *ComponentObjects* are assembled within a *ReferencedElement* to complete the path definition.
USAGE	
ALIASES	
CONSTRAINTS	No two components within the same *DefinitionObject* shall have the same value for *SequenceNumber*.
DATA TYPE	Integer
DOMAIN	Positive Integer
LENGTH	
ISOPTIONAL	False

8.4.8 RootEntity.CreatedBy.ToolUser

META-RELATIONSHIP DEFINITION	
NAME	**RootEntity.CreatedBy.ToolUser**
CDIFMETAIDENTIFIER	68
SUBJECTAREANAME	Common
SUBJECTAREAVERSION	15476-2:2002
DESCRIPTION	This relates a *RootEntity* with the *ToolUser* who initially created it.
USAGE	This meta-relationship may be used for audit trails, change tracking, etc.
ALIASES	DefinedBy, OriginatedBy
CONSTRAINTS	
ISABSTRACT	False
MINSOURCECARD	0
MAXSOURCECARD	N
MINDESTCARD	0
MAXDESTCARD	1
LOCAL SUBTYPES	
LOCAL METAATTRIBUTES	

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8.4.9 RootEntity.Has.AlternateName

META-RELATIONSHIP DEFINITION	
NAME	**RootEntity.Has.AlternateName**
CDIFMETAIDENTIFIER	69
SUBJECTAREANAME	Common
SUBJECTAREAVERSION	15476-2:2002
DESCRIPTION	This enables an object to have aliases. Each alias is stored in a separate occurrence of *AlternateName*. Each is connected to the relevant object by an instance of this meta-relationship.
USAGE	This meta-relationship may be used for audit trails, change tracking, etc.
ALIASES	HasAlias
CONSTRAINTS	This shall be used only where the source object has a *Name* meta-attribute defined in the CDIF semantic metamodel or added through extensibility. It shall not be used for adding a name to an otherwise nameless object. This meta-relationship shall not be used from a source object of type *AlternateName*, thereby giving alternate names to alternate names.
ISABSTRACT	False
MINSOURCECARD	1
MAXSOURCECARD	N
MINDESTCARD	0
MAXDESTCARD	N
LOCAL SUBTYPES	
LOCAL METAATTRIBUTES	

8.4.10 RootEntity.LastUpdatedBy.ToolUser

META-RELATIONSHIP DEFINITION	
NAME	**RootEntity.LastUpdatedBy.ToolUser**
CDIFMETAIDENTIFIER	70
SUBJECTAREANAME	Common
SUBJECTAREAVERSION	15476-2:2002
DESCRIPTION	This associates a *RootEntity* with the *ToolUser* who most recently updated it.
USAGE	This meta-relationship may be used for audit trails, change tracking, etc.
ALIASES	ModifiedBy
CONSTRAINTS	
ISABSTRACT	False
MINSOURCECARD	0
MAXSOURCECARD	N
MINDESTCARD	0
MAXDESTCARD	1
LOCAL SUBTYPES	
LOCAL METAATTRIBUTES	

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8.4.11 RootEntity.IsRelatedTo.RootEntity

META-RELATIONSHIP REFERENCE	
NAME	**RootEntity.IsRelatedTo.RootEntity**
CDIFMETAIDENTIFIER	3
SUBJECTAREANAME	Foundation
SUBJECTAREAVERSION	15476-1:2002
LOCAL SUBTYPES	ComponentObject.References.DefinitionObject ComponentObject.IsActualFor.ComponentObject DefinitionObject.Contains.ComponentObject EquivalenceSet.HasMember.ComponentObject Model.HasRoot.DefinitionObject ReferencedElement.DefinesPath.ComponentObject RootEntity.CreatedBy.ToolUser RootEntity.Has.AlternateName RootEntity.LastUpdatedBy.ToolUser RootEntity.Uses.AlternateName SemanticInformationObject.IsCategorizedIn.AbstractionLevel SemanticInformationObject.ProducedBy.Derivation SemanticInformationObject.UsedIn.Derivation TextualConstraint.IsConstraintOn.SemanticInformationObject
LOCAL METAATTRIBUTES	

8.4.12 RootEntity.Uses.AlternateName

META-RELATIONSHIP DEFINITION	
NAME	**RootEntity.Uses.AlternateName**
CDIFMETAIDENTIFIER	71
SUBJECTAREANAME	Common
SUBJECTAREAVERSION	15476-2:2002
DESCRIPTION	Where any object refers to another by one of its alternate names, this meta-relationship is used to indicate which of the set of alternate names is being used.
USAGE	Where instance ***A*** of object Q is related to instance ***B*** of object R by an instance of meta-relationship W, but refers to ***B*** by one of its *AlternateName*s, an instance of this meta-relationship shall be used to indicate which *AlternateName* instance related to ***B*** (by the meta-relationship *RootEntity.Has.AlternateName)* is to be used. The instance of this meta-relationship does not replace the need for the instance of W, it merely indicates the name to be used when interpreting that relationship.
ALIASES	
CONSTRAINTS	This meta-relationship shall only be used to connect instances where the other relevant meta-relationship instances exist: a connection between the source of this meta-relationship and another object, and a corresponding instance of *RootEntity.Has.AlternateName* between that other object and the destination *AlternateName* instance of this meta-relationship instance.
ISABSTRACT	False
MINSOURCECARD	0
MAXSOURCECARD	N
MINDESTCARD	0
MAXDESTCARD	N
LOCAL SUBTYPES	
LOCAL METAATTRIBUTES	

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8.4.13 SemanticInformationObject.IsCategorizedIn.AbstractionLevel

META-RELATIONSHIP DEFINITION	
NAME	**SemanticInformationObject.IsCategorizedIn.AbstractionLevel**
CDIFMETAIDENTIFIER	72
SUBJECTAREANAME	Common
SUBJECTAREAVERSION	15476-2:2002
DESCRIPTION	This relates one or more *SemanticInformationObjects* to the *AbstractionLevel* that identifies the level at which the objects are defined or used.
USAGE	
ALIASES	
CONSTRAINTS	
ISABSTRACT	False
MINSOURCECARD	0
MAXSOURCECARD	N
MINDESTCARD	0
MAXDESTCARD	N
LOCAL SUBTYPES	
LOCAL METAATTRIBUTES	

8.4.14 SemanticInformationObject.ProducedBy.Derivation

META-RELATIONSHIP DEFINITION	
NAME	**SemanticInformationObject.ProducedBy.Derivation**
CDIFMETAIDENTIFIER	73
SUBJECTAREANAME	Common
SUBJECTAREAVERSION	15476-2:2002
DESCRIPTION	This relates one or more *SemanticInformationObjects* to the *Derivation* used to produce them. It connects the outputs of a derivation to the derivation itself.
USAGE	
ALIASES	
CONSTRAINTS	
ISABSTRACT	False
MINSOURCECARD	1
MAXSOURCECARD	N
MINDESTCARD	0
MAXDESTCARD	N
LOCAL SUBTYPES	
LOCAL METAATTRIBUTES	

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8.4.15 SemanticInformationObject.UsedIn.Derivation

META-RELATIONSHIP DEFINITION	
NAME	**SemanticInformationObject.UsedIn.Derivation**
CDIFMETAIDENTIFIER	74
SUBJECTAREANAME	Common
SUBJECTAREAVERSION	15476-2:2002
DESCRIPTION	This relates all the *SemanticInformationObjects* used in a particular derivation to the *Derivation* concerned. These are the inputs to the derivation.
USAGE	
ALIASES	
CONSTRAINTS	
ISABSTRACT	False
MINSOURCECARD	1
MAXSOURCECARD	N
MINDESTCARD	0
MAXDESTCARD	N
LOCAL SUBTYPES	
LOCAL METAATTRIBUTES	

8.4.16 TextualConstraint.IsConstraintOn.SemanticInformationObject

META-RELATIONSHIP DEFINITION	
NAME	**TextualConstraint.IsConstraintOn.SemanticInformationObject**
CDIFMETAIDENTIFIER	80
SUBJECTAREANAME	Common
SUBJECTAREAVERSION	15476-2:2002
DESCRIPTION	This relates one or more *SemanticInformationObjects* to any *TextualConstraints* imposed on those objects.
USAGE	
ALIASES	
CONSTRAINTS	
ISABSTRACT	False
MINSOURCECARD	0
MAXSOURCECARD	N
MINDESTCARD	1
MAXDESTCARD	N
LOCAL SUBTYPES	
LOCAL METAATTRIBUTES	

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