Public Health Information Network
Logical Data Model Version 1.0
User Guide

May 2004

Centers for Disease Control and Prevention

1 Contents

2 Preface

The PHIN LDM is build on and heavily influenced by the Health Level Seven Version 3 Reference Information Model[1] (HL7 RIM). That model is available from HL7 at http://www.hl7.org. Content from that model is directly included here, for reference.

The HL7 documents referenced in this publication are the authoritative source of any information regarding the RIM, Version 3 Messaging, classes, attributes, datatypes, and other artifacts. Health Level Seven can be contacted at:

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3 Introduction

This user guide is meant to serve as a companion document to the PHIN LDM V1.0 model, which is available as a separate document and set of software artifacts. This guide attempts to document the use and capabilities of that model.

4 PHIN Logical Data Model Overview

The PHIN Logical Data Model provides a set of technology neutral specifications to facilitate database modeling and schema design supporting the development of PHIN compliant systems. The PHIN LDM is not a complete database design model, but provides a bridge between the subject matter expert's view and the system developer's view of the information requirements for public health.

[1] HL7 Version 3 Standard: Reference Information Model, Health Level Seven, Inc. 3300 Washtenaw Avenue, Suite 227, Ann Arbor, MI 48104, http://www.hl7.org

The PHIN Logical Data Model models public health concepts in a fashion that is consistent with the HL7 RIM. The RIM is the primary conceptual information model from which public health concepts are derived.

A logical data model is a highly abstract, normalized representation of the information domain. It is not expected to be directly implemented. Typically, the logical model is used to obtain an understanding of the storage and expression of concepts that are appropriate to the domain.

It is important to recognize that only by having a domain information model, can disparate systems communicate in a meaningful manner. The purpose of the Logical Data Model is to show a valid representation of the data that comprises the information model, in a manner that captures all use cases for its management.

In other words, the logical data model (schema) tells us how the individual words and phrases are stored (syntax), but the information model tells us the legal sentences and vocabularies of the language (semantics). An analogy might be that of the language "English" to an "English language" dictionary. The dictionary is a necessary measure of correctness, but it must be combined with the speaker's knowledge of English.

The PHIN LDM is a highly abstract data model that stores domain concepts in a manner that is understandable for reference. It is not a recipe for a deployable physical model, although insights to hat model may be gained.

The PHIN LDM provides a means to illustrate the storage of information content that must be conveyed by all PHIN compliant systems. PHIN compliance, with respect to the PHIN LDM, simply means that derivative systems (the Database Data Models and Physical Data Models) are able to accurately represent each of the information concepts in their domains in a manner consistent with the PHIN LDM.

The PHIN LDM is expressed in the UML[2]. The UML is used for object modeling, and model stereotypes are available in the UML for data models.

Typically, a logical data model depicts a model in 3rd normal form, or higher. As an aid to designers, and to understanding the model, some of the concepts in the PHIN LDM are actually denormalized. For example, all of the current specializations of Entity and Act are represented as denormalized specialized classes, rather than with a generalization-specialization hierarchy. Also, common set valued datatypes may appear denormalized.

The PHIN LDM is based on the Health Level 7 Reference Information Model (HL7 RIM). The HL7 RIM provides a conceptual information model for the PHIN LDM. The PHIN LDM also draws on earlier information models such as the Public Health Conceptual Data Model (PHCDM), and is consistent with current NEDSS data models.

[2] Unified Modeling Language. Object Management Group, Inc. http://www.omg.org

The PHIN LDM V1.0 is

1) consistent with the HL7 RIM V2.03,
2) includes only those classes that are needed for public health, and
3) extends the RIM with public health classes and attributes, specifically to handle nationally notifiable conditions, and syndromic surveillance, bioterrorism response related health related activities.

HL7 RIM *based* means that:

1. The LDM "backbone" classes directly correspond to core classes in the HL7 RIM.
2. Not all RIM backbone classes are represented
3. Classes not pertaining to public health are omitted.
4. Datatypes are limited to those required to express public health concepts.

4.1.1 Modifications to the PHIN LDM

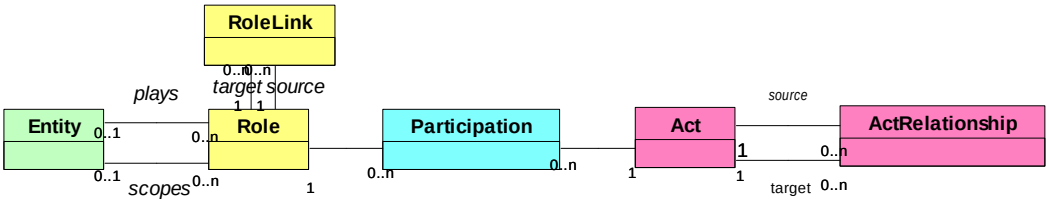
While much of the public health domain can be represented in the RIM without modification, some concepts do require modification. As with any area, models such as these are dynamic, and naturally change over time to accommodate new concepts, and retire old. The PHIN LDM will follow the same pattern over time. While not directly tied to the RIM, we expect the PHIN LDM and information model to track RIM changes where appropriate, in a controlled, versioned environment. Where appropriate, we also expect to propose modeling concepts identified within public health for inclusion in future RIM versions, as part of the HL7 standards process.

4.2 RIM Summary

A brief summary and overview of the HL7 RIM is included here. A complete specification for the RIM is found at http://www.hl7.org .

The RIM is comprised of six "back-bone" classes:

- *Act* which represents the actions that are executed and must be documented as health care is managed and provided;
- *Participation* which expresses the context for an act in terms such as who performed it, for whom it was done, where it was done, etc.;
- *Entity* which represents the physical things and beings that are of interest to, and take part in health care;
- *Role* which establishes the roles that entities play as they participate in health care acts;
- *ActRelationship* which represents the binding of one act to another, such as the relationship between an order for an observation and the observation event as it occurs; and
- *RoleLink* which represents relationships between individual roles.



The PHIN LDM utilizes 5 of the 6 backbone classes, (and renames several), as follows:

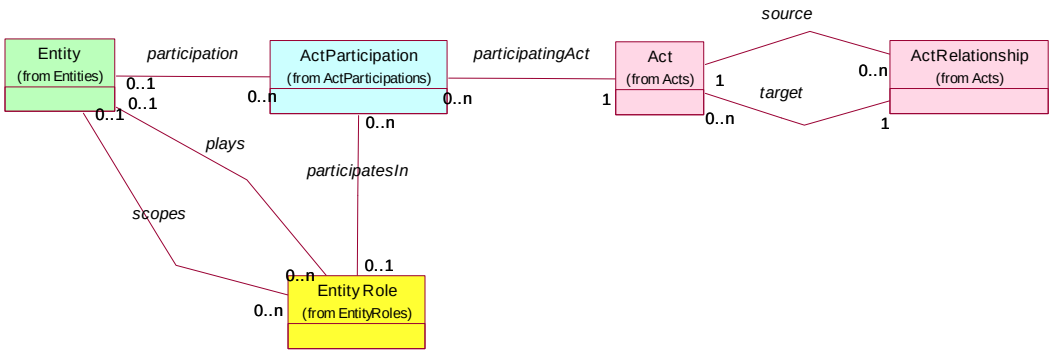
- *Act*
- *ActParticipation* (for Participation)
- *Entity*
- *EntityRole* (for Role) – also represents Entity relationships
- *ActRelationship*

4.3 Summary of PHIN LDM Classes

As described above, the PHIN LDM is a direct logical-level representation of the RIM. As the PHIN only deals with a segment of the healthcare domain represented by the RIM, we reduce the domain to that utilized.

4.3.1 PHIN LDM Backbone

The backbone diagram is a high level diagram at the class level, of the abstract classes that participate in the PHIN Logical Data Model. It is meant to illustrate the associations between the major abstract classes. The classes are colored in the same fashion as the RIM classes to illustrate the common structure.



4.3.1.1 Act

An Act is an action of public health interest that has been done, can be done, is being done, or is intended or requested to be done, such as an observation, intervention, communication, or public health case.

4.3.1.2 Entity

An Entity is a class or specific instance of a physical thing or an organization/group of physical things capable of participating in Acts; an artifact. This includes living subjects, organizations, material, and places. The Entity hierarchy encompasses human beings, organizations, living organisms, devices, pharmaceutical substances, etc. It does not include events/acts/actions, the definition of things, or the roles that things can play (e.g. patient, provider).

4.3.1.3 Act Relationship

An ActRelationship is an association between a pair of Acts. This includes Act to Act associations such as collector/component, predecessor/successor, and cause/outcome.

The class has two associations to the Act class, one named "source" the other named "target". The relationships associated with an Act are considered properties of the source act object. That means that the originator of the information reported in an act object is not only responsible for the attribute values of that object, but also for all its outgoing relationships.

The rule of attribution is that all act relationships are attributed to the responsible actor of the Act at the source of the ActRelationship (the "source act".)

4.3.1.4 EntityRole

An EntityRole is a categorization of competency of the Entity that plays the EntityRole as defined by the Entity that scopes the EntityRole.

An Entity, in a particular EntityRole, can participate in an Act. Note that a particular entity in a particular role can participate in an act in many ways. Thus, a Person in the role of a practitioner can participate in a patient encounter as a rounding physician or as an attending physician. The EntityRole defines the competency of the Entity irrespective of any Act, as opposed to Participation, which is limited to the scope of an Act.

Each EntityRole is 'played' by one Entity (the Entity that is in the role) and is usually 'scoped' by another. Thus the EntityRole of 'patient' is played by (usually) a person and scoped by the provider from whom the patient will receive services. Similarly, the employer scopes an Employee EntityRole.

4.3.1.5 ActParticipation

An ActParticipation is an association between an EntityRole and an Act. The ActParticipation represents the involvement of the Entity playing the EntityRole with regard to the associated Act. A single EntityRole may participate in multiple Acts and a single Act may have multiple participating EntityRoles. A single ActParticipation is always an association between a particular EntityRole and a particular Act. ActParticipation is limited to the scope of the Act, as opposed to EntityRole, which defines the competency of an Entity irrespective of any Act.

4.3.1.6 Sub Classes of Act, Entity and EntityRole

Entity, Act and EntityRole are "high-level" classes, although they are not "abstract" classes in the formal sense (i.e. meaningful instances of both classes are quite common). As a result, it has been necessary to define a number of more specialized subclasses of

these three classes to specify the additional data (class attributes) required in more specific contexts (e.g. the Observation subclass of Act and the Living Subject and Material subclasses of Entity). Attributes of a subclass must be both useful and unique to that subclass. Subclasses inherit all of the attributes of their parent superclass.

There are meaningful subclasses in each of these hierarchies that do not require additional attributes, and therefore are not represented as classes in the RIM. The "classCode" attribute in each of these hierarchies specifies which class is represented. The code set that can be used with the "classCode" attributes are tightly controlled by HL7. A second attribute in each hierarchy, the "code" attribute provides a further classification of subtypes of each subclass.

4.3.1.7 The Concept of Mood

The Act class represents intentional actions. These actions can exist in different "moods". Moods describe activities as they progress in the business cycle, from defined, through planned and ordered to complete. The mood of an Act is specified by the value of the Act.moodCode attribute.

Any instance of an Act assumes one and only one mood and will not change its mood along its life cycle. The moods - definition, intent, order, event - seem to specify a life cycle of an activity. However, the participants in the activity in these different moods are different, as is the data. Therefore, the mood of an Act instance is static. The progression actualization (i.e., the progression from defined, through planned and ordered, to being performed) is called the "business cycle" to distinguish it from the "life cycle" of a single act instance. Related Act instances that form such a "business cycle" are linked through the ActRelationship class.

4.3.1.8 Data Type and Vocabulary Specifications

The RIM class, attribute and association definitions provide detail about logical meaning, but a full specification requires data type and vocabulary specifications. **Data Types** define the allowable values of attributes and what these values "mean." Data types are therefore the fundamental building blocks that shape (and constrain) all the semantics that can ultimately expressed in the RIM. For HL7 Version 3, the datatype specifications are found in the Data Types Abstract Specification[3] and in the V3 Data Types Implementable Technology Specification for XML[4]

Vocabulary specifications for attributes include the assignment of a default domain, and a "coding strength." **Vocabulary Domains** are explicitly defined in Vocabulary Domains[5].

[3] HL7 Version 3 Standard: Data Types Abstract Specification, Health Level Seven, Inc. 3300 Washtenaw Avenue, Suite 227, Ann Arbor, MI 48104, http://www.hl7.org
[4] HL7 Version 3 Standard: XML Implementation Technology Specification – Data Types, Health Level Seven, Inc. 3300 Washtenaw Avenue, Suite 227, Ann Arbor, MI 48104, http://www.hl7.org
[5] HL7 Version 3 Standard: HL7 Vocabulary Domains, Health Level Seven, Inc. 3300 Washtenaw Avenue, Suite 227, Ann Arbor, MI 48104, http://www.hl7.org

They document cross-reference and alternative representations among coding systems, while keeping track of the logical concepts being expressed by each code. Each coded attribute may only be expressed using specific Vocabulary Domains.

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4.4 Conventions

4.5 Artifact Naming Conventions

The PHIN LDM utilizes naming conventions consistent with the HL7 RIM. The modeler may discover that name mapping may still be required when mapping to a physical database, in that the database may only support upper case names, for example.

4.5.1 Specific Conventions

The PHIN LDM utilizes mixed case characters, as follows:

Classnames are `CamelCase`, beginning with an uppercase letter.
Attribute names are `camelCase`, beginning with a lowercase letter.

Attributes that function as keys or local identifiers, usually have the uppercase characters "`ID`" in the name. If other descriptive characters are used, they are catenated via an underscore. For example, a simple identifier might may labeled "`ID`", where multiple identifiers in a class would be disambiguated as "`source_ID`" and "`target_ID`".

Parameterized datatypes are represented by `TYPE<T>`, where `TYPE` is the type specifier, such as `SET` or `IVL`, and `T` is the parameterized datatype. For example, `IVL<TS>` denotes an interval of type timestamp.

Datatype cardinalities are expressed using a bracket notation `[m..n]` where `m` denotes the minimum number of occurrences of the type, and `n` the maximum. `m` may be omitted, in which case the notation `[n]` denotes the maximum number of occurances of the type.

Diagrammatically, the UML is used to represent classes and attributes. A class is represented as a rectangular box, partitioned into three areas: title, attributes, and keys. The title appears at the top of the box, and is the name of the class, attributes are listed in the middle section, in the form "name: type", and keys are denoted in the bottom section. Keys take the form "`PK(attribute)`" or "`FK(attribute): reference`". The PK form indicates that the identified attribute is a primary key for that class, and the FK form indicates that the identified attribute is used as a foreign key to a value in the "reference" class.

The diagrams make use of the HL7 RIM color conventions, where Acts and Act Relationships are depicted in rose, Act Participations in cyan, Roles (EntityRoles) in yellow, and Entities in green. Complex datatypes are shown in pale yellow.

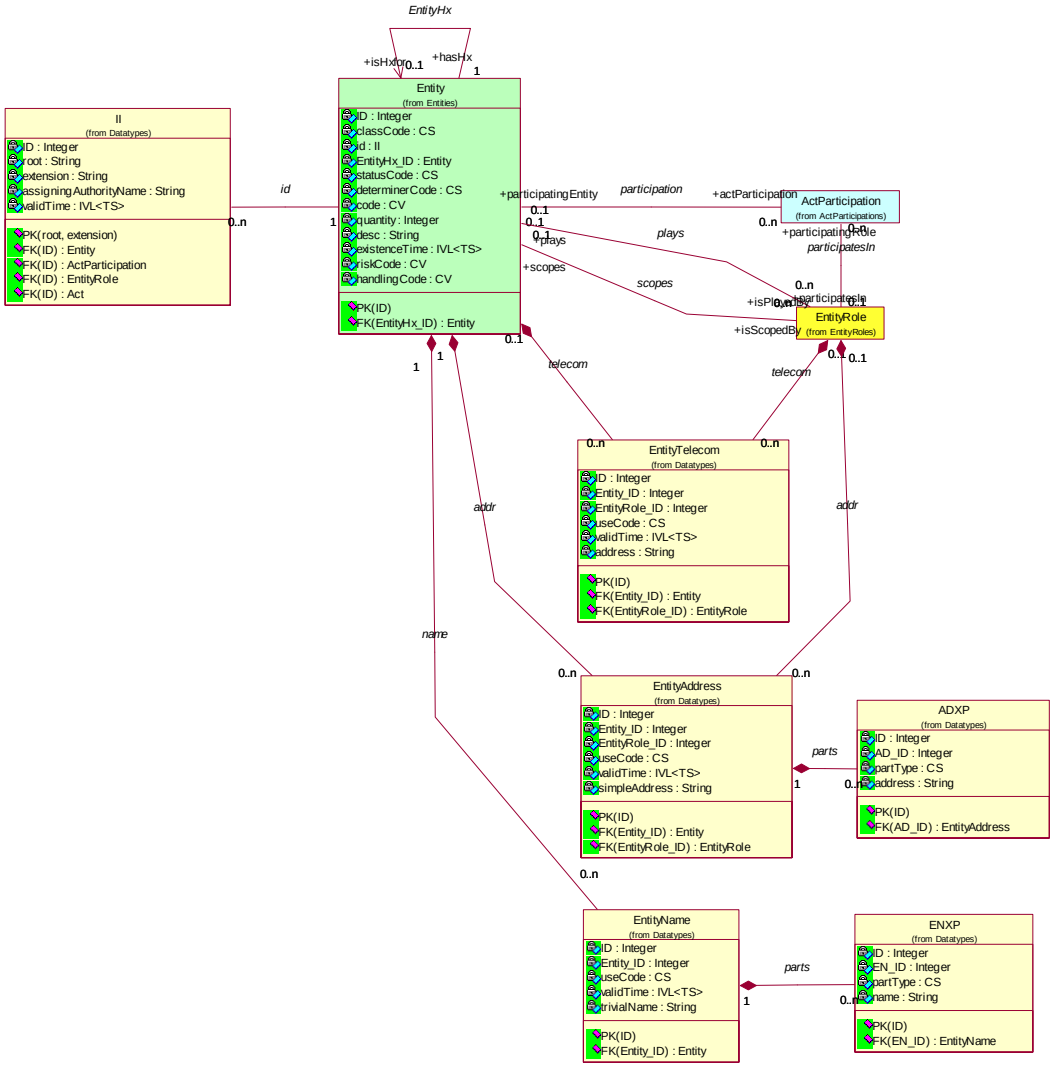
5 PHIN Logical Data Model Reference

This section provides a reference of the PHIN LDM classes, attributes, datatypes, and other relevant information.

5.1 Entities

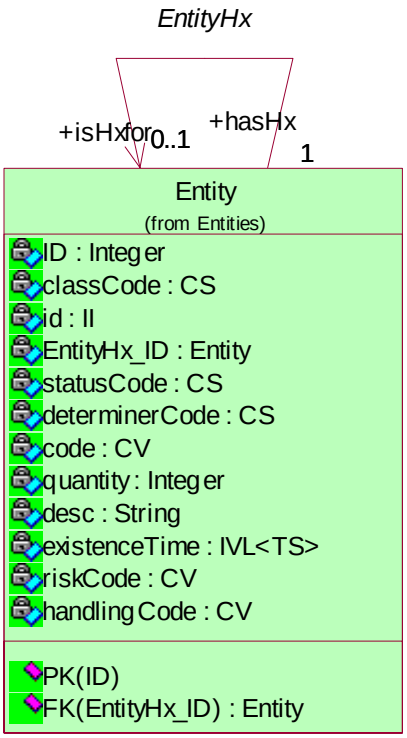
Entity classes model “physical things” either living, material, locational, or organizational. An entity has, had or will have existence. The only exceptions to this are Organization and Group, which while not having physical presence, fulfill the other characteristics of an Entity. The Entity hierarchy encompasses living subjects (including human beings), organizations, material, and places and their specializations. It does not indicate the roles played, or acts that these entities participate in.

In the PHIN LDM, we use a subset of the RIM specializations of entity classes pertinent to public health.


EntityHx
+isHxfor
0..1
+hasHx
1
Entity
(from Entities)
ID : Integer
classCode : CS
id : II
EntityHx_ID : Entity
statusCode : CS
determinerCode : CS
code : CV
quantity : Integer
desc : String
existenceTime : IVL<TS>
riskCode : CV
handlingCode : CV
PK(ID)
FK(EntityHx_ID) : Entity
II
(from Datatypes)
ID : Integer
root : String
extension : String
assigningAuthorityName : String
validTime : IVL<TS>
PK(root, extension)
FK(ID) : Entity
FK(ID) : ActParticipation
FK(ID) : EntityRole
FK(ID) : Act
id
0..n
1
+participatingEntity
participation
+actParticipation
0..1
0..n
ActParticipation
(from ActParticipations)
+participatingRole
participatesIn
plays
+plays
scopes
+scopes
+isPlayedBy
+isScopedBy
EntityRole
(from EntityRoles)
telecom
addr
name
EntityTelecom
(from Datatypes)
ID : Integer
Entity_ID : Integer
EntityRole_ID : Integer
useCode : CS
validTime : IVL<TS>
address : String
PK(ID)
FK(Entity_ID) : Entity
FK(EntityRole_ID) : EntityRole
EntityAddress
(from Datatypes)
ID : Integer
Entity_ID : Integer
EntityRole_ID : Integer
useCode : CS
validTime : IVL<TS>
simpleAddress : String
PK(ID)
FK(Entity_ID) : Entity
FK(EntityRole_ID) : EntityRole
ADXP
(from Datatypes)
ID : Integer
AD_ID : Integer
partType : CS
address : String
PK(ID)
FK(AD_ID) : EntityAddress
parts
EntityName
(from Datatypes)
ID : Integer
Entity_ID : Integer
useCode : CS
validTime : IVL<TS>
trivialName : String
PK(ID)
FK(Entity_ID) : Entity
ENXP
(from Datatypes)
ID : Integer
EN_ID : Integer
partType : CS
name : String
PK(ID)
FK(EN_ID) : EntityName

5.1.1 Entity

This abstract class handles the RIM class Entity and its inheritance model. The inheritance (or generalization) structures of the Entity class are mapped such that a general parent class Entity is joined with the specialized child classes. The generalized attributes and codes are expressed in the Entity class, and any specialized attributes are expressed in the child classes.



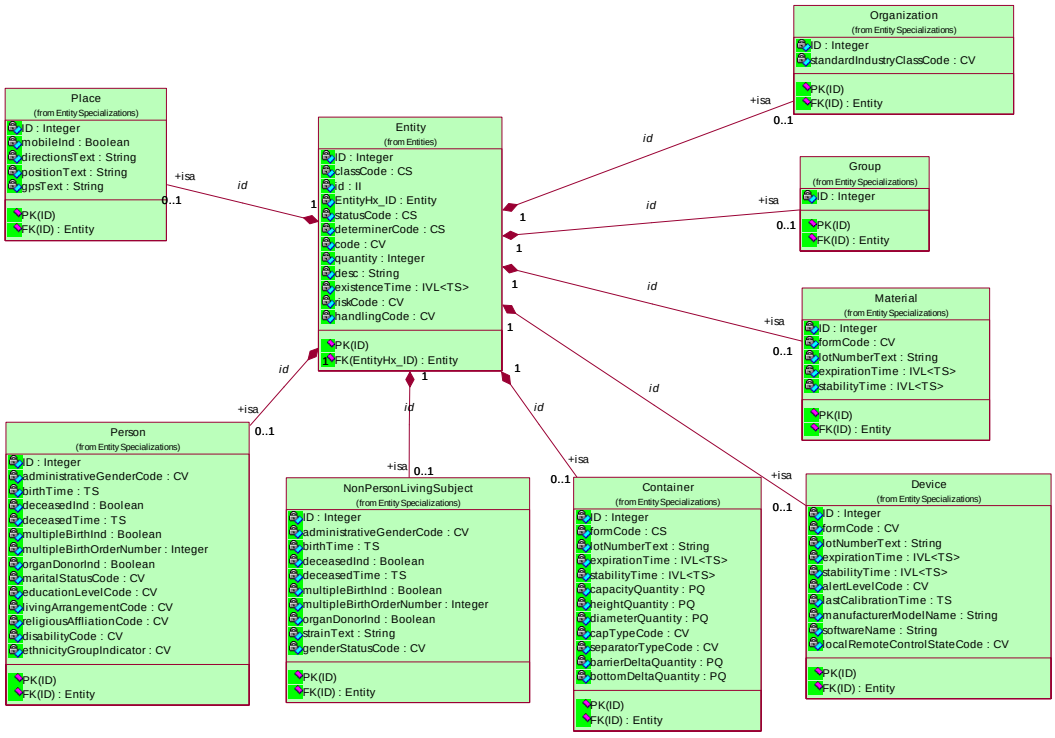
Entity:

Attribute	Type/Cardinality	Notes
ID	Integer	Local ID, primary key.
classCode	CS [1..1]	An HL7 defined value representing the class or category that the Entity instance represents. Examples include Person, Place, and Organization. Vocabulary Domain=*EntityClass*
id	II [0..*]	A unique identifier for the Entity. The id attribute is implemented as a FK reference from the II table.
participatesIn	ActParticipation [0..*]	An Entity participates in 0 or more Acts, via ActParticipation. An FK reference will exist from ActParticipation to Entity if such a relationship exists.
plays	EntityRole [0..*]	An Entity may *play* roles (have competence), which may occur independently of ActParticipations. An FK reference will exist from EntityRole to Entity if such a relationship exists.
scopes	EntityRole [0..*]	An Entity may *scope* roles (have competence), which may occur independently of ActParticipations. An FK reference will exist from EntityRole to Entity if such a relationship exists.
entityHx_ID	Entity[0..1]	A recursive FK reference back to Act, that can be used to represent a history of Acts, together with the statusCode attribute.
determinerCode	CS[1..1]	An HL7 defined value representing whether the Entity represents a kind, quantified kind or a specific instance. For example, a Person might be an instance (a particular person), a quantified kind (a dozen people) or a kind (people). Vocabulary domain=*EntityDeterminer*
code	CV[0..1]	A value representing the specific kind of Entity the instance represents. The value of this attribute belongs to any of several coding systems that depend on the type of Entity, as determined by the classCode attribute. Examples include: An inhaler or syringe are types of

		devices, hospital bed and room are types of places, a parrot is a type of animal. Vocabulary domain=*EntityCode*
statusCode	CS[0..1]	A value representing whether the information associated with the Entity is currently active or inactive for the purpose of participation in acts. Vocabulary Domain=*EntityStatus*
quantity	Integer[0..1]	The number or quantity of the Entity, with appropriate units, congruent with the value of Entity.determinerCode
desc	ED[0..1]	A textual or multimedia depiction of the Entity. If a description (desc) is present, it is meant as an aid to human understanding, and should not contain computable codes or semantic content. Computable information should be conveyed with the proper attributes of the relevant objects.
existenceTime	IVL<TS>[0..1]	An interval of time specifying the period in which the Entity physically existed. For example, a birthdate/deathdate, an organization's incorporation/disincorporation time, etc.
riskCode	CV[0..1]	A value representing the type of hazard or threat associated with the Entity. This attribute indicates that an entity may pose a risk to other entities, but does not convey a particular level of the risk. Examples include a risk of unknown infection from a biological material, a material is known to be infectious wiith human pathogenic microorganisms, or a material is corrosive. Vocabulary Domain=*EntityRisk*
handlingCode	CV[0..1]	A value representing special handling requirements for the Entity. Examples include: shake before use, keep upright, do not expose to atmosphere. Vocabulary Domain=*EntityHandling*
name	Bag<EntityName>[0..*]	A non-unique textual identifier or moniker for the Entity. In the case of de-identified data, the name attribute

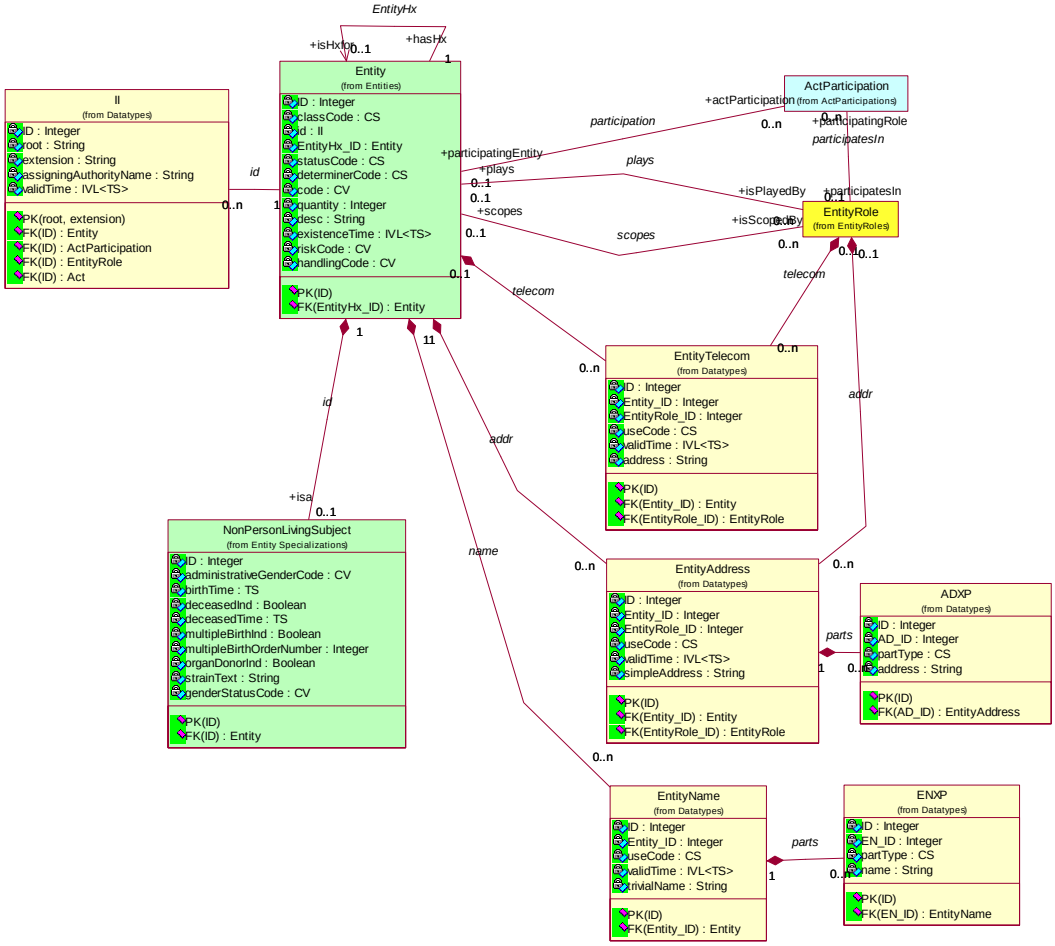
		may be null. An FK reference will exist from EntityName to Entity if the name attribute is valued. The bag collection is used to handle a name used in multiple ways, for example legal and alias.
telecom	Bag<EntityTelecom>[0..*]	A telecommunication address for the Entity. Telecommunication addresses include phone, email, and others, and are specified with a use code to denote work, home, etc. The telecom attribute is an FK reference from the EntityTelecom table.
addr	Bag<EntityAddress>[0..*]	The address of the Entity. The addr attribute is an FK reference from the EntityAddress table. Addresses are specified with a use code to denote postal, home, work, etc. Note that addr will not necessarily be appropriate for all specializations of Entity, but is included as an attribute at the base level for full generality.

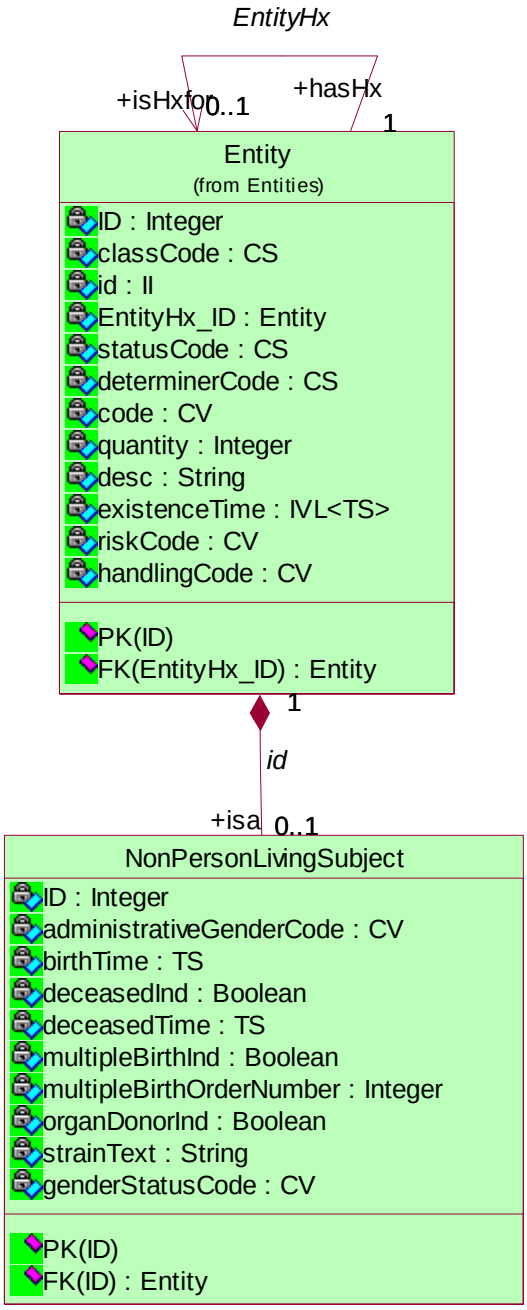
5.1.2 Entity Specializations



5.1.2.1 **NonPersonLivingSubject**

A subtype of Entity representing an organism or complex animal, alive or not, except the species homo sapiens. Instances of this class encompass mammals, birds, fishes, bacteria, parasites, fungi and viruses. Examples include: Cattle, birds, bacteria , molds and fungi, microorganism or a plant of any taxonomic group, etc.
Living organisms other than human beings may require additional characterizing information such as genetic strain identification that cannot be conveyed in the Entity.code. This class contains "static" or "administrative" attributes of interest to medicine that differentiate non-person living entities from other Entities. This class can be used to represent either a single Non-Person Living Subject or a group of Non-Person Living Subject based on the value of Entity.determinerCode and Entity.quantity



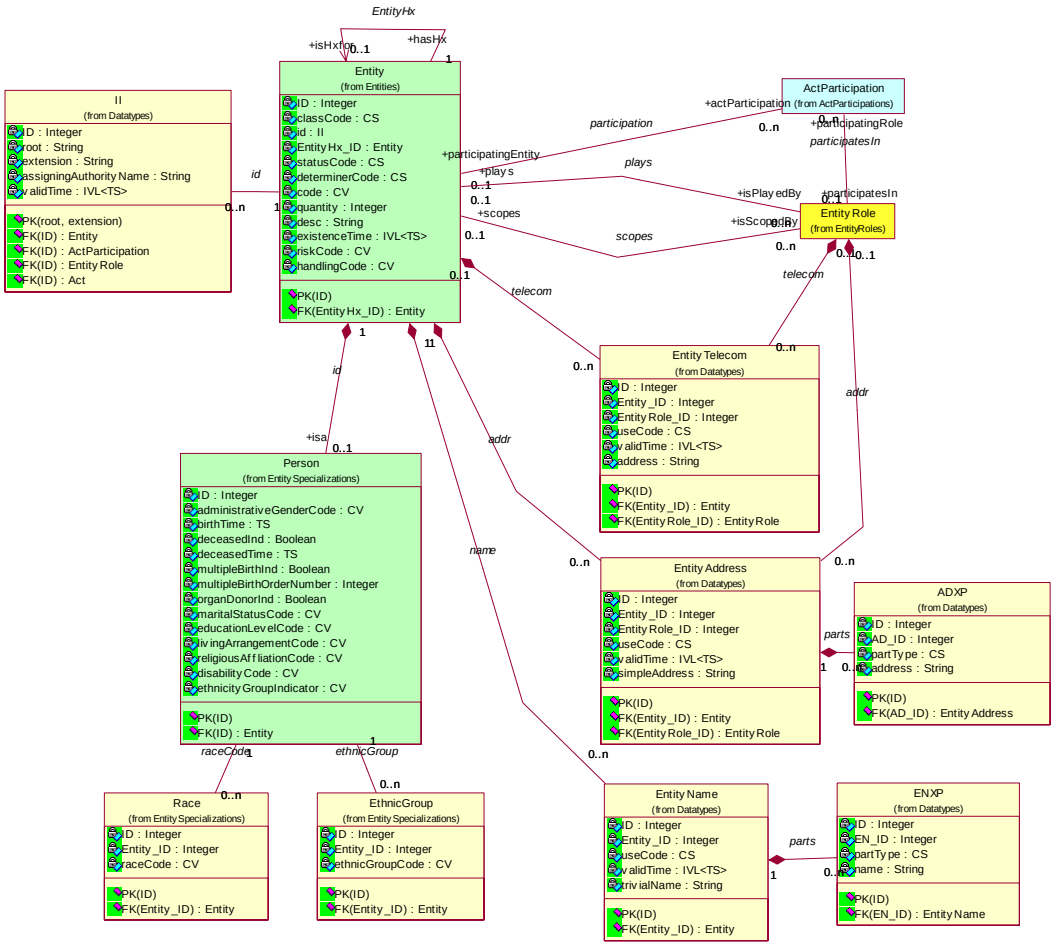

EntityHx
+isHxfor
0..1
+hasHx
1
Entity
(from Entities)
ID : Integer
classCode : CS
id : II
EntityHx_ID : Entity
statusCode : CS
determinerCode : CS
code : CV
quantity : Integer
desc : String
existenceTime : IVL<TS>
riskCode : CV
handlingCode : CV
PK(ID)
FK(EntityHx_ID) : Entity
1
id
+isa
0..1
NonPersonLivingSubject
ID : Integer
administrativeGenderCode : CV
birthTime : TS
deceasedInd : Boolean
deceasedTime : TS
multipleBirthInd : Boolean
multipleBirthOrderNumber : Integer
organDonorInd : Boolean
strainText : String
genderStatusCode : CV
PK(ID)
FK(ID) : Entity

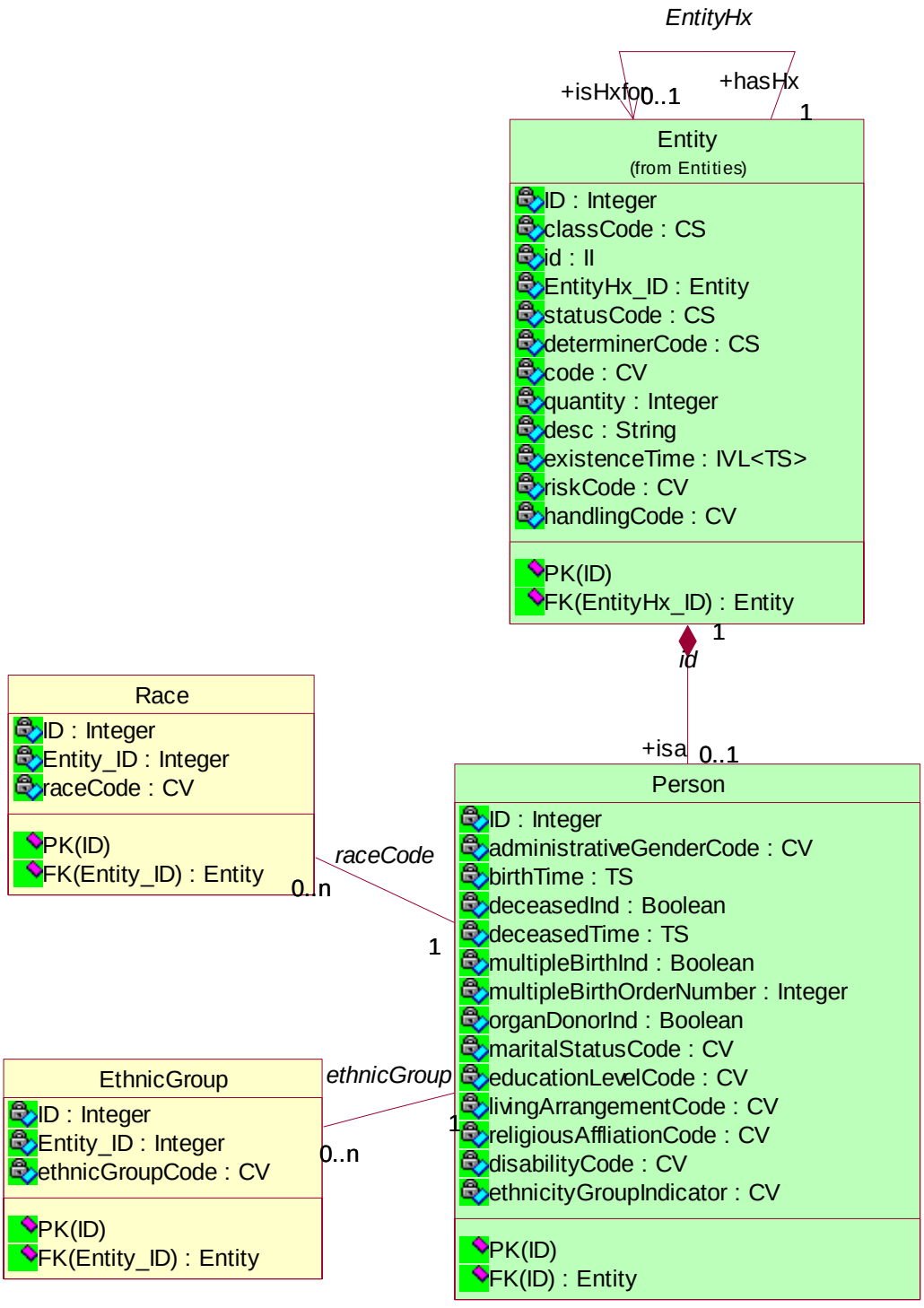
NonPersonLivingSubject (Specializes Entity)

Attribute	Type/Cardinality	Notes
administrativeGenderCode	CV	A coded value representing the gender (sex) of a Living subject. This attribute does not include terms related to clinical gender. Gender is a complex physiological, genetic and sociological concept that requires multiple observations in order to be comprehensively described. Vocabulary Domain=*AdministrativeGender*
birthTime	TS	The date and time of a living subject's birth or hatching
deceasedInd	Boolean	An indication that the subject is dead.
deceasedTime	TS	The date and time that a living subject's death occurred
multipleBirthInd	Boolean	An indication as to whether the living subject is part of a multiple birth
multipleBirthOrderNumber	Integer	The order in which this living subject was born if part of a multiple birth
organDonorInd	Boolean	An indication that the living subject is a candidate to serve as an organ donor.
strainText	String	A text string representing a specific genotypic or phenotypic variant of a NonPersonLivingSubject
genderStatusCode	CV	A value representing whether the primary reproductive organs of NonPersonLivingSubject are present. Vocabulary Domain=*GenderStatus*

5.1.2.2 **Person**

A subtype of Entity representing a human being, alive or not. This class can be used to represent either a single individual or a group of individuals based on the value of Entity.determinerCode and Entity.quantity




EntityHx
+isHxfor
0..1
+hasHx
1
Entity
(from Entities)
ID : Integer
classCode : CS
id : II
EntityHx_ID : Entity
statusCode : CS
determinerCode : CS
code : CV
quantity : Integer
desc : String
existenceTime : IVL<TS>
riskCode : CV
handlingCode : CV
PK(ID)
FK(EntityHx_ID) : Entity
1
id
+isa
0..1
Race
ID : Integer
Entity_ID : Integer
raceCode : CV
PK(ID)
FK(Entity_ID) : Entity
raceCode
0..n
1
Person
ID : Integer
administrativeGenderCode : CV
birthTime : TS
deceasedInd : Boolean
deceasedTime : TS
multipleBirthInd : Boolean
multipleBirthOrderNumber : Integer
organDonorInd : Boolean
maritalStatusCode : CV
educationLevelCode : CV
livingArrangementCode : CV
religiousAffliationCode : CV
disabilityCode : CV
ethnicityGroupIndicator : CV
PK(ID)
FK(ID) : Entity
EthnicGroup
ID : Integer
Entity_ID : Integer
ethnicGroupCode : CV
PK(ID)
FK(Entity_ID) : Entity
ethnicGroup
0..n
1

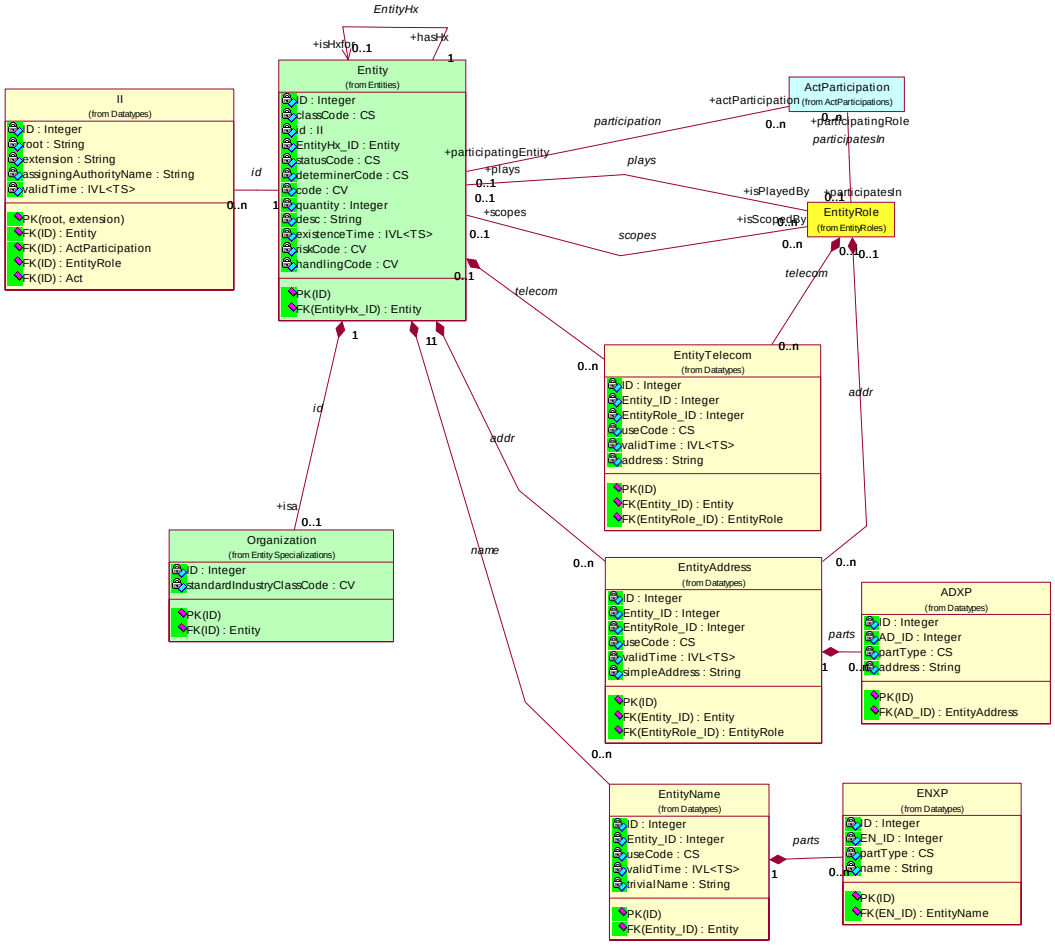
Person (Specializes Entity)

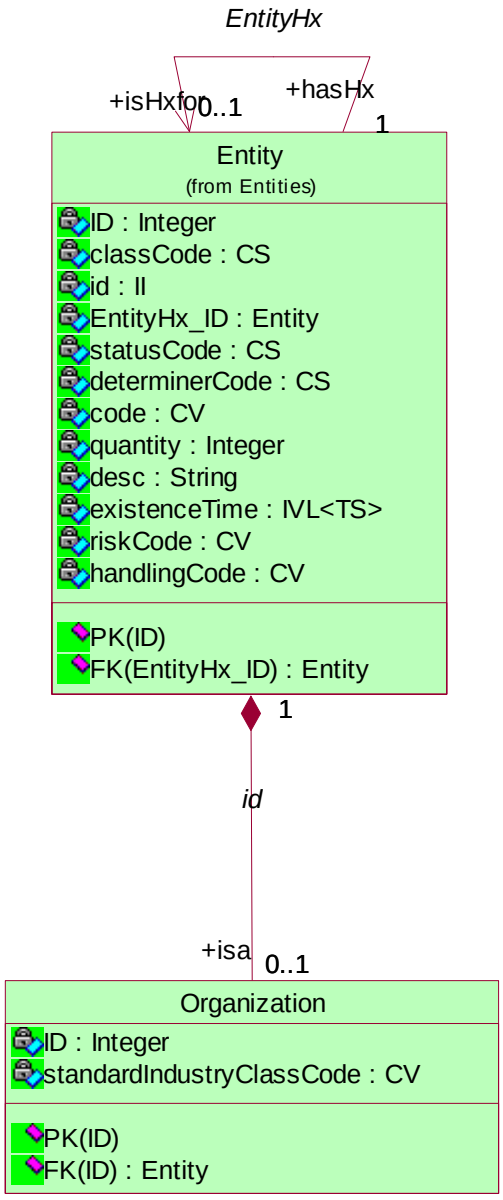
Attribute	Type/Cardinality	Notes
administrativeGenderCode	CV	A coded value representing the gender (sex) of a Living subject. This attribute does not include terms related to clinical gender. Gender is a complex physiological, genetic and sociological concept that requires multiple observations in order to be comprehensively described. Vocabulary Domain=*AdministrativeGender*
birthTime	TS	The date and time of the person's birth
deceasedInd	Boolean	An indication that the person is dead.
deceasedTime	TS	The date and time that a person's death occurred
multipleBirthInd	Boolean	An indication as to whether the person is part of a multiple birth
multipleBirthOrderNumber	Integer	The order in which this person was born if part of a multiple birth
organDonorInd	Boolean	An indication that the person is a candidate to serve as an organ donor.
maritalStatusCode	CV	A value representing the domestic partnership status of a person. Vocabulary Domain=*MaritalStatus*
educationLevelCode	CV	The highest level of education a person achieved (e.g. elementary school, high school or secondary school degree complete, college or baccalaureate degree complete). Vocabulary Domain=*EducationLevel*
livingArrangementCode	CV	A value specifying the housing situation of a person. Vocabulary Domain=*LivingArrangement*
religiousAffiliationCode	CV	The primary religious preference of a person (e.g.

		Hinduism, Islam, Roman Catholic Church). Vocabulary Domain=*ReligiousAffiliation*
disabilityCode	CV	A value identifying a person's disability. Vocabulary Domain=*PersonDisabilityType*
raceCode	Set<Race>[0..*]	A value representing the race of a person. An FK reference will exist from Race to Person if the raceCode attribute is valued.
ethnicGroup	Set<EthnicGroup>[0..*]	The ethnic group of the person. An FK reference will exist from EthnicGroup to Person if the ethnicGroup attribute is valued.
ethnicGroupIndicator	CV	A value indicating if the ethnic group of the person is Hispanic. Vocabulary Domain=*EthnicGroup*

5.1.2.3 Organization

A subtype of Entity representing a formalized group of entities with a common purpose (e.g. administrative, legal, political) and the infrastructure to carry out that purpose. Examples include: Companies and institutions, a government department, an incorporated body that is responsible for administering a facility, an insurance company.



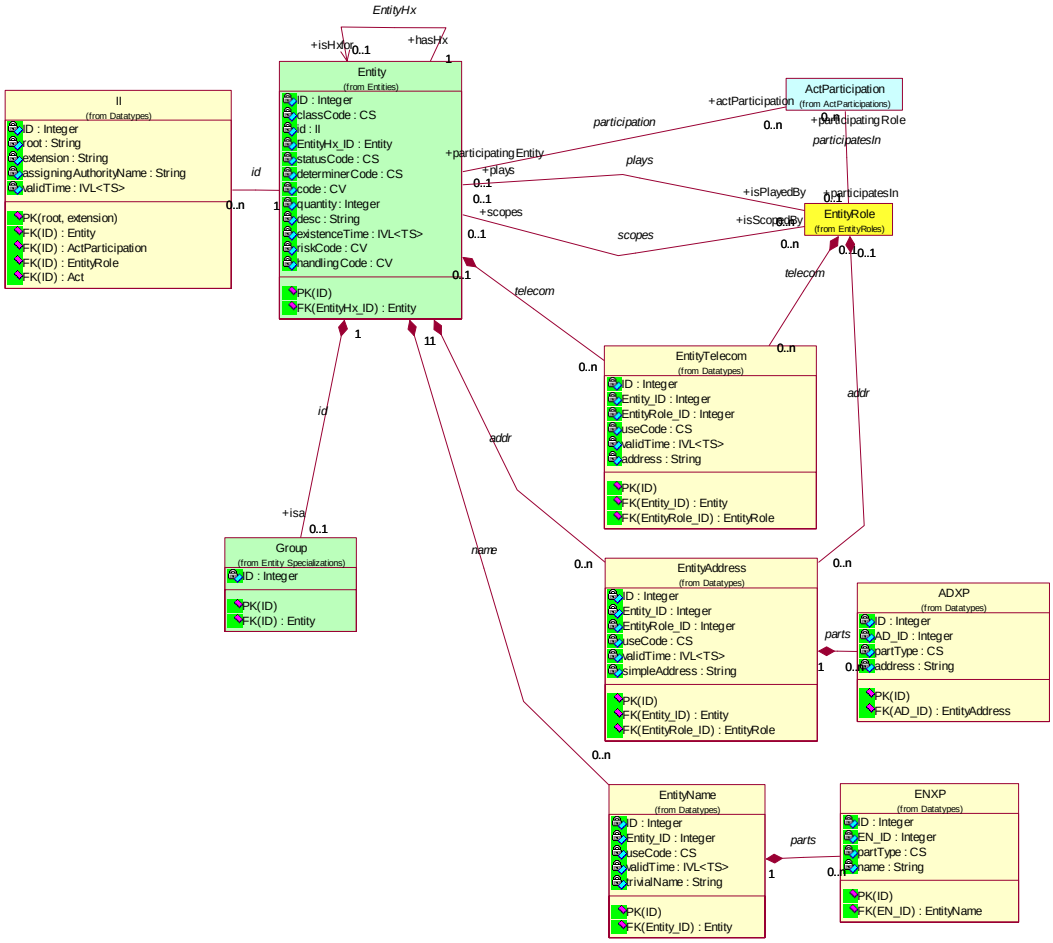


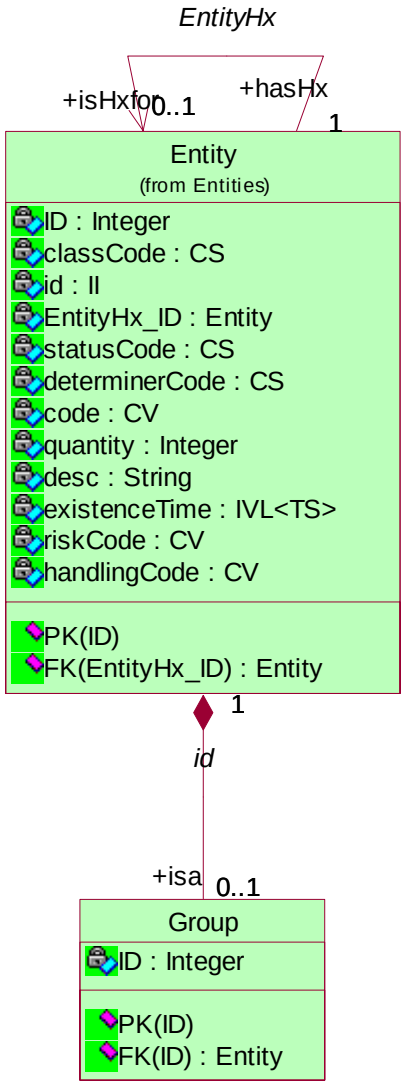
Organization (Specializes Entity)

Attribute	Type/Cardinality	Notes
standardIndustryClassCode	CV [0..1]	A value representing the industrial category of an organization entity. Vocabulary Domain=*OrganizationIndustryClass*

5.1.2.4 Group

This class specializes Entity and models groups of entities. The class itself is a container object for the collection of objects (entities) that are related via an EntityRole. The Group scopes the EntityRole, which is a *member* or *part* role. This class can be used to handle a group of persons who are part of a subjects of a study, for example. A group is similar to an organization in structure, however, may not be formalized with organizational behavior. No standardIndustryCode is used.





Group (Specializes Entity)

Attribute	Type/Cardinality	Notes

(There are no further attributes of Group that specialize Entity)

5.1.2.5 Material, ManufacturedMaterial

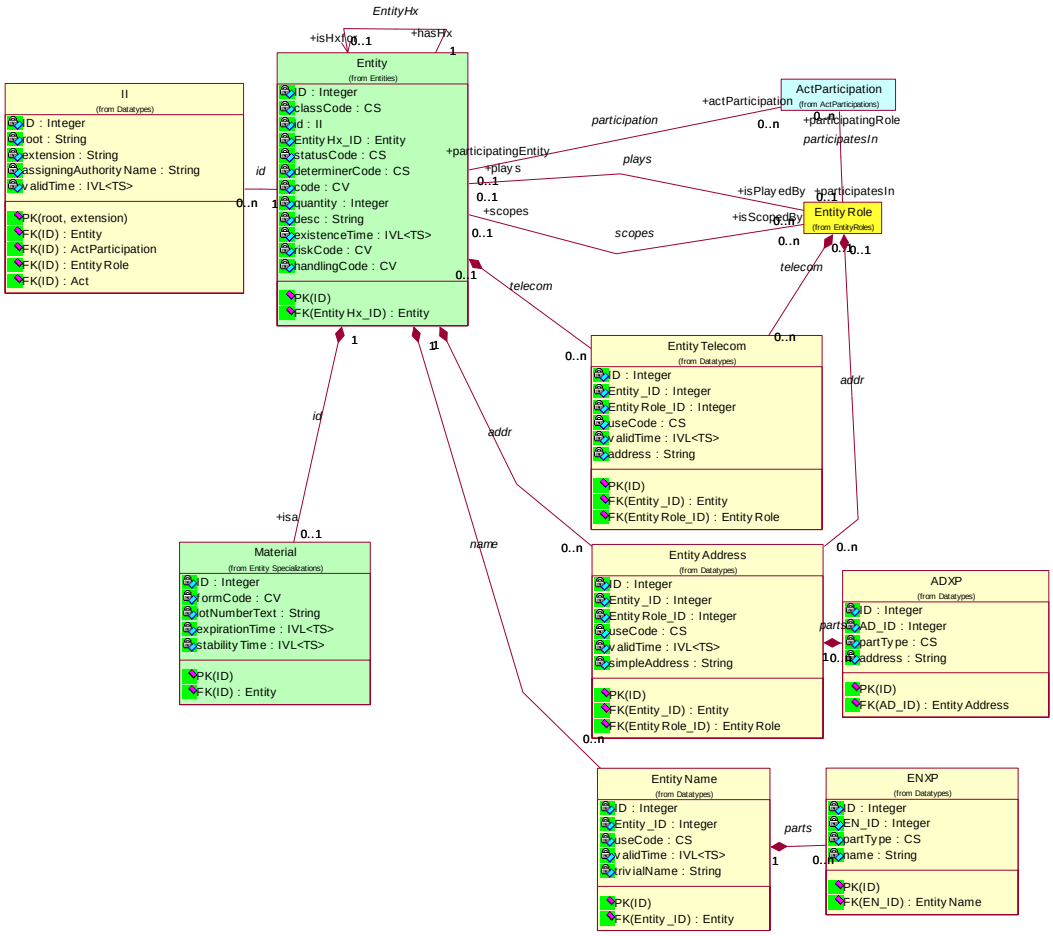
These specializations of Entity are modeled together. The Material encompasses all non-manufactured materials, Manufactured Material encompasses all others except Devices and Containers.

Material
A subtype of Entity that is inanimate and locationally independent. Examples include: Pharmaceutical substances (including active vaccines containing retarded virus), disposable supplies, durable equipment, food items (including meat or plant products), waste, traded goods, etc.

Manufactured Material
ManufacturedMaterial is a subtype of Entity representing an Entity or combination of Entities transformed for a particular purpose by a non-natural or manufacturing process.

Manufactured or processed products are considered material, even if they originate as living matter. Materials come in a wide variety of physical forms and can pass through different states (ie. Gas, liquid, solid) while still retaining their physical composition and material characteristics.

Examples include: Processed food products, saline for infusion, etc. This class is used to further define the characteristics of Entities that are created out of other Entities. These entities are identified and tracked through associations and mechanisms unique to the class, such as lotName, stabilityTime and expirationTime.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classCode : CS
id : II
EntityHx_ID : Entity
statusCode : CS
determinerCode : CS
code : CV
quantity : Integer
desc : String
existenceTime : IVL<TS>
riskCode : CV
handlingCode : CV
PK(ID)
FK(EntityHx_ID) : Entity
II
(from Datatypes)
ID : Integer
root : String
extension : String
assigningAuthorityName : String
validTime : IVL<TS>
PK(root, extension)
FK(ID) : Entity
FK(ID) : ActParticipation
FK(ID) : EntityRole
FK(ID) : Act
id
participation
+actParticipation
ActParticipation
(from ActParticipations)
+participatingRole
participatesIn
+participatingEntity
plays
+plays
+isPlayedBy
+participatesIn
+scopes
+isScopedBy
scopes
Entity Role
(from EntityRoles)
telecom
Entity Telecom
(from Datatypes)
ID : Integer
Entity_ID : Integer
EntityRole_ID : Integer
useCode : CS
validTime : IVL<TS>
address : String
PK(ID)
FK(Entity_ID) : Entity
FK(EntityRole_ID) : EntityRole
addr
+isa
Material
(from Entity Specializations)
ID : Integer
formCode : CV
lotNumberText : String
expirationTime : IVL<TS>
stabilityTime : IVL<TS>
PK(ID)
FK(ID) : Entity
name
Entity Address
(from Datatypes)
ID : Integer
Entity_ID : Integer
EntityRole_ID : Integer
useCode : CS
validTime : IVL<TS>
simpleAddress : String
PK(ID)
FK(Entity_ID) : Entity
FK(EntityRole_ID) : EntityRole
ADXP
(from Datatypes)
ID : Integer
AD_ID : Integer
partType : CS
address : String
PK(ID)
FK(AD_ID) : Entity Address
parts
Entity Name
(from Datatypes)
ID : Integer
Entity_ID : Integer
useCode : CS
validTime : IVL<TS>
trivialName : String
PK(ID)
FK(Entity_ID) : Entity
ENXP
(from Datatypes)
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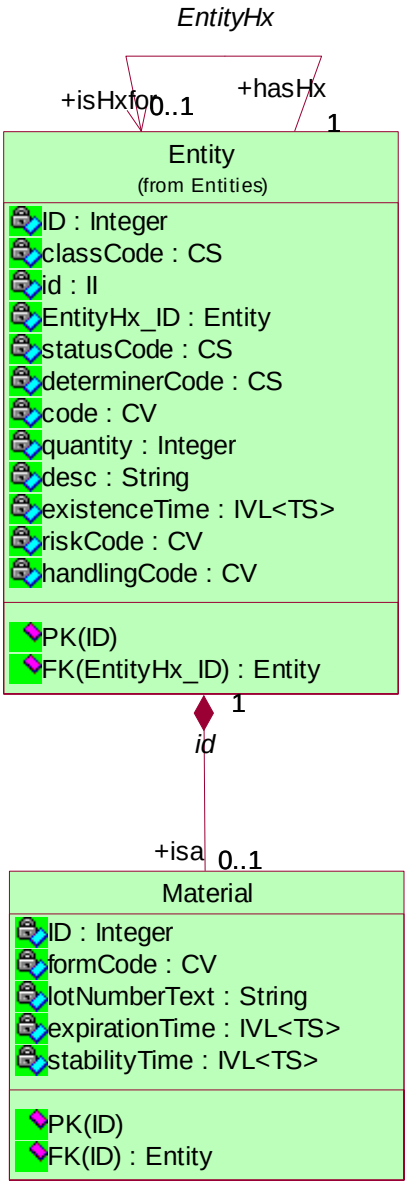
EN_ID : Integer
partType : CS
name : String
PK(ID)
FK(EN_ID) : Entity Name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+hasHx
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id : II
EntityHx_ID : Entity
statusCode : CS
determinerCode : CS
code : CV
quantity : Integer
desc : String
existenceTime : IVL<TS>
riskCode : CV
handlingCode : CV
PK(ID)
FK(EntityHx_ID) : Entity
1
id
+isa
0..1
Material
ID : Integer
formCode : CV
lotNumberText : String
expirationTime : IVL<TS>
stabilityTime : IVL<TS>
PK(ID)
FK(ID) : Entity

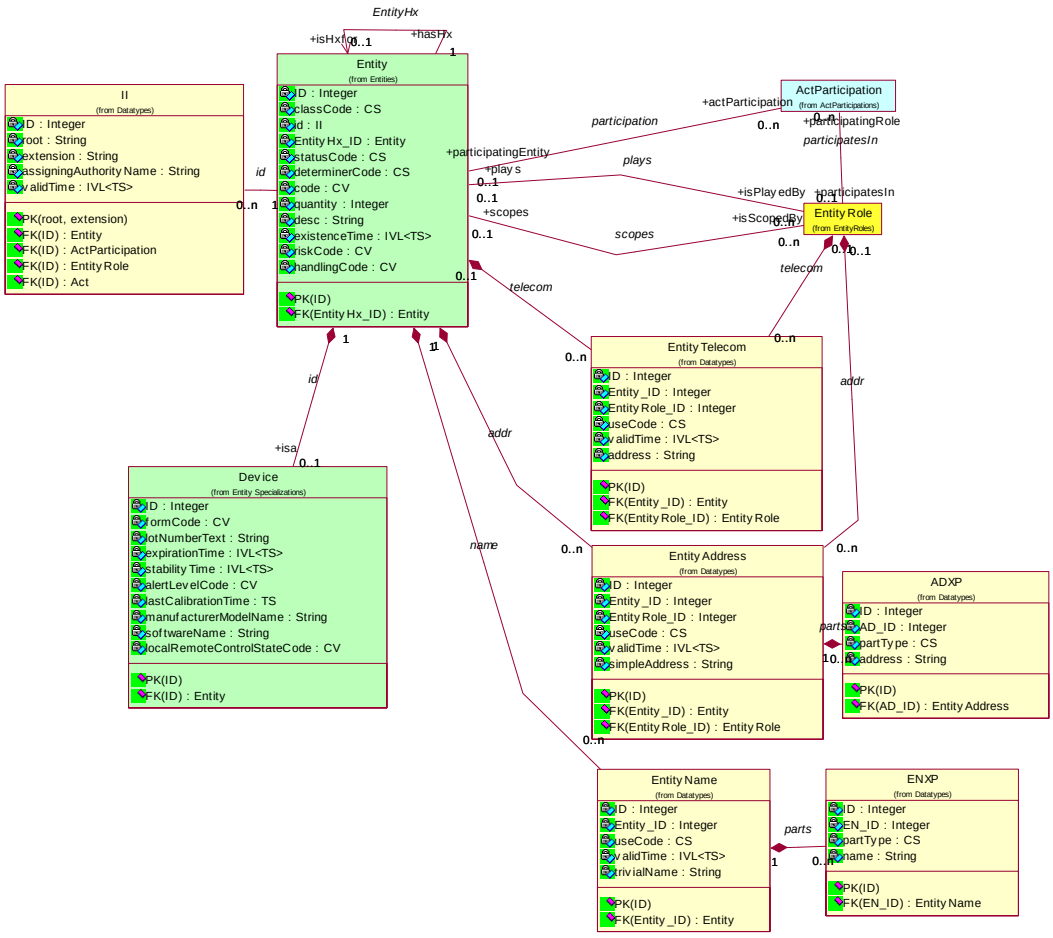
Material (Specializes Entity)

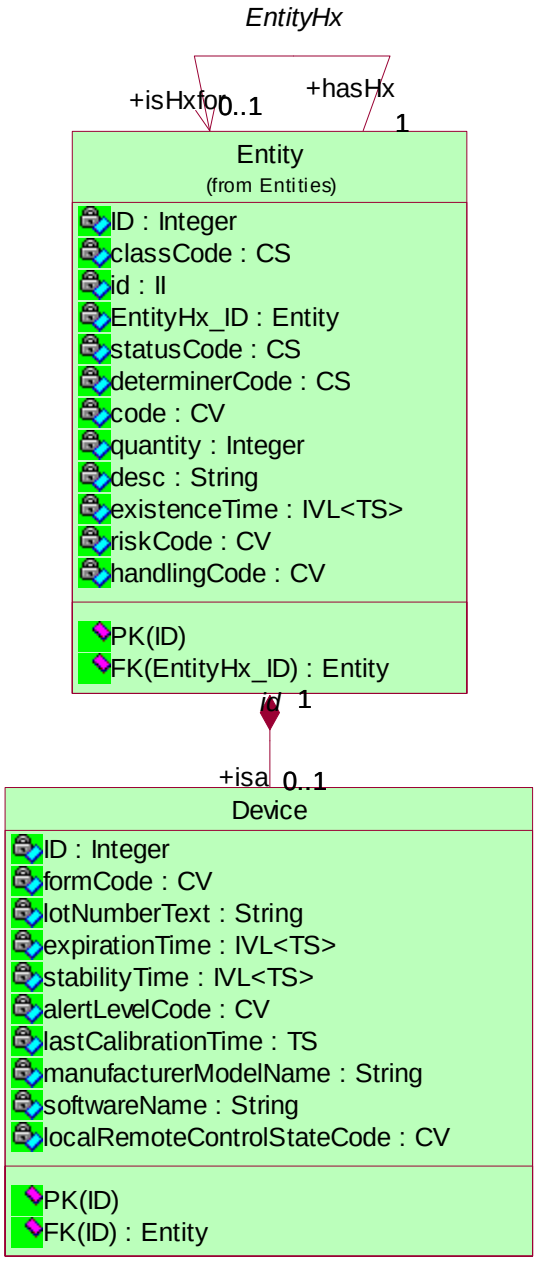
Attribute	Type/Cardinality	Notes
formCode	CV	A value representing the state (solid, liquid, gas) and nature of the material. Examples: For therapeutic substances, the dose form, such as tablet, ointment, gel, etc. Vocabulary Domain=*MaterialForm*
lotNumberText	String	An alphanumeric string used to identify a particular batch of manufactured material. The lot name is usually printed on the label attached to the container holding the substance and/or on the packaging which houses the container. Note that a lot number is not meant to be a unique identifier, but is meaningful only when the product kind and manufacturer are also identified. May be Null if not manufactured material
expirationTime	IVL<TS> [0..1]	The date and time the manufacturer no longer ensures the safety, quality, and/or proper functioning of the material. There is a need in many situations that the materials used are of a specific quality or potency or functional status. The ending date for this guarantee is specified by the manufacturer. After that date, while the material may still provide the same characteristics, the manufacturer no longer takes responsibility that the product will perform as specified and denies responsibility for failure of the material after that date. May be Null if not manufactured material
stabilityTime	IVL<TS> [0..1]	The time at which the material is considered useable after it is activated. Examples include:

		After opening a bottle of a liquid. The mixing of two chemicals for an analysis that must be mixed and used within two hours or their activity diminishes. May be Null if not manufactured material

5.1.2.6 Device

A subtype of ManufacturedMaterial used in an activity, without being substantially changed through that activity. The kind of device is identified by the code attribute inherited from Entity. This includes durable (reusable) medical equipment as well as disposable equipment. Example: chemistry analyzer.

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+hasHx
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EntityHx_ID : Entity
statusCode : CS
determinerCode : CS
code : CV
quantity : Integer
desc : String
existenceTime : IVL<TS>
riskCode : CV
handlingCode : CV
PK(ID)
FK(EntityHx_ID) : Entity
id
1
+isa
0..1
Device
ID : Integer
formCode : CV
lotNumberText : String
expirationTime : IVL<TS>
stabilityTime : IVL<TS>
alertLevelCode : CV
lastCalibrationTime : TS
manufacturerModelName : String
softwareName : String
localRemoteControlStateCode : CV
PK(ID)
FK(ID) : Entity

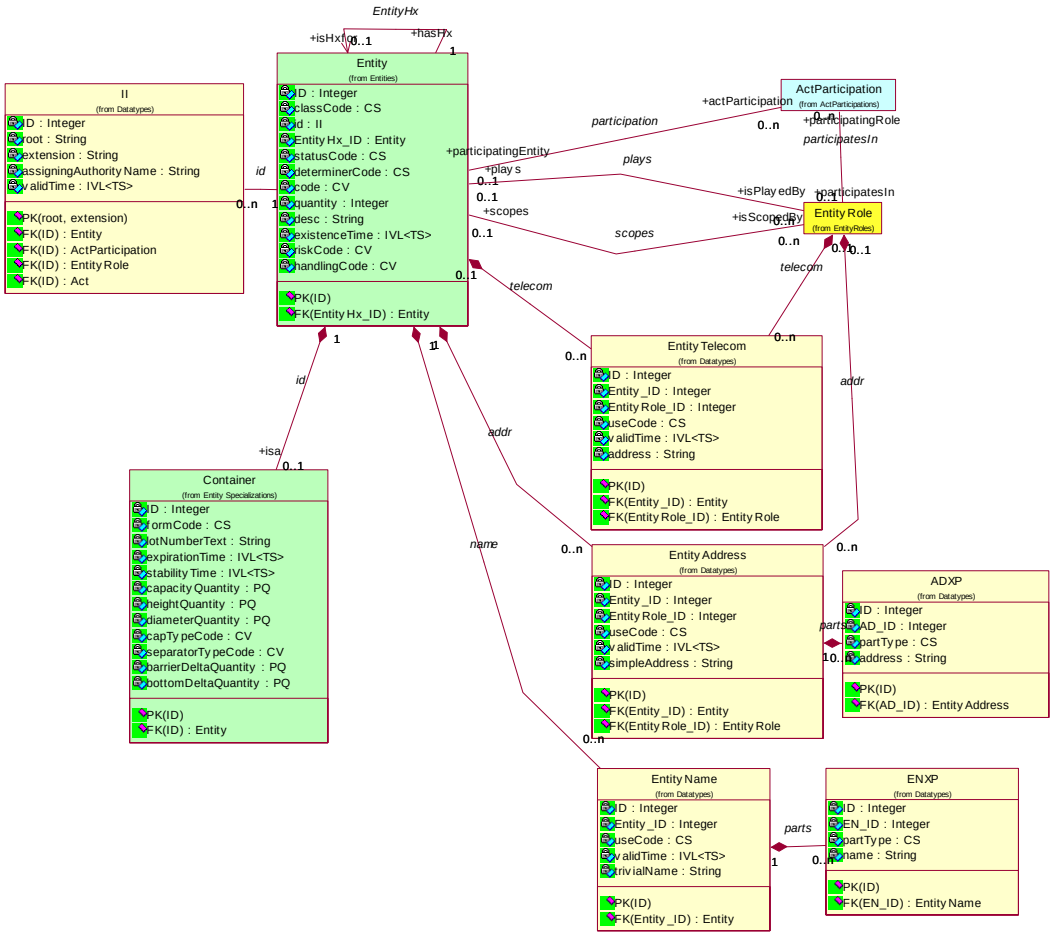
Device (Specializes Entity)

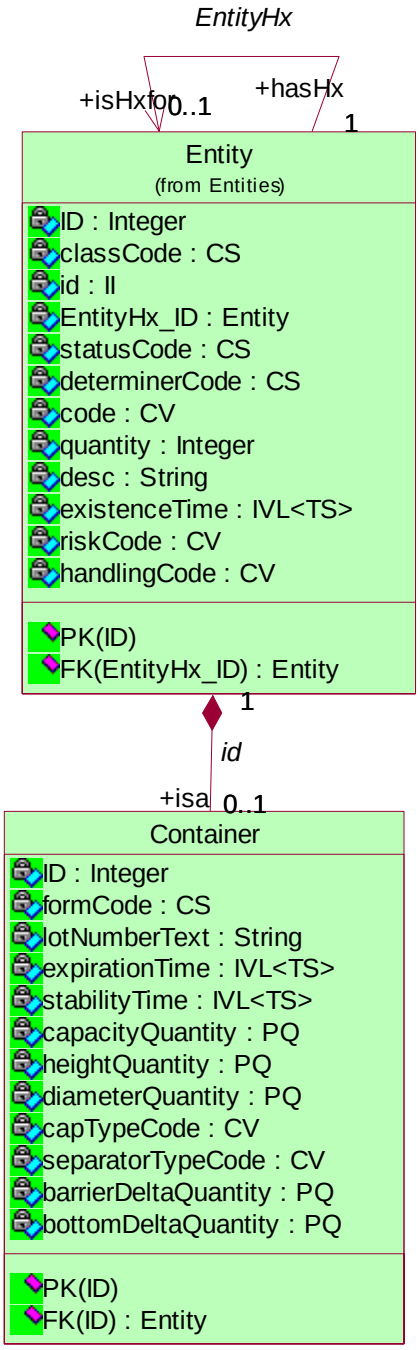
Attribute	Type/Cardinality	Notes
formCode	CV	A value representing the state (solid, liquid, gas) and nature of the material. Examples: For therapeutic substances, the dose form, such as tablet, ointment, gel, etc. Vocabulary Domain=*MaterialForm*
lotNumberText	String	An alphanumeric string used to identify a particular batch of manufactured material. The lot name is usually printed on the label attached to the container holding the substance and/or on the packaging which houses the container. Note that a lot number is not meant to be a unique identifier, but is meaningful only when the product kind and manufacturer are also identified.
expirationTime	IVL<TS> [0..1]	The date and time the manufacturer no longer ensures the safety, quality, and/or proper functioning of the material. There is a need in many situations that the materials used are of a specific quality or potency or functional status. The ending date for this guarantee is specified by the manufacturer. After that date, while the material may still provide the same characteristics, the manufacturer no longer takes responsibility that the product will perform as specified and denies responsibility for failure of the material after that date.
stabilityTime	IVL<TS> [0..1]	The time at which the material is considered useable after it is activated. Examples include: After opening a bottle of a liquid. The mixing of two chemicals for an analysis that must be mixed and used within two hours or their activity diminishes.
alertLevelCode	CV [0..1]	Values representing the current functional activity of an automated device. Examples include: Normal, Warning, Critical. Vocabulary Domain=*DeviceAlertLevel*

lastCalibrationTime	Datetime	The date/time of the last calibration of the device. Devices are required to be recalibrated at specific intervals to ensure they are performing within specifications. The accepted interval between calibrations varies with protocols. Thus for results to be valid, the precise time/date of last calibration is a critical component.
manufacturerModelName	String	The human designated moniker for a device assigned by the manufacturer. Examples:Perkin Elmer 400 Inductively Coupled Plasma Unit
softwareName	String	The moniker, version and release of the software that operates the device as assigned by the software manufacturer or developer. Examples: Agilent Technologies Chemstation A.08.xx
localRemoteControlStateCode	CV [0..1]	Values representing the current state of control associated with the device. Examples: A device can either work autonomously (localRemoteControlStateCode="Local") or it can be controlled by another system (localRemoteControlStateCode="Remote"). Vocabulary Domain=*LocalRemoteControlState*

5.1.2.7 Container

A subtype of ManufacturedMaterial used to hold other Entities for purposes such as transportation or protection of contents from loss or damage. A container is related to a content material through Role.classCode = CONT (content). Examples: bottle, syringe.

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0..1
+hasHx
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ID : Integer
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id : II
EntityHx_ID : Entity
statusCode : CS
determinerCode : CS
code : CV
quantity : Integer
desc : String
existenceTime : IVL<TS>
riskCode : CV
handlingCode : CV
PK(ID)
FK(EntityHx_ID) : Entity
1
id
+isa
0..1
Container
ID : Integer
formCode : CS
lotNumberText : String
expirationTime : IVL<TS>
stabilityTime : IVL<TS>
capacityQuantity : PQ
heightQuantity : PQ
diameterQuantity : PQ
capTypeCode : CV
separatorTypeCode : CV
barrierDeltaQuantity : PQ
bottomDeltaQuantity : PQ
PK(ID)
FK(ID) : Entity

Container (Specializes Entity)

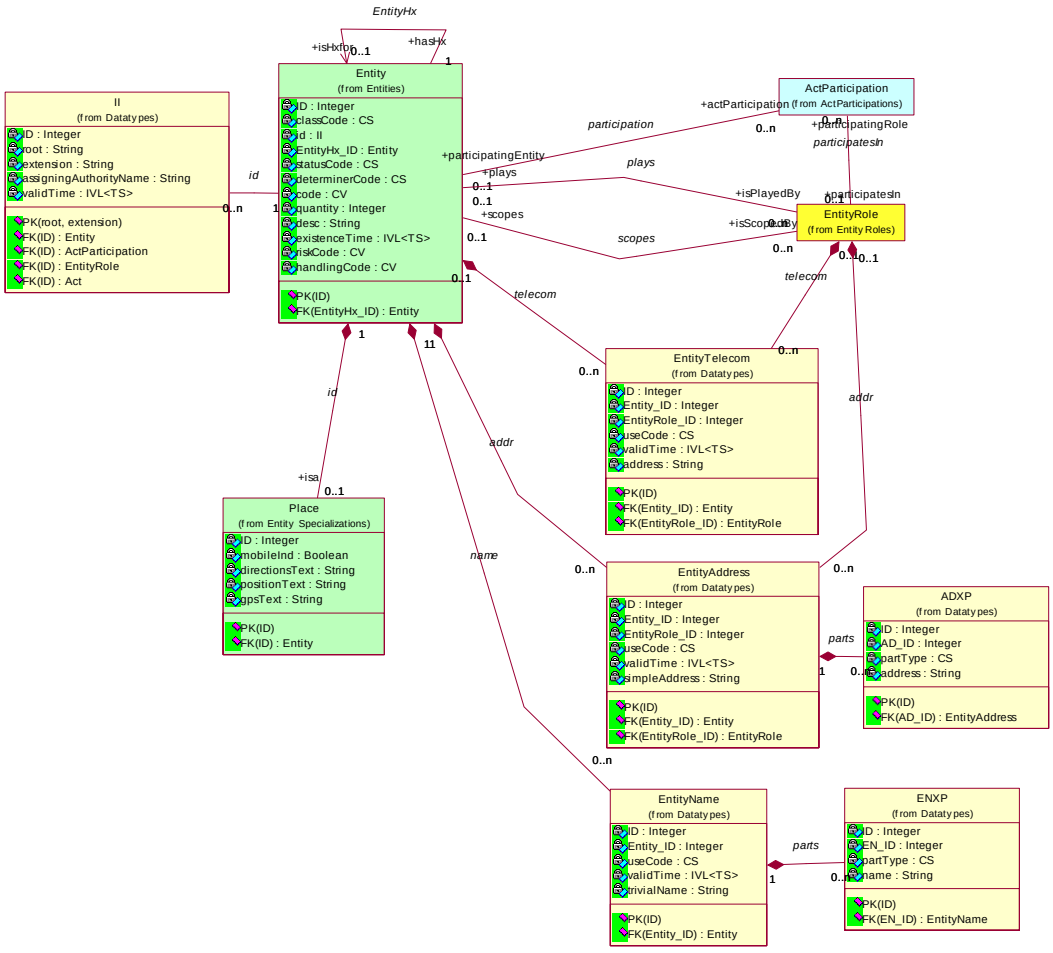
Attribute	Type/Cardinality	Notes
formCode	CV	A value representing the state (solid, liquid, gas) and nature of the material. Examples: For therapeutic substances, the dose form, such as tablet, ointment, gel, etc. Vocabulary Domain=*MaterialForm*
lotNumberText	String	An alphanumeric string used to identify a particular batch of manufactured material. The lot name is usually printed on the label attached to the container holding the substance and/or on the packaging which houses the container. Note that a lot number is not meant to be a unique identifier, but is meaningful only when the product kind and manufacturer are also identified.
expirationTime	IVL<TS> [0..1]	The date and time the manufacturer no longer ensures the safety, quality, and/or proper functioning of the material. There is a need in many situations that the materials used are of a specific quality or potency or functional status. The ending date for this guarantee is specified by the manufacturer. After that date, while the material may still provide the same characteristics, the manufacturer no longer takes responsibility that the product will perform as specified and denies responsibility for failure of the material after that date.
stabilityTime	IVL<TS> [0..1]	The time at which the material is considered useable after it is activated. Examples include: After opening a bottle of a liquid. The mixing of two chemicals for an analysis that must be mixed and used within two hours or

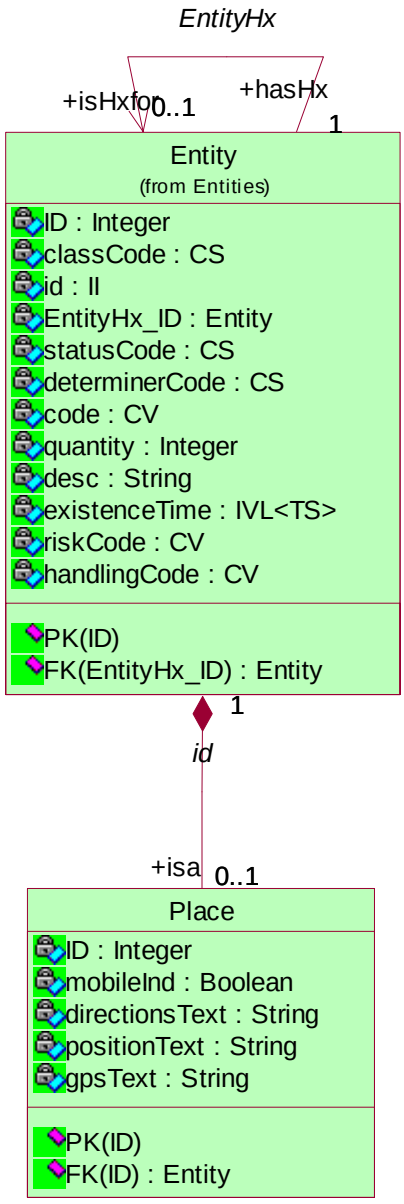
		their activity diminishes.
capacityQuantity	PQ	The functional capacity of the container.
heightQuantity	PQ	The height of the container.
diameterQuantity	PQ	The outside diameter of the container.
capTypeCode	CV	The type of container cap consistent with decapping, piercing or other automated manipulation. Vocabulary Domain=*ContainerCap*
separatorTypeCode	CV	A material added to a container to facilitate and create a physical separation of specimen components of differing density. The composition or nature of the separator material may have an effect on the analysis. Knowledge of the material aids interpretation of results. Examples include A gel material added to blood collection tubes that following centrifugation creates a physical barrier between the blood cells and the serum or plasma. Vocabulary Domain=*ContainerSeparator*
barrierDeltaQuantity	PQ	The distance from the Point of Reference to the separator material (barrier) within a container. This distance may be provided by a laboratory automation system to an instrument and/or specimen processing/handling device to facilitate the insertion of a sampling probe into the specimen without touching the separator. See the Point of Reference definition or in NCCLS standard AUTO5 Laboratory Automation: Electromechanical Interfaces.
bottomDeltaQuantity	PQ	The distance from the Point of Reference to the outside bottom of the container. Refer to Point of

		Reference in NCCLS standard AUTO5 Laboratory Automation: Electromechanical Interfaces.

5.1.2.8 Place

A subtype of Entity representing a bounded physical place or site with its contained structures, if any. Examples include: A field, lake, city, county, state, country, lot (land), building, pipeline, power line, playground, ship, truck. Place may be natural or man-made. The geographic position of a place may or may not be constant. Places may be work facilities (where relevant acts occur), homes (where people live) or offices (where people work). Places may contain sub-places (floor, room, booth, bed). Places may also be sites that are investigated in the context of health care, social work, public health administration (e.g., buildings, picnic grounds, day care centers, prisons, counties, states, and other focuses of epidemiological events).

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id : II
EntityHx_ID : Entity
statusCode : CS
determinerCode : CS
code : CV
quantity : Integer
desc : String
existenceTime : IVL<TS>
riskCode : CV
handlingCode : CV
PK(ID)
FK(EntityHx_ID) : Entity
1
id
+isa
0..1
Place
ID : Integer
mobileInd : Boolean
directionsText : String
positionText : String
gpsText : String
PK(ID)
FK(ID) : Entity

Place (Specializes Entity)

Attribute	Type/Cardinality	Notes
mobileInd	Boolean	An Indication of whether the facility has the capability to move freely from one location to another. Rationale: Ships, aircraft and ambulances all have the capability to participate in healthcare acts.
directionsText	String	A free text note that carries information related to a site that is useful for entities accessing that site. The attribute could include directions for finding the site when address information is inadequate, GPS information is not available, and/or the entity accessing the site cannot make direct use of the GPS information. It could also include information useful to people visiting the location. E.g., "Last house on the right", "If owner not present, check whereabouts with neighbor down the road".
positionText	String	A set of codes that locates the site within a mapping scheme. Examples include: map coordinates for US Geological Survey maps.
gpsText	String	The global positioning system coordinates of a place. The global positioning system values for this attribute should conform with the USGS Spatial Data Transmission Standards. Among other things this includes the nature of the latitude and longitude readings, the offset error, the projection. In some field conditions, there will be no physical address to identify a place of interest. As all locations on the surface of the earth have unique

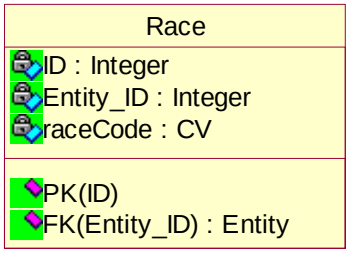
		geographic coordinates, the GPS values allow for precise location information to be captured and transmitted.

5.1.3 Entity-related Classes

The following classes are utilized by the Person specialization of Entity.

5.1.3.1 Race

The Person.race attribute contains a value representing the race of a person. As it is set valued, it is represented as a separate normalized class.

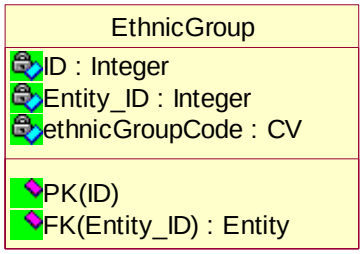


Race

Attribute	Type/Cardinality	Notes
ID	integer	Local ID, Primary key
Entity_ID	integer	FK to Person
raceCode	CV	A coded value representing the race of a person. Vocabulary domain=*Race*

5.1.3.2 EthnicGroup

The Person.ethnicGroupCode attribute contains a value representing the ethnicGroup of a person. As it is set valued, it is represented as a separate normalized class.



EthnicGroup

Attribute	Type/Cardinality	Notes
ID	integer	Local ID, Primary Key
Entity_ID	integer	FK to Person

ethnicGroupCode	CV	A coded value representing the ethnic group of the person. Vocabulary domain=*Ethnicity*

5.2 Acts

Act classes model actions of public health interest. In the PHIN LDM, the utilized Act classes are derived from the HL7 RIM Act class.

An Act is an action of public health interest that has been done, can be done, is being done, or is intended or requested to be done, such as an observation, intervention, or public health case.

The kinds of acts that are common in health care are (1) a clinical observation, (2) an assessment of health condition (such as problems and diagnoses), (3) healthcare goals, (4) treatment services (such as medication, surgery, physical and psychological therapy), (5) assisting, monitoring or attending, (6) training and education services to patients and their next of kin, (7) and notary services (such as advanced directives or living will), (8) editing and maintaining documents, and many others.

Acts are the pivot of the PHIN LDM; all domain information and processes are represented primarily in Acts. Any profession or business, including healthcare, is primarily constituted of intentional actions, performed and recorded by responsible actors. An Act-instance is a record of such an intentional action. Intentional actions are distinguished from something that happens by forces of nature (natural events). Such natural events are not Acts by themselves, but may be recorded as observed (Observation).

5.2.1 Act

This abstract class handles the PHIN LDM class Act and its inheritance model. The inheritance (or generalization) structures of the Act class are mapped such that a general parent class Act is joined with the specialized child classes. The generalized attributes and codes are expressed in the Act class, and any specialized attributes are expressed in the child classes.

Act mood

Each Act is expressed in a mood, which distinguishes whether the Act is conceived of as a factual statement or in some other manner as a command, possibility, goal, etc. An Act-instance must have one and only one moodCode value. The moodCode of a single Act-instance never changes. Mood is not state. To describe the progression of a business activity from defined to planned to executed, etc. one must instantiate different Act-instances in the different moods and link them using ActRelationship of general type "sequel". (See ActRelationship.typeCode.)

The Act.moodCode includes the following notions: (1) event, i.e., factual description of an actions that occurred; (2) definition of possible actions and action plans (the master file layer); (3) intent, i.e., an action plan instantiated for a patient as a care plan or order; (4) goal, i.e., an desired outcome attached to patient problems and plans; and (5) criterion, i.e., a predicate used to evaluate a logical expression.

To illustrate the effect of mood code, consider a "blood glucose" observation:

The DEFINITION mood specifies the Act of "obtaining blood glucose". Participations describe in general the characteristics of the people who must be involved in the act, and the required objects, e.g., specimen, facility, equipment, etc. involved. The Observation.value specifies the absolute domain (range) of the observation (e.g., 15-500 mg/dl).

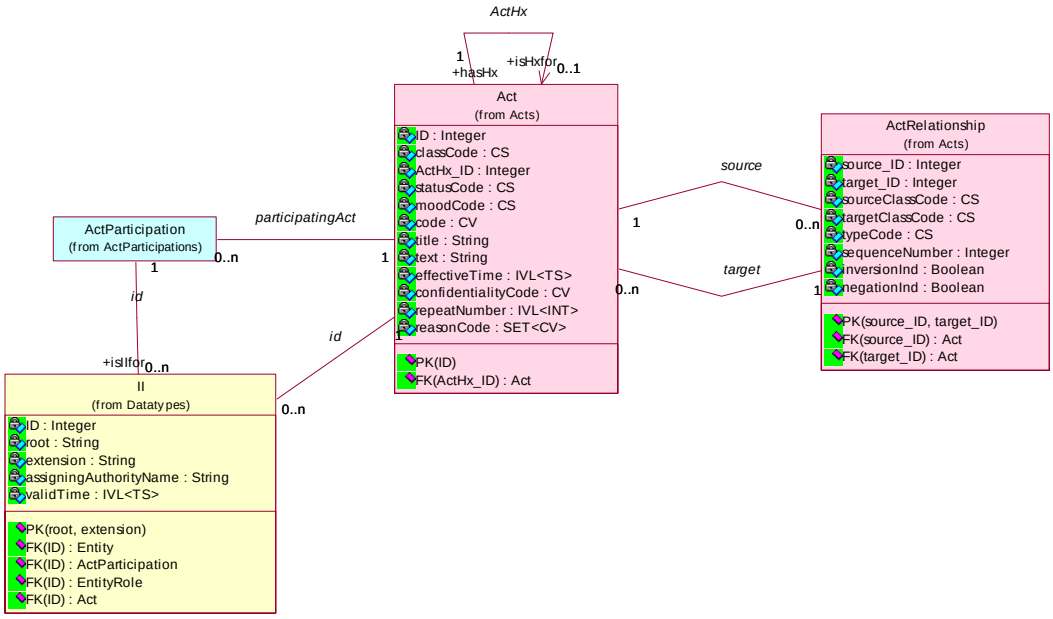
In INTENT mood the author of the intent expresses the intent that he or someone else "should obtain blood glucose". The participations are the people actually or supposedly involved in the intended act, especially the author of the intent or any individual assignments for group intents, and the objects actually or supposedly involved in the act (e.g., specimen sent, equipment requirements, etc.). The Observation.value is usually not specified, since the intent is to measure blood glucose, not to measure blood glucose in a specific range. (But compare with GOAL below).

In REQUEST mood, a kind of intent, the author requests to "please obtain blood glucose". The Participations are the people actually and supposedly involved in the act, especially the placer and the designated filler, and the objects actually or supposedly involved in the act (e.g., specimen sent, equipment requirements, etc.). The Observation.value is usually not specified, since the order is not to measure blood glucose in a specific range.

In EVENT mood, the author states that "blood glucose was obtained". Participations are the people actually involved in the act, and the objects actually involved (e.g., specimen, facilities, equipment). The Observation.value is the value actually obtained (e.g., 80 mg/dL, or <15 mg/dL).

In event-CRITERION mood, an author considers a certain class of "obtaining blood glucose" possibly with a certain value (range) as outcome. The Participations constrain the criterion, for instance, to a particular patient. The Observation.value is the range in which the criterion would hold (e.g. > 180 mg/dL or 200-300 mg/dL).

In GOAL mood (a kind of criterion), the author states that "our goal is to be able to obtain blood glucose with the given value (range)". The Participations are similar to intents, especially the author of the goal and the patient for whom the goal is made. The Observation.value is the range which defined when the goal is met (e.g. 80-120 mg/dl).



5.2.2 ActRelationship

A directed association between a source Act and a target Act. ActRelationship on the same source Act are called the "outbound" act relationships of that Act. ActRelationships on the same target Act are called the "inbound" relationships of that Act. The meaning and purpose of an ActRelationship is specified in the ActRelationship.typeCode attribute.

Examples: 1) An electrolyte observation panel may have sodium, potassium, pH, and bicarbonate observations as components. The composite electrolyte panel would then have 4 outbound ActRelationships of type "has component".

2) The electrolyte panel event has been performed in fulfillment of an observation order. The electrolyte panel event has an outbound ActRelationship of type "fulfills" with the order as target.

3) A Procedure "cholecystectomy" may be performed for the reason of an Observation of "cholelithiasis". The procedure has an outbound ActRelationship of type "has reason" to the cholelithiasis observation.

Discussion: Consider every ActRelationship instance an arrow with a point (headed to the target) and a butt (coming from the source). The functions (sometimes called "roles") that source and target Acts play in that association are defined for each ActRelationship type differently. For instance in a composition relationship, the source is the composite and the target is the component. In a reason-relationship the source is any Act and the target is the reason or indication for the source-Act.

The relationships associated with an Act are considered properties of the source act object. This means that the author of an Act-instance is also considered the author of all of the act relationships that have this Act as their source. There are no exceptions to this rule.

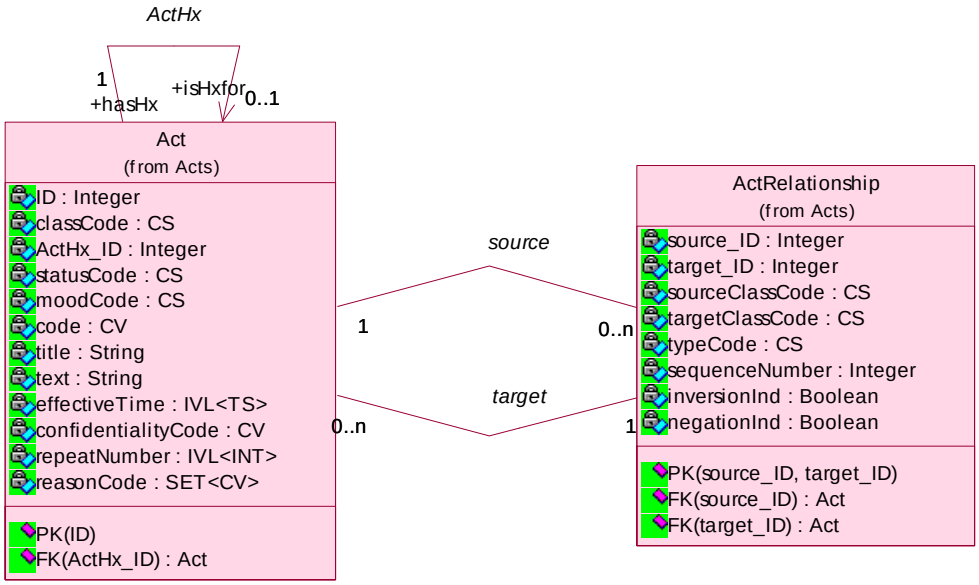
See ActRelationship.typeCode for more overview of the different kinds of ActRelationships.

The ActRelationship class is used to construct action plans and to represent clinical reasoning or judgments about action relationships. Prior actions can be linked as the reasons for more recent actions. Supporting evidence can be linked with current clinical hypotheses. Problem lists and other networks of related judgments about clinical events are represented by the ActRelationship link.

One of the most commonly used ActRelationship types is "has component" to describe the composition and de-composition of Acts. The relationship type allows specifying detail of Acts to varying degrees.

The composition relationship can group actions into "batteries," e.g., LYTES, CHEM12, or CBC, where multiple routine laboratory tests are ordered as a group. Some groupings, such as CHEM12, appear more arbitrary; others, such as blood pressure, seem to naturally consist of systolic and diastolic pressure.

With the composition relationship, the detail of Acts can be revealed to different levels for different purposes, without the structure of the Act hierarchy needing to be rearranged. This allows supporting multiple viewpoints on the same business processes. For instance, a billing-viewpoint of a laboratory test battery may be as a single billable act. A clinician's view of the same laboratory test battery is as a set of individual observations, where the ordering among the observations is irrelevant. The laboratory's view of this act will be more detailed, including action plan steps that are never reported to the clinician (e.g., centrifugation, decantation, aliquoting, running certain machines etc.). The laboratory's viewpoint warrants a thorough specification of action plans (that can be automated). During this specification, more and more nested sub-activities will be defined. Still the Act is the same, with varying degrees of detail uncovered in the de-composition relationship.



Act:

Attribute	Type/Cardinality	Notes
ID	Integer	Local ID, primary key.
classCode	CS	An HL7 defined value representing the class or category that the Act instance represents. Examples include: Patient Encounter, Observation, Public Health Case. Vocabulary Domain=*ActClass*
id	II [0..*]	A unique identifier for the Act. The id attribute is implemented as an FK reference from the II table.
participation	ActParticipation [0..*]	0 or more Entities participate in an Act, via an ActParticipation, and in a Role. An FK reference will exist from ActParticipation to Act for each such relationship if they exist.
source	ActRelationship [0..*]	An Act is related to 0 or more other Acts, via the relationship type expressed in ActRelationship. The source relationship represents the “parent” or source Act in the relationship. An FK reference will exist from ActRelationship to Act for each such relationship.
target	ActRelationship [0..*]	An Act is related to 0 or more other Acts, via the relationship expressed in

		ActRelationship. The target relationship represents the “child” or target Act in the relationship. An FK reference will exist from ActRelationship to Act for each such relationship.
actHx	Act[0..1]	A recursive FK reference back to Act, that can be used to represent a history of Acts, together with the statusCode attribute. See discussion in Section xx.
moodCode	CS[1..1]	A code value which distinguishes whether the Act is conceived of as a factual statement or in some other manner as a command, possibility, goal, etc.. See the discussion above. Vocabulary Domain=*ActMood*
code	CV	A code specifying the particular kind of Act that the Act-instance represents within its class. The kind of Act (e.g. physical examination, serum potassium, inpatient encounter, charge financial transaction, etc.) is specified with a code from one of several, typically external, coding systems. The coding system will depend on the class of Act, such as LOINC for observations, etc. Vocabulary Domain=*ActCode*
title	ST	A word or phrase by which a specific Act may be known among people. Example: name of a research study (e.g. "Scandinavian Simvastatin Study"), name of a court case (e.g. "Brown v. Board of Education"), name of another kind of work project or operation. For acts representing documents, this is the title of the document. This is not a formal identifier but rather a human-recognizable common name. It is similar to the id attribute in that it refers to a specific Act rather than a 'kind' of act.
text	ED	A textual or multimedia description of the Act. Examples: For act definitions, the

		Act.text can contain textbook-like information about that act. For act orders, the description will contain particular instructions pertaining only to that order. If present, Act.text is meant as an aid to human understanding, and should not contain computable codes or semantic information. Computable information should be conveyed with the proper attributes and associated objects.
statusCode	CS[0..1]	A code specifying the state of the Act. Examples include: Active, Suspended, Cancelled, Complete, and Aborted. Changes in state are known as state transitions. An example of a state transition might be the change in the state of an Act from Active to Complete. The change in state (state transition) is associated with a trigger event that causes the transition. Vocabulary Domain=*ActStatus*
effectiveTime	IVL<TS>	A time expression specifying the focal or operative time of the Act, the primary time for which the Act holds, the time of interest from the perspective of the Act's intention. Examples include: For clinical Observations, the effectiveTime is the time at which the observation holds (is effective) for the patient. For substance administrations, the effective time is the time over which the substance is to be administered, including the frequency of administration (e.g. TID for 10 days). For a surgical procedure (operation), the effectiveTime is the time relevant for the patient, i.e., between incision and last suture. For patient encounters, this is the "administrative" time, i.e., the encounter start and end date required to be chosen by business rules, as opposed to the actual time the healthcare encounter related work is performed.

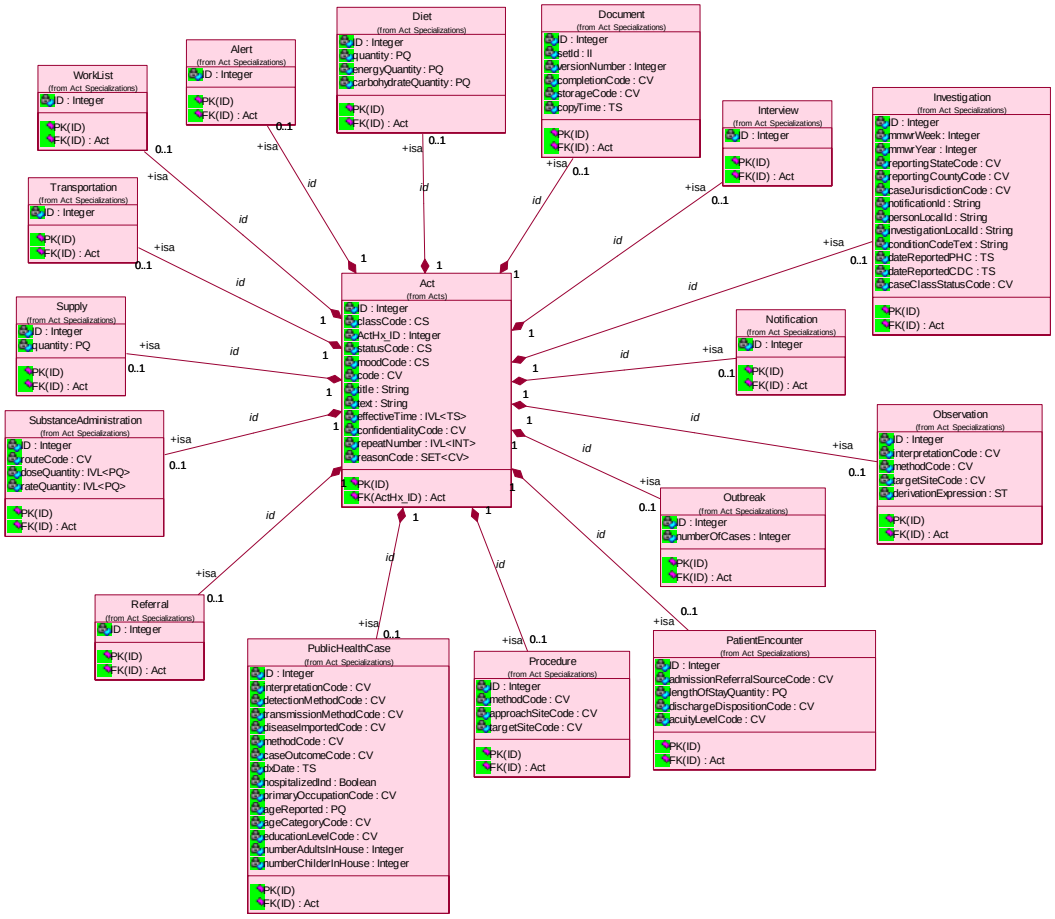
		The effectiveTime is also known as the "primary" time (Arden Syntax) or the "biologically relevant time" (HL7 v2.x). For observations, the time of the observation activity may be much later than the time of the observed feature. For instance, in a Blood Gas Analysis (BGA), a result will always come up several minutes after the specimen was taken, meanwhile the patient's physiological state may have changed significantly. For essentially physical activities (surgical procedures, transportations, etc.), the effective time is the time of interest for the Act's intention, i.e., since the intention of a transportation is to deliver a payload from location A to B, the effectiveTime is the time this payload is underway from A to B.
confidentialityCode	CS	A code that controls the disclosure of information about this Act, regardless of mood. It is important to note that the necessary confidentiality of the medical record cannot be achieved solely through confidentiality codes to mask individual record items from certain types of users. To mitigate some of the inference-risk, aggregations of data should assume the confidentiality level of the most confidential action in the aggregation.Vocabulary Domain=*Confidentiality*
repeatNumber	IVL<INT>	An interval of integer numbers stating the minimal and maximal number of repetitions of the Act.
reasonCode	CS [0..*]	A code specifying the motivation, cause, or rationale of an Act, when such rationale is not reasonably represented as an ActRelationship of type "has reason" linking to another Act. Examples include:</i> "routine requirement", "infectious disease reporting requirement", "on patient

		request", "required by law". Most reasons for acts can be clearly expressed by linking the new Act to another prior Act using an ActRelationship of type "has reason". Vocabulary Domain=*ActReason*

ActRelationship

Attribute	Type/Cardinality	Notes
source_ID	Act [0..*]	Local ID, FK reference to Act. This represents the *source* Act in the relationship
target_ID	Act [0..*]	Local ID, FK reference to Act. This represents the *target* Act in the relationship
sourceClassCode	CS [1..1]	Denormalized classCode for source Act. Vocabulary domain=*ActClass*
targetClassCode	CS [1..1]	Denormalized classCode for target Act. Vocabulary domain=*ActClass*
typeCode	CS [1..1]	This code specifies the meaning and purpose of the relationship between the source and target acts. Vocabulary Domain=*ActRelationshipType*
sequenceNumber	Integer	An integer specifying the relative ordering of this relationship among other like-types relationships having the same source Act.
inversionInd	Boolean	An indicator specifying that the typeCode should be interpreted as if the roles of the source and target acts were reversed.
negationInd	Boolean	An indicator that asserts that the meaning of the link is negated. See HL7 RIM for a discussion of the use of this attribute.

5.2.3 Act Specializations



5.2.3.1 Observation

An Act of recognizing and noting information about the subject, and whose immediate and primary outcome (post-condition) is new data about a subject. Observations often involve measurement or other elaborate methods of investigation, but may also be simply assertive statements.

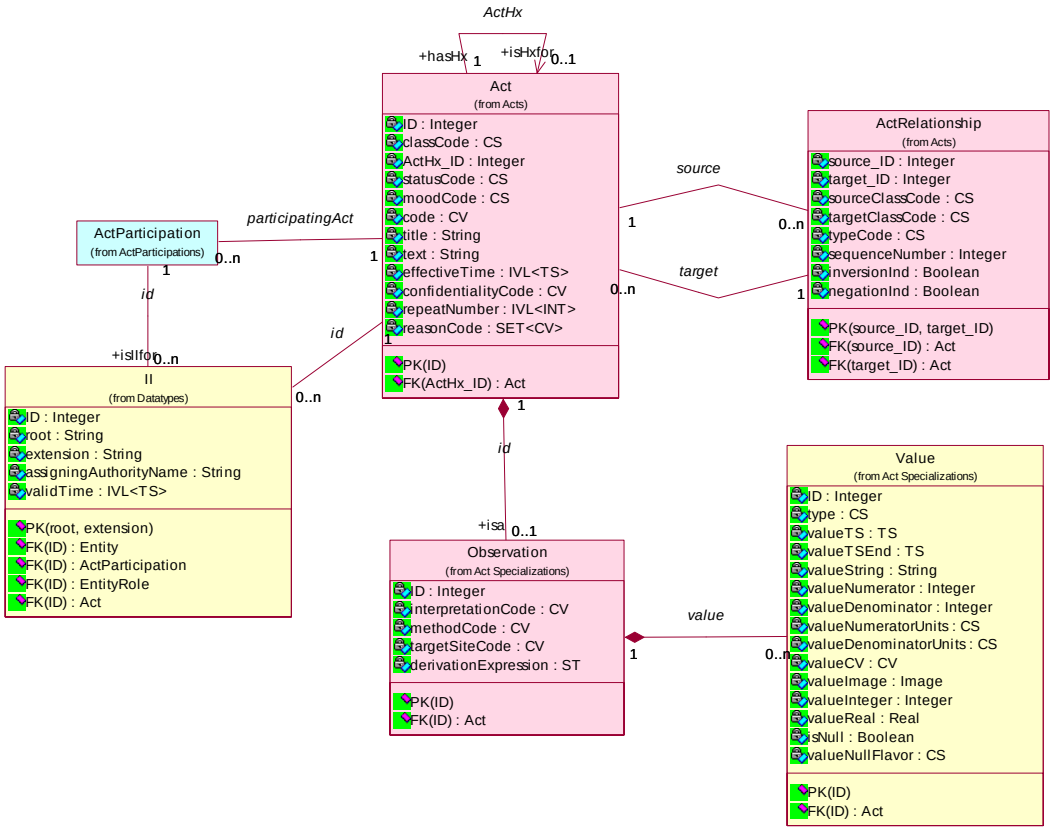
Discussion: Structurally, many observations are name-value-pairs, where the Observation.code (inherited from Act) is the name and the Observation.value is the value of the property. Such a construct is also known as a "variable" (a named feature that can assume a value); hence, the Observation class is always used to hold generic name-value-pairs or variables, even though the variable valuation may not be the result of an elaborate observation method. It may be a simple answer to a question or it may be an assertion or setting of a parameter.

As with all Act statements, Observation statements describe what was done, and in the case of Observations, this includes a description of what was actually observed ("results" or "answers"); and those "results" or "answers" are part of the observation and not split off into other objects.

An observation may consist of component observations each having their own Observation.code and Observation.value. In this case, the composite observation may not have an Observation.value for itself. For instance, a white blood cell count consists of the sub-observations for the counts of the various granulocytes, lymphocytes and other normal or abnormal blood cells (e.g., blasts). The overall white blood cell count Observation itself may therefore not have a value by itself (even though it could have one, e.g., the sum total of white blood cells). Thus, as long as an Act is essentially an Act of recognizing and noting information about a subject, it is an Observation, regardless of whether it has a simple value by itself or whether it has sub-observations.

Even though observations are professional acts (see Act) and as such are intentional actions, this does not require that every possible outcome of an observation be pondered in advance of it being actually made. For instance, differential white blood cell counts (WBC) rarely show blasts, but if they do, this is part of the WBC observation even though blasts might not be predefined in the structure of a normal WBC.

Diagnoses, findings, symptoms, etc. are also Observations. The Observation.code (or the reference to the Observation definition) specifies the kind of diagnosis (e.g. "chief complaint" or "discharge diagnosis") and the value specifies the diagnosis code or symptom code.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+isHxfor
0..1
Act
(from Acts)
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ActHx_ID : Integer
statusCode : CS
moodCode : CS
code : CV
title : String
text : String
effectiveTime : IVL<TS>
confidentialityCode : CV
repeatNumber : IVL<INT>
reasonCode : SET<CV>
PK(ID)
FK(ActHx_ID) : Act
ActRelationship
(from Acts)
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target_ID : Integer
sourceClassCode : CS
targetClassCode : CS
typeCode : CS
sequenceNumber : Integer
inversionInd : Boolean
negationInd : Boolean
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FK(source_ID) : Act
FK(target_ID) : Act
source
target
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0..n
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participatingAct
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+isIIfor
II
(from Datatypes)
ID : Integer
root : String
extension : String
assigningAuthorityName : String
validTime : IVL<TS>
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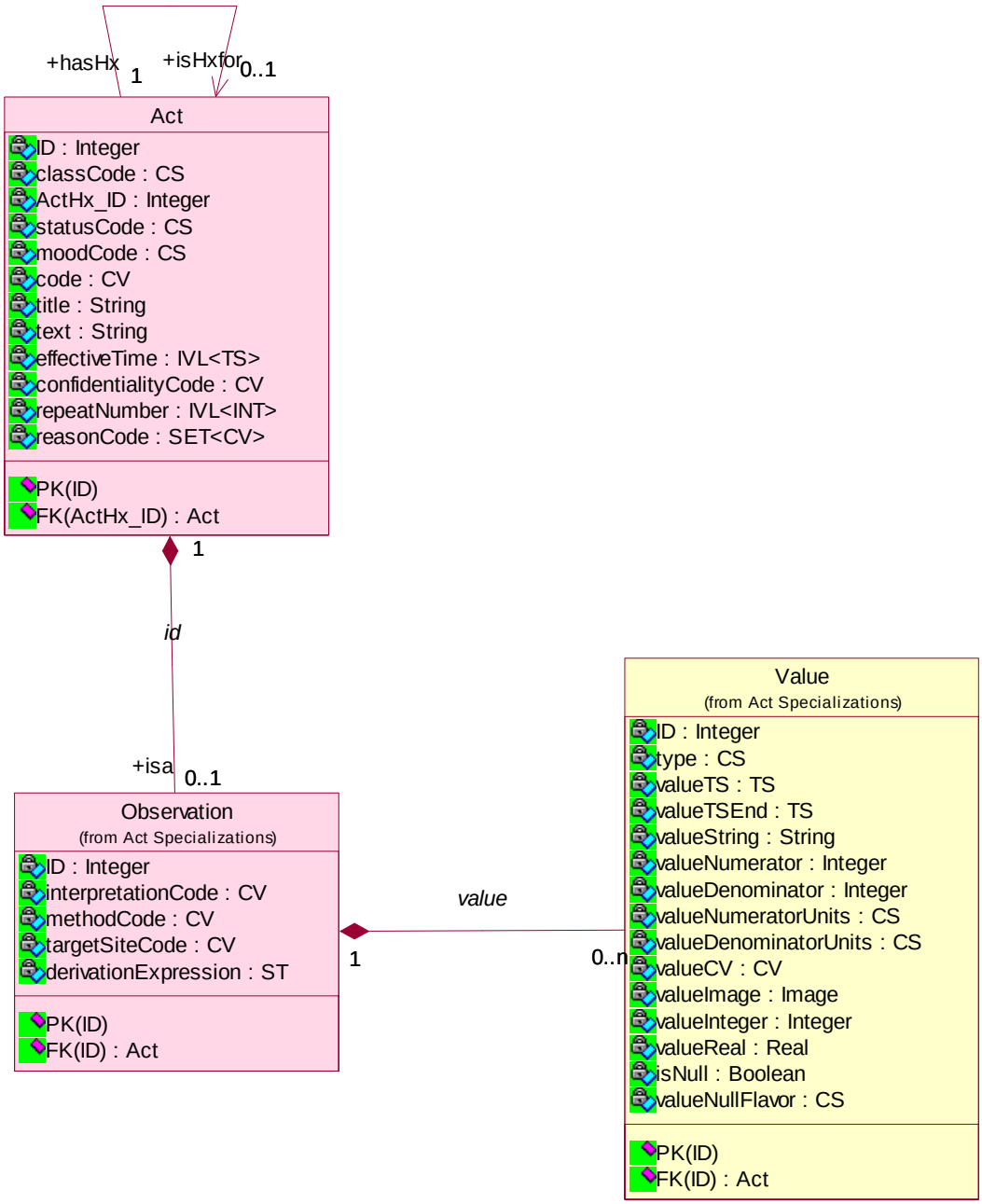
FK(ID) : Entity
FK(ID) : ActParticipation
FK(ID) : EntityRole
FK(ID) : Act
+isa
Observation
(from Act Specializations)
ID : Integer
interpretationCode : CV
methodCode : CV
targetSiteCode : CV
derivationExpression : ST
PK(ID)
FK(ID) : Act
value
Value
(from Act Specializations)
ID : Integer
type : CS
valueTS : TS
valueTSEnd : TS
valueString : String
valueNumerator : Integer
valueDenominator : Integer
valueNumeratorUnits : CS
valueDenominatorUnits : CS
valueCV : CV
valueImage : Image
valueInteger : Integer
valueReal : Real
isNull : Boolean
valueNullFlavor : CS
PK(ID)
FK(ID) : Act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+isHxfor
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Act
ID : Integer
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ActHx_ID : Integer
statusCode : CS
moodCode : CS
code : CV
title : String
text : String
effectiveTime : IVL<TS>
confidentialityCode : CV
repeatNumber : IVL<INT>
reasonCode : SET<CV>
PK(ID)
FK(ActHx_ID) : Act
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+isa
0..1
Observation
(from Act Specializations)
ID : Integer
interpretationCode : CV
methodCode : CV
targetSiteCode : CV
derivationExpression : ST
PK(ID)
FK(ID) : Act
value
1
0..n
Value
(from Act Specializations)
ID : Integer
type : CS
valueTS : TS
valueTSEnd : TS
valueString : String
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valueDenominator : Integer
valueNumeratorUnits : CS
valueDenominatorUnits : CS
valueCV : CV
valueImage : Image
valueInteger : Integer
valueReal : Real
isNull : Boolean
valueNullFlavor : CS
PK(ID)
FK(ID) : Act

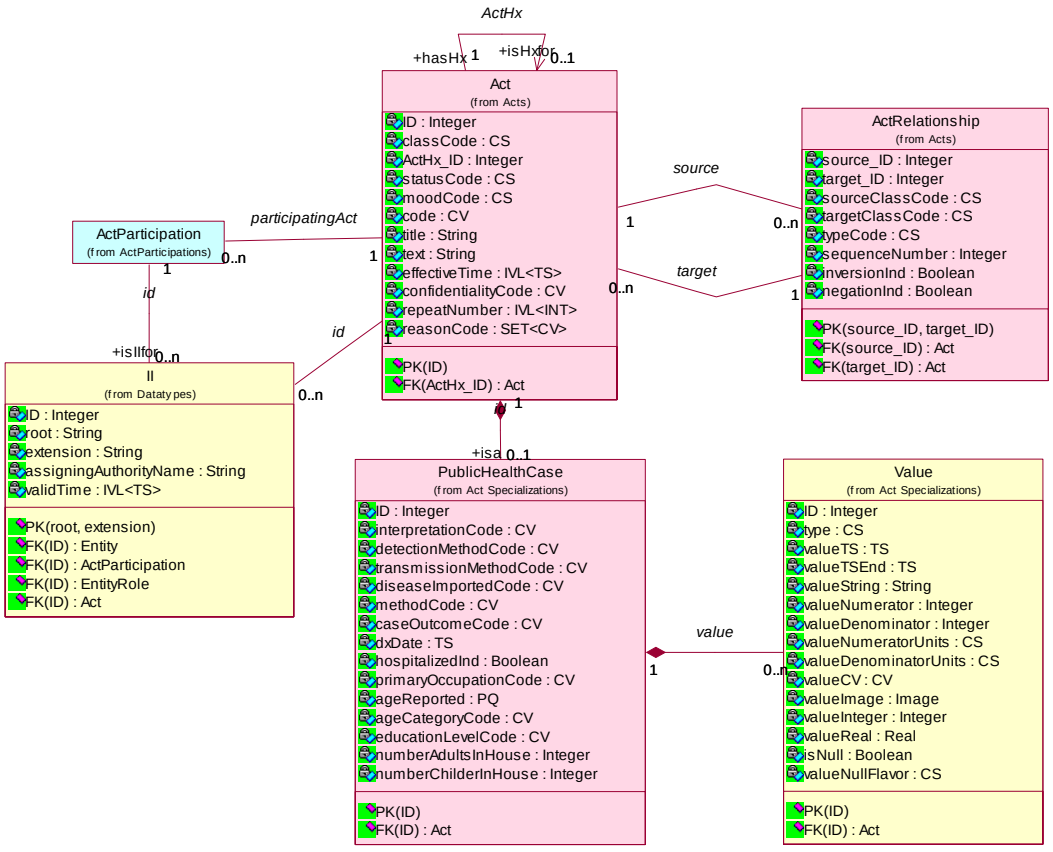
Observation

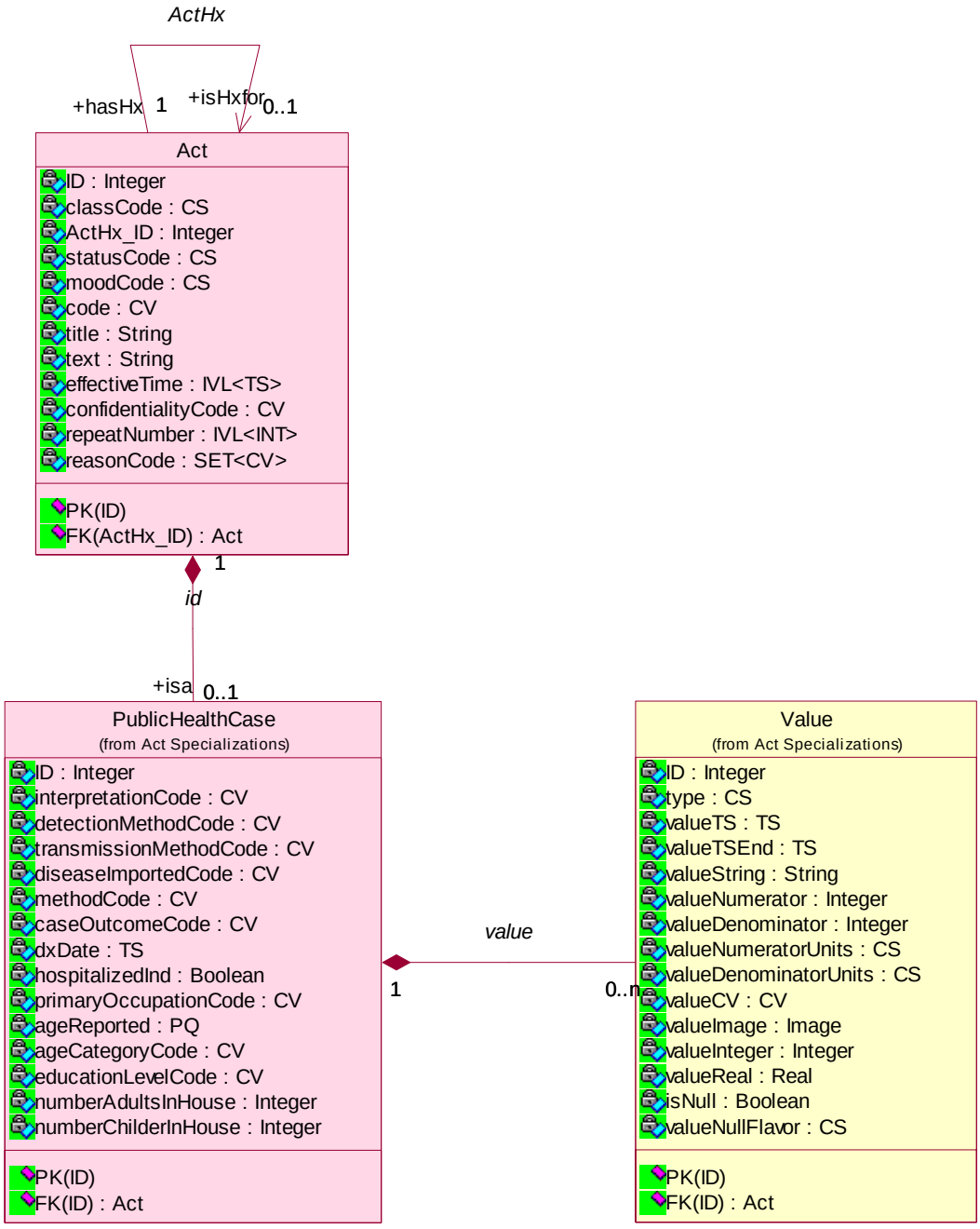
Attribute	Type/Cardinality	Notes
interpretationCode	CV [0..1]	A code specifying a rough qualitative interpretation of the observation, such as "normal", "abnormal", "below normal", "change up", "resistant", "susceptible", etc. Vocabulary Domain=*ObservationInterpretation*
methodCode	CV [0..1]	A code that provides additional detail about the means or technique used to ascertain the observation, if required. In some cases, method is already partially specified by the Act.code. Examples include: Blood pressure measurement method: arterial puncture vs. sphygmomanometer (Riva-Rocci), sitting vs. supine position, etc. Vocabulary Domain=*ObservationMethod*
targetSiteCode	CV [0..1]	A code specifying detail about the anatomical site or system that is the focus of the observation if this information is not already implied by the observation definition or Act.code. Most observation target sites are implied by the observation definition and Act.code, or Observation.value. For example, "heart murmur" always has the heart as target. This attribute is used only when the observation target site needs to be refined, to distinguish right and left etc. If the subject of the Observation is something other than a human patient or animal, the attribute is used analogously to specify a structural landmark of the thing where the act focuses. For example, if the subject is a lake, the site could be inflow and outflow, etc. If the subject is a lymphatic node, "hilus," "periphery," etc. would still be valid target sites. Vocabulary Domain=*ActSite*
derivationExpression	ST[0..1]	A character string containing a formal language expression that specifies how the Act's attributes are derived from

		input parameters associated with derivation relationships. See discussion in HL7 RIM for Act.derivationExpression
value	Value [0..*]	Zero or more values for this observation. The Value table has FK references to Observation. The values represent information that is assigned or determined by the observation action. The Observation.value, if not otherwise constrained, can be of any data type. The appropriate data type of the Observation.value varies with the kind of Observation and can generally be described in Observation definitions or in a simple relation that pairs Act.codes to value data types.

5.2.3.2 Public Health Case

A public health case is an Observation representing a condition or event that has a specific significance for public health. The case is a health-related event concerning a single individual. Typically it involves an instance of a reportable infectious disease or other condition. A public health case definition (Act.moodCode = "definition") includes the description of the clinical, laboratory, and epidemiologic indicators associated with a disease or condition of interest to public health. There are case definitions for conditions that are reportable, as well as for those that are not. A public health case definition is a construct used by public health for the purpose of counting cases, and should not be used as clinical indications for treatment. Examples include AIDS, toxic-shock syndrome, and salmonellosis and their associated indicators that are used to define a case.

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+isHxfor
0..1
Act
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classCode : CS
ActHx_ID : Integer
statusCode : CS
moodCode : CS
code : CV
title : String
text : String
effectiveTime : IVL<TS>
confidentialityCode : CV
repeatNumber : IVL<INT>
reasonCode : SET<CV>
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FK(ActHx_ID) : Act
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id
+isa
0..1
PublicHealthCase
(from Act Specializations)
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detectionMethodCode : CV
transmissionMethodCode : CV
diseaseImportedCode : CV
methodCode : CV
caseOutcomeCode : CV
dxDate : TS
hospitalizedInd : Boolean
primaryOccupationCode : CV
ageReported : PQ
ageCategoryCode : CV
educationLevelCode : CV
numberAdultsInHouse : Integer
numberChilderInHouse : Integer
PK(ID)
FK(ID) : Act
value
1
0..n
Value
(from Act Specializations)
ID : Integer
type : CS
valueTS : TS
valueTSEnd : TS
valueString : String
valueNumerator : Integer
valueDenominator : Integer
valueNumeratorUnits : CS
valueDenominatorUnits : CS
valueCV : CV
valueImage : Image
valueInteger : Integer
valueReal : Real
isNull : Boolean
valueNullFlavor : CS
PK(ID)
FK(ID) : Act

PublicHealthCase

Attribute	Type/Cardinality	Notes
interpretationCode	CV [0..1]	One or more codes specifying a rough qualitative interpretation of the observation, such as "normal", "abnormal", "below normal", "change up", "resistant", "susceptible", etc. These interpretation codes are sometimes called "abnormal flags". Vocabulary domain=*ObservationInterpretation*
detectionMethodCode	CV [0..1]	Code for the method by which the public health department was made aware of the case. Includes provider report, patient self-referral, laboratory report, case or outbreak investigation, contact investigation, active surveillance, routine physical, prenatal testing, perinatal testing, prison entry screening, occupational disease surveillance, medical record review, etc. Vocabulary domain=*CaseDetectio0nMethod*
transmissionMethodCode	CV [0..1]	Code for the mechanism by which disease was acquired by the living subject involved in the public health case. Includes sexually transmitted, airborne, bloodborne, vectorborne, foodborne, zoonotic, nosocomial, mechanical, dermal, congenital, environmental exposure, indeterminate. Vocabulary Domain=*CaseTransmissionMode*
diseaseImportedCode	CV [0..1]	Code that indicates whether the disease was likely acquired outside the jurisdiction of observation, and if so, the nature of the inter-jurisdictional relationship. Possible values include not imported, imported from another country, imported from another state, imported from another jurisdiction, and insufficient information to determine. Vocabulary domain=*CaseDiseaseImported*

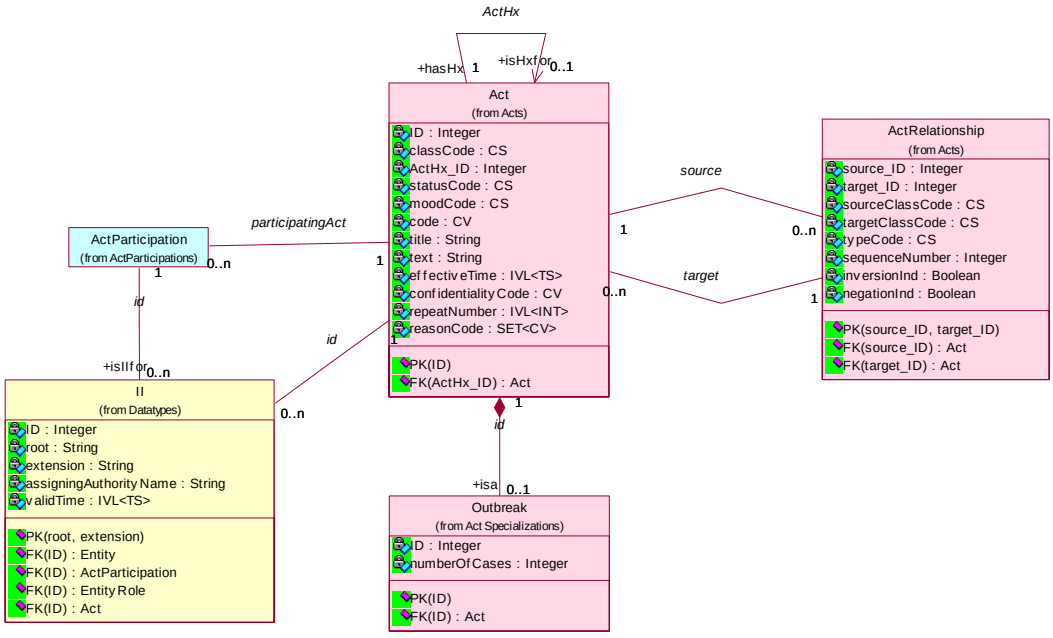
methodCode	CV [0..1]	A code that provides additional detail about the means or technique used to ascertain the observation, if required. In some cases, method is already partially specified by the Act.code. Examples include: Blood pressure measurement method: arterial puncture vs. sphygmomanometer (Riva-Rocci), sitting vs. supine position, etc. Vocabulary Domain=*ObservationMethod*
caseOutcomeCode	CV [0..1]	A code indicating if the subject died from the illness that is being investigated. Vocabulary domain= *To Be Supplied*
dxDate	dateTime [0..1]	The date of the diagnosis of this case.
hospitalizedInd	Boolean [0..1]	Indicates if the subject was hospitalized as a result of this case.
primaryOccupation	CV [0..1]	A code indicating the primary occupation of the subject. Vocabulary domain= *To Be Supplied*
ageReported	PQ [0..1]	The subject's reported age at time of event. The age units reported are captured as well.
ageCategoryCode	CV[0..1]	A code categorizing the relative age of the subject. Vocabulary domain= *To Be Supplied*
educationLevelCode	CV[0..1]	A code giving the highest level of education attained by the subject. Vocabulary domain= *To Be Supplied*
numberAdultsInHouse	Integer[0..1]	The number of adults living in the same house as the subject.
numberChildrenInHouse	Integer[0..1]	The number of children living in the same house as the subject.

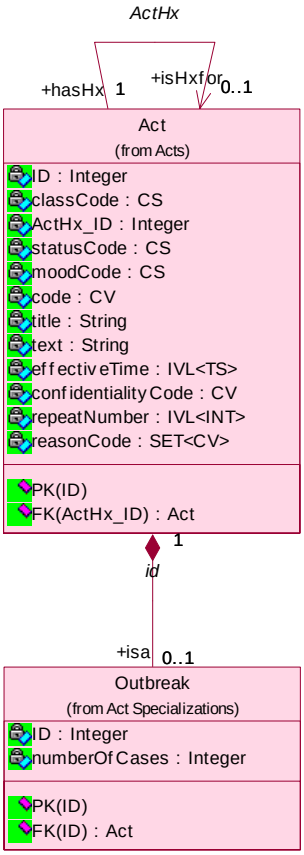
5.2.3.3 Outbreak

An outbreak or cluster is the occurrence in a community or region of cases of a condition of public health importance in excess of those normally expected. The designation of an outbreak implies that a public health assessment of causality or at least relatedness among cases has taken place. Multiple cases need not occur – a single "cases" of smallpox could be considered an outbreak.

The date on which an outbreak starts is the earliest date of onset among the cases assigned to the outbreak, and its ending date is the last date of onset among the cases assigned to the outbreak.

Related cases to an outbreak are expressed via an ActRelationship of type "PERT" (Pertains).





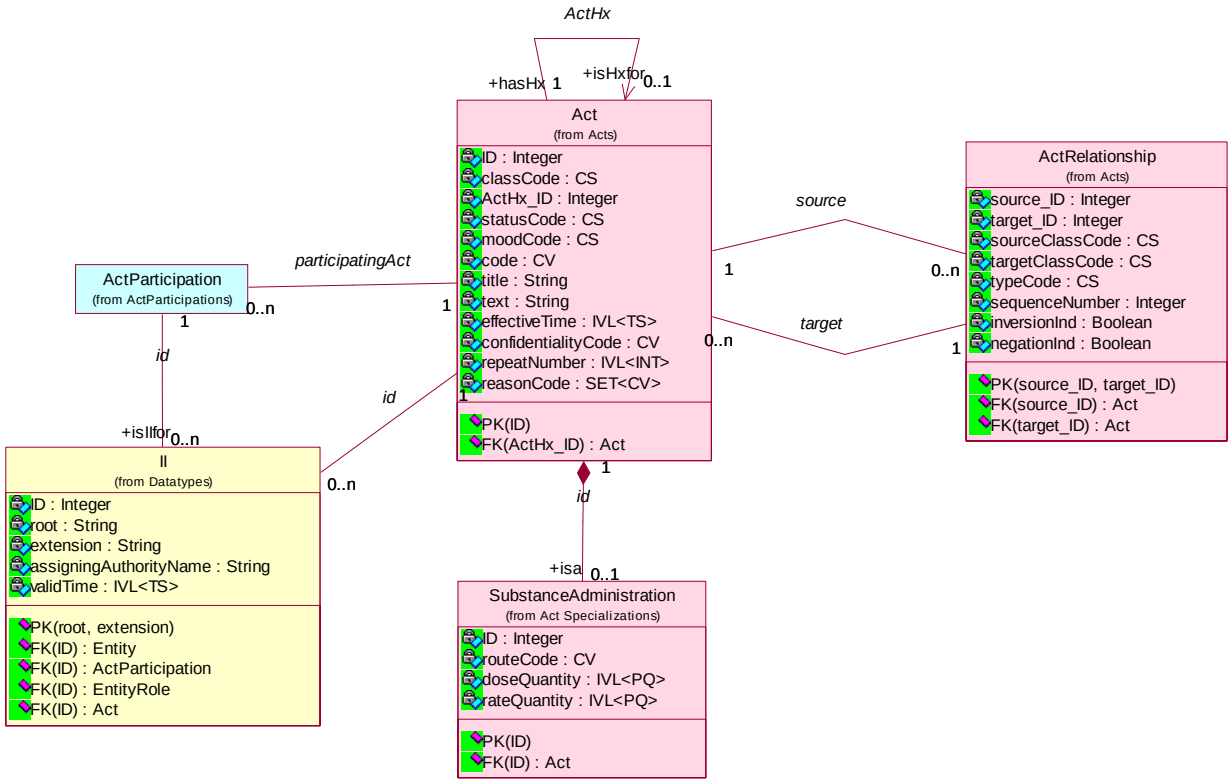
Outbreak

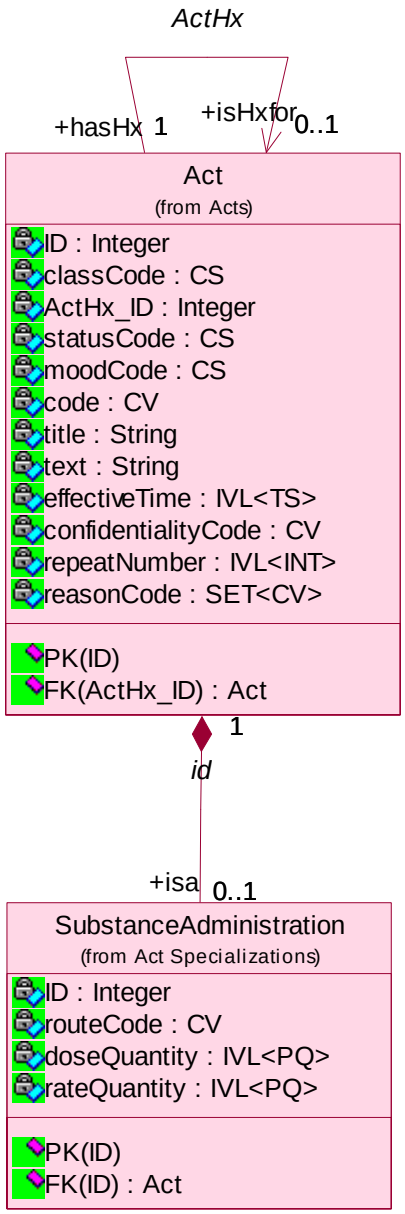
Attribute	Type/Cardinality	Notes
numberOfCases	Integer	Count of related or grouped cases comprising the outbreak.

5.2.3.4 Substance Administration

The act of introducing or otherwise applying a substance to the subject.

Examples: Chemotherapy protocol; Drug prescription; Vaccination record




ActHx
+hasHx
1
+isHxfor
0..1
Act
(from Acts)
ID : Integer
classCode : CS
ActHx_ID : Integer
statusCode : CS
moodCode : CS
code : CV
title : String
text : String
effectiveTime : IVL<TS>
confidentialityCode : CV
repeatNumber : IVL<INT>
reasonCode : SET<CV>
PK(ID)
FK(ActHx_ID) : Act
1
id
+isa
0..1
SubstanceAdministration
(from Act Specializations)
ID : Integer
routeCode : CV
doseQuantity : IVL<PQ>
rateQuantity : IVL<PQ>
PK(ID)
FK(ID) : Act

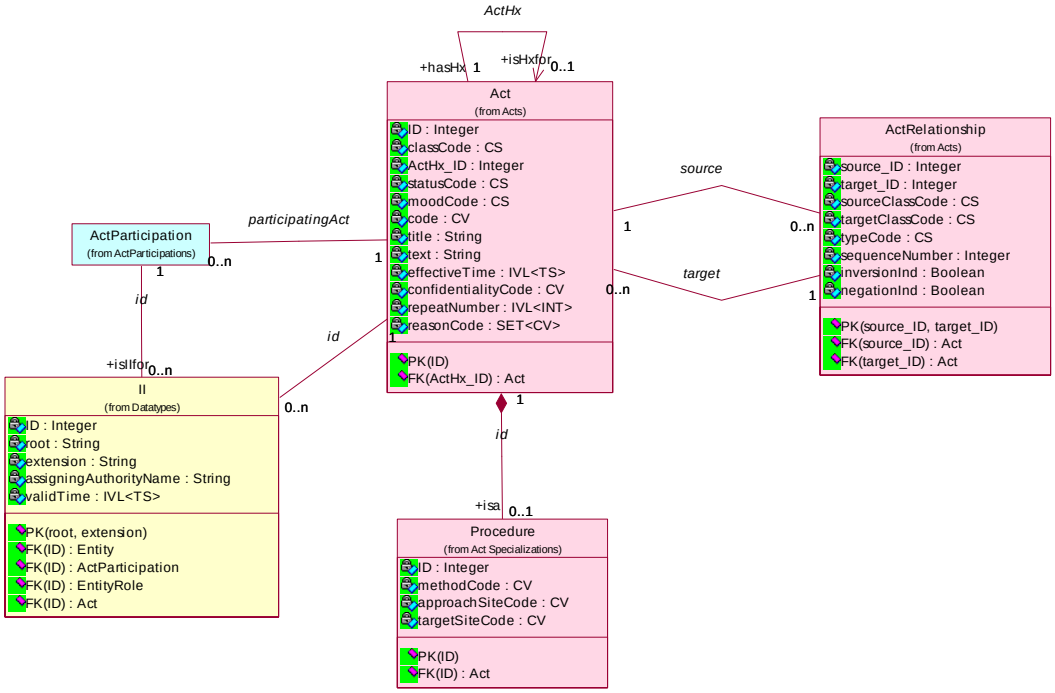
SubstanceAdministration

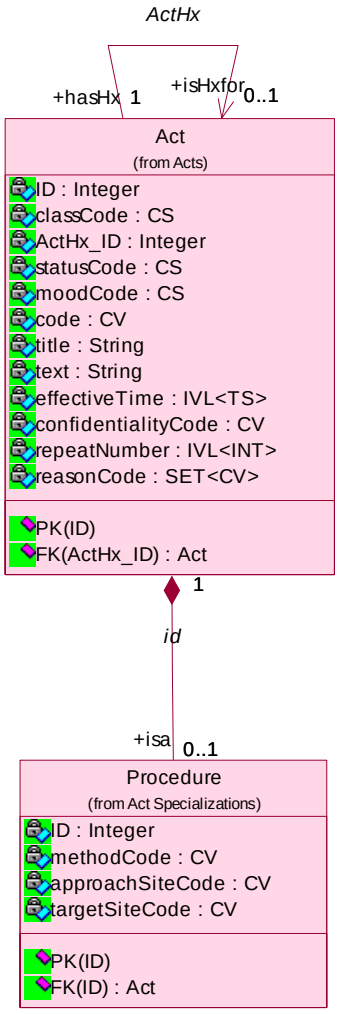
Attribute	Type/Cardinality	Notes
routeCode	CV [0..*]	The method of introducing the therapeutic material into or onto the subject. *Examples:* per os (PO), sublingual (SL), rectal (PR), per inhalationem (IH), ophtalmic (OP). Vocabulary domain=*RouteOfAdministration*
doseQuantity	IVL<PQ>	The amount of the therapeutic agent or other substance given at one administration event. The dose may be specified either as a physical quantity of active ingredient (e.g. 200 mg) or as the count of administration-units (e.g., tablets, capsules, "eaches").
rateQuantity	IVL<PQ>	Identifies the speed with which the substance is introduced into the subject. Expressed as a physical (extensive) quantity over elapsed time (e.g., examples are 100 mL/h, 1 g/d, 40 mmol/h, etc.)

5.2.3.5 Procedure

An Act whose immediate and primary outcome (post-condition) is the alteration of the physical condition of the subject.

Examples: Procedures may involve the disruption of some body surface (e.g. an incision in a surgical procedure) conservative procedures such as reduction of a luxated join, including physiotherapy such as chiropractic treatment, massage, balneotherapy, acupuncture, shiatsu, etc. Outside of clinical medicine, procedures may be such things as alteration of environments (e.g. straightening rivers, draining swamps, building dams) or the repair or change of machinery etc.




ActHx
+hasHx
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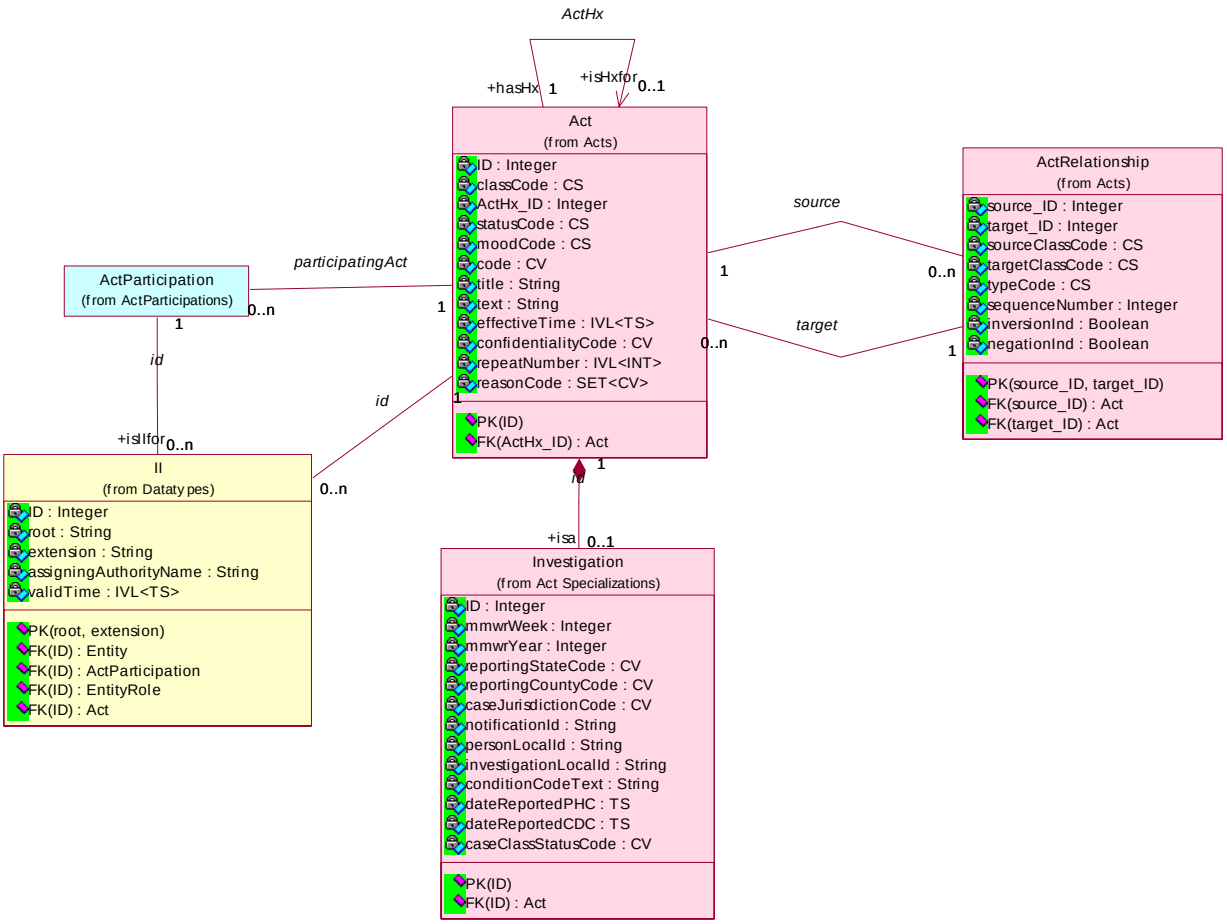
+isHxfor
0..1
Act
(from Acts)
ID : Integer
classCode : CS
ActHx_ID : Integer
statusCode : CS
moodCode : CS
code : CV
title : String
text : String
effectiveTime : IVL<TS>
confidentialityCode : CV
repeatNumber : IVL<INT>
reasonCode : SET<CV>
PK(ID)
FK(ActHx_ID) : Act
1
id
+isa
0..1
Procedure
(from Act Specializations)
ID : Integer
methodCode : CV
approachSiteCode : CV
targetSiteCode : CV
PK(ID)
FK(ID) : Act

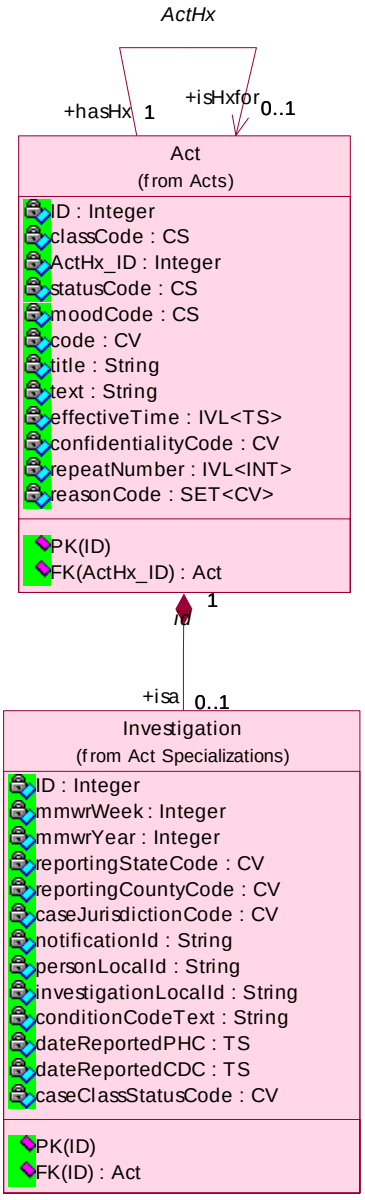
Procedure

Attribute	Type/Cardinality	Notes
methodCode	CV	Identifies the means or technique used to perform the procedure. For any Procedure there may be several different methods to achieve by and large the same result, but may be important to know when interpreting a report more thoroughly (e.g., cholecystectomy: open vs. laparoscopic). Vocabulary domain=*ProcedureMethod*
approachSiteCode	CV [0..*]	The anatomical site or system through which the procedure reaches its target (see targetSiteCode). Vocabulary domain=*ActSite*
targetSiteCode	CV [0..*]	The anatomical site or system that is the focus of the procedure. Vocabulary domain=*ActSite*

5.2.3.6 Investigation

An investigation is the activity of surveillance undertaken by a public health agency or jurisdiction, usually in conjunction with a public health case. Typically this results in a report. An occurrence of a public health case would be related to its investigation via an Act Relationship of type *pertains* or *trigger*.




ActHx
+hasHx
1
+isHxfor
0..1
Act
(from Acts)
ID : Integer
classCode : CS
ActHx_ID : Integer
statusCode : CS
moodCode : CS
code : CV
title : String
text : String
effectiveTime : IVL<TS>
confidentialityCode : CV
repeatNumber : IVL<INT>
reasonCode : SET<CV>
PK(ID)
FK(ActHx_ID) : Act
1
+isa
0..1
Investigation
(from Act Specializations)
ID : Integer
mmwrWeek : Integer
mmwrYear : Integer
reportingStateCode : CV
reportingCountyCode : CV
caseJurisdictionCode : CV
notificationId : String
personLocalId : String
investigationLocalId : String
conditionCodeText : String
dateReportedPHC : TS
dateReportedCDC : TS
caseClassStatusCode : CV
PK(ID)
FK(ID) : Act

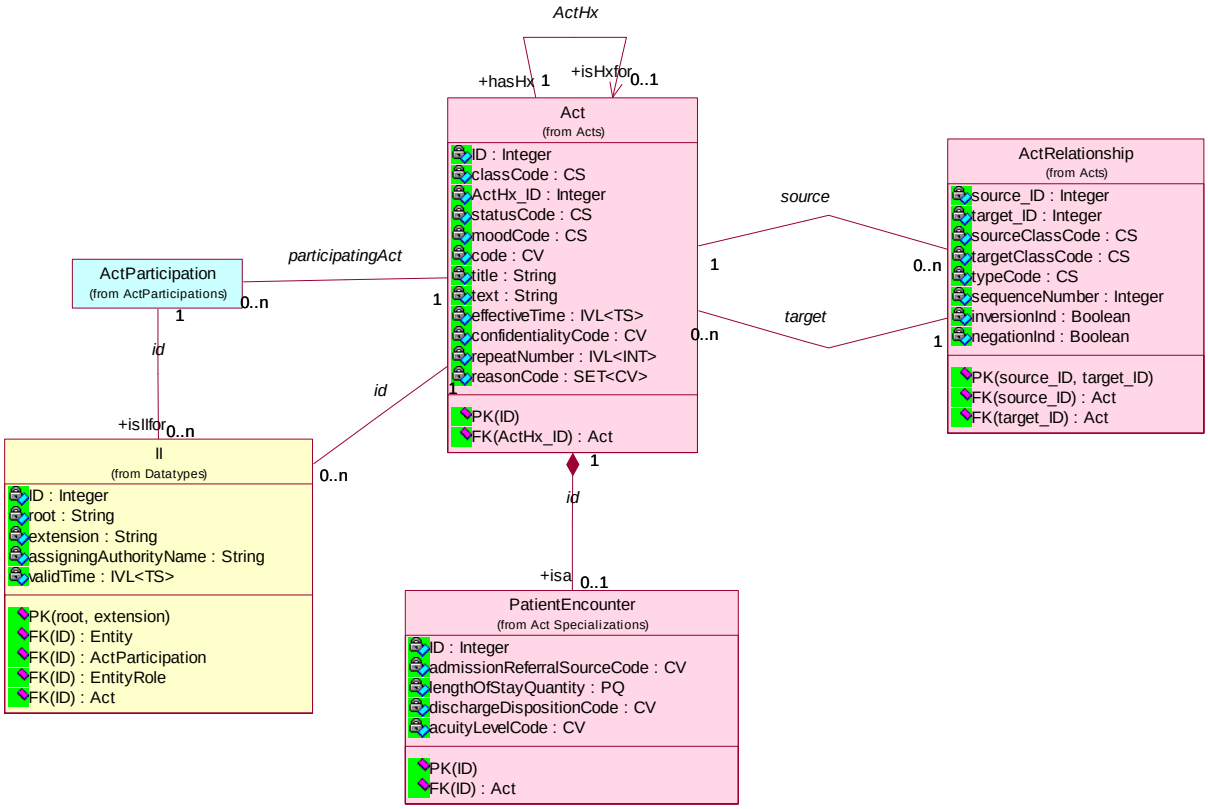
Investigation

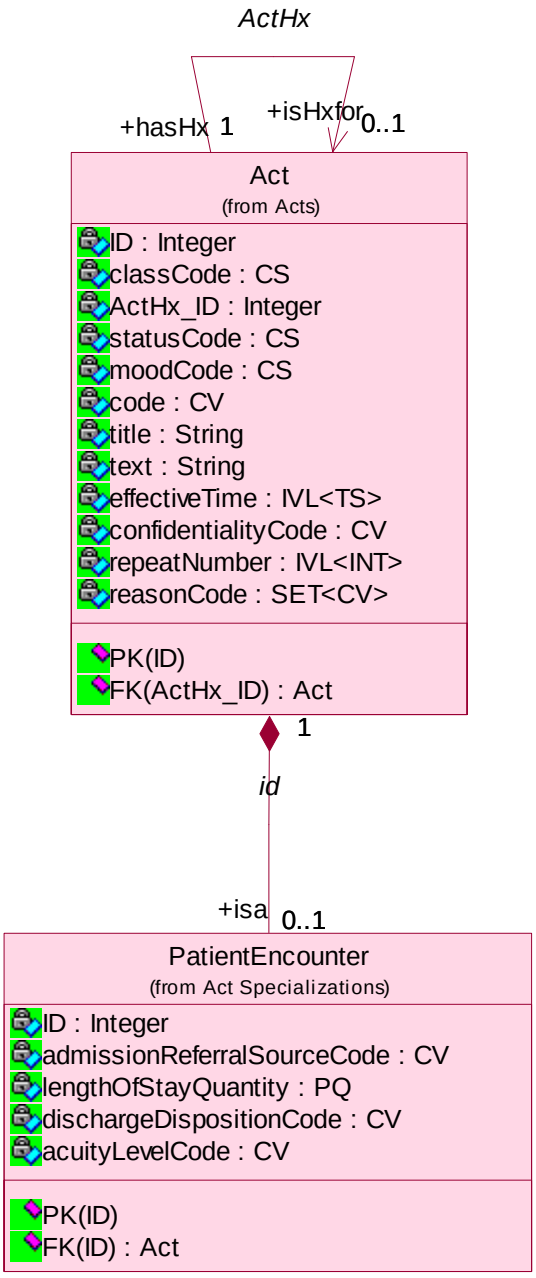
Attribute	Type/Cardinality	Notes
mmwrWeek	INT[0..1]	The ordinal value of the week within the specified mmwrYear that this investigation appears in the CDC's MMWR report. The first week in January has value "1".
mmwrYear	INT[0..1]	The value of the year that this investigation appears in the CDC's MMWR report.
reportingStateCode	CV[0..1]	A code indicating the state reporting this investigation to the CDC. Vocabulary domain=*To Be Supplied*
reportingCountyCode	CV[0..1]	A code indicating the county reporting this investigation to the CDC. Vocabulary domain= *To Be Supplied*
caseJurisdictionCode	CV[0..1]	A code representing the jurisdiction of the investigation. Vocabulary domain= *To Be Supplied*
notificationId	String[0..1]	The identifier of corresponding notification to this investigation.
personLocalId	String[0..1]	A local identifier for the case subject.
investigationLocalId	String[0..1]	A local identifier for the investigation.
conditionCodeText	String[0..1]	*To Be Supplied*
dateReportedPHC	TS[0..1]	The date this investigation was first reported to the local public health agency.
dateReportedCDC	TS[0..1]	The date this investigation was first reported to the CDC.
caseClassStatusCode	CV[0..1]	*To Be Supplied*

5.2.3.7 Encounter

An interaction between a patient and care provider(s) for the purpose of providing healthcare-related service(s). Healthcare services include health assessment.

Examples: outpatient visit to multiple departments, home health support (including physical therapy), inpatient hospital stay, emergency room visit, field visit (e.g., traffic accident), office visit, occupational therapy, telephone call.




ActHx
+hasHx
1
+isHxfor
0..1
Act
(from Acts)
ID : Integer
classCode : CS
ActHx_ID : Integer
statusCode : CS
moodCode : CS
code : CV
title : String
text : String
effectiveTime : IVL<TS>
confidentialityCode : CV
repeatNumber : IVL<INT>
reasonCode : SET<CV>
PK(ID)
FK(ActHx_ID) : Act
1
id
+isa
0..1
PatientEncounter
(from Act Specializations)
ID : Integer
admissionReferralSourceCode : CV
lengthOfStayQuantity : PQ
dischargeDispositionCode : CV
acuityLevelCode : CV
PK(ID)
FK(ID) : Act

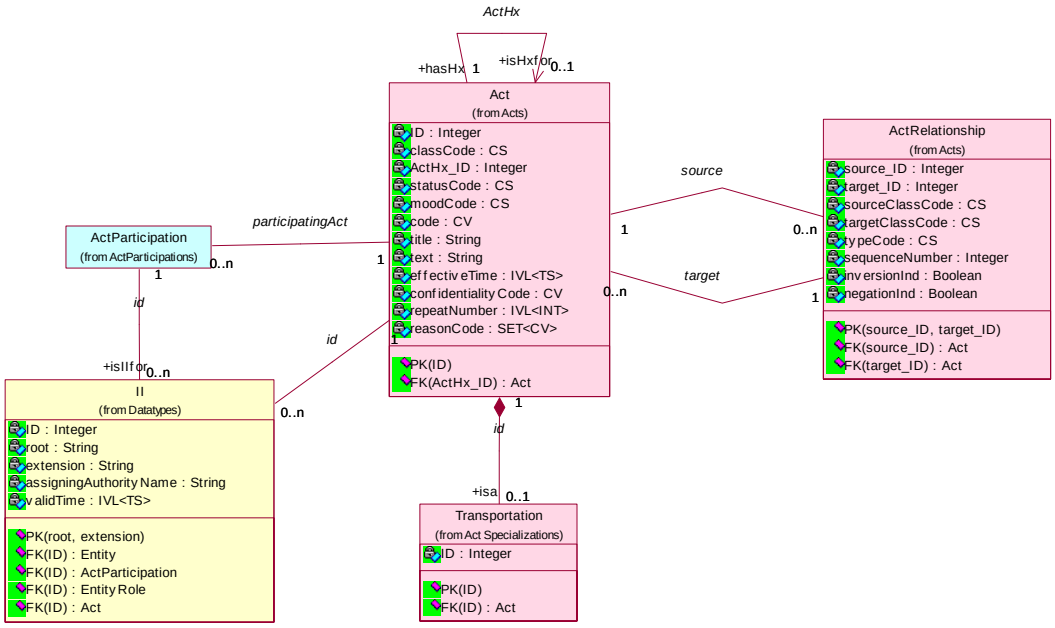
PatientEncounter

Attribute	Type/Cardinality	Notes
admissionReferralSourceCode	CV[0..1]	The source of the referral for a patient encounter. Vocabulary domain=*EncounterReferralSource*
lengthOfStayQuantity	PQ[0..1]	Identifies the total quantity of time when the subject is expected to be or was resident at a facility as part of an encounter.
dischargeDispostitionCode	CV[0..1]	A code depicting the disposition of the patient at the time of discharge (e.g., discharged to home, expired, against medical advice, etc.). Vocabulary domain=*EncounterDischargeDisposition*
acuityLevelCode	CV[0..1]	A code depicting the acuity (complexity of patient care, resource intensiveness of the patient care) of a patient's medical condition upon arrival. Vocabulary domain=*EncounterAcuity*

5.2.3.8 Transportation

A Health related event, where an entity in the role of contact, or exposed entity, or investigativeSubject participated as "subj". The travel event occured at the effectiveTime, Transportation is the moving of a payload (people or material) from a location of origin to a destination location. Thus, any transport service has the three target instances of type payload, origin, and destination, besides the targets that are generally used for any service (i.e., performer, device, etc.)

A Transportation act is represented simply as an Acts without special attributes.

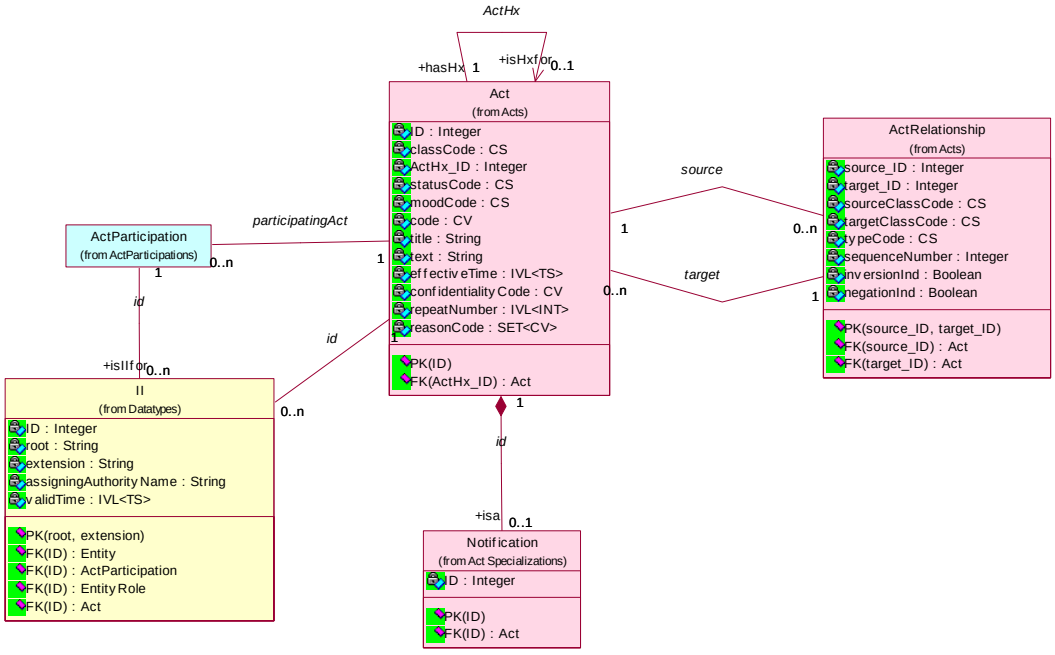


5.2.3.9 Notification

A notification is the activity of conveying information about a public health related event. Typically, the information conveyed is a report of an investigation or a public health case.

A Notification is represented simply as an Act without special attributes.

The actual values conveyed in a notification are domain dependant, and thus represented in this logical model by Observations related to the Notification via the “COMP” (has Component) relationship. Any additional reporting information can be conveyed in the Notification.text attribute.

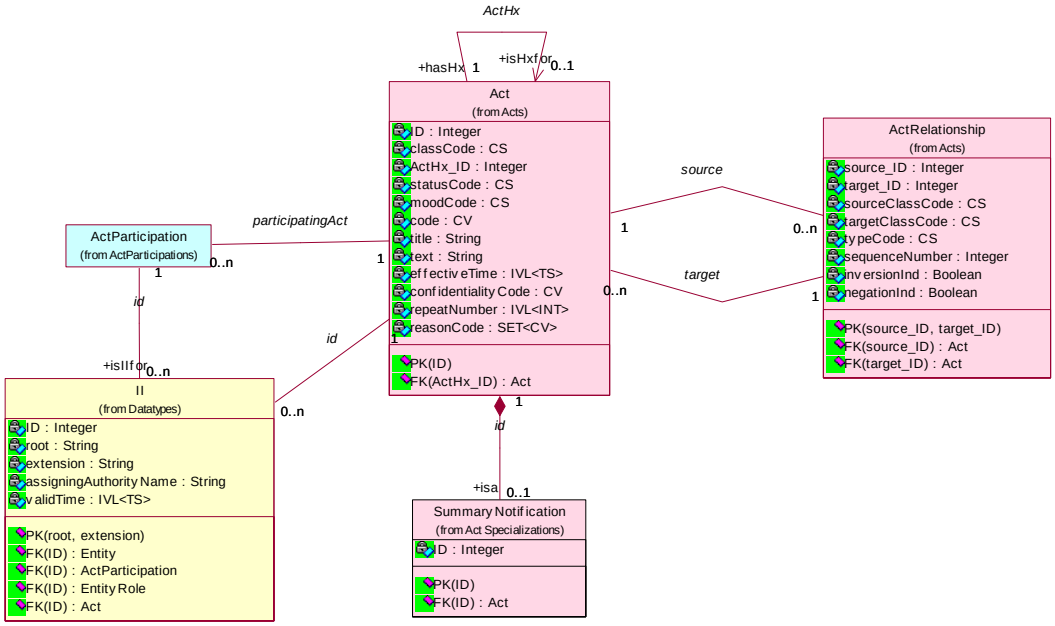


5.2.3.10 SummaryNotification

A Summary Notification is the activity of conveying summary information about a public health related event, or group of events. Typically, the information conveyed is a report containing counts of cases, and other related information.

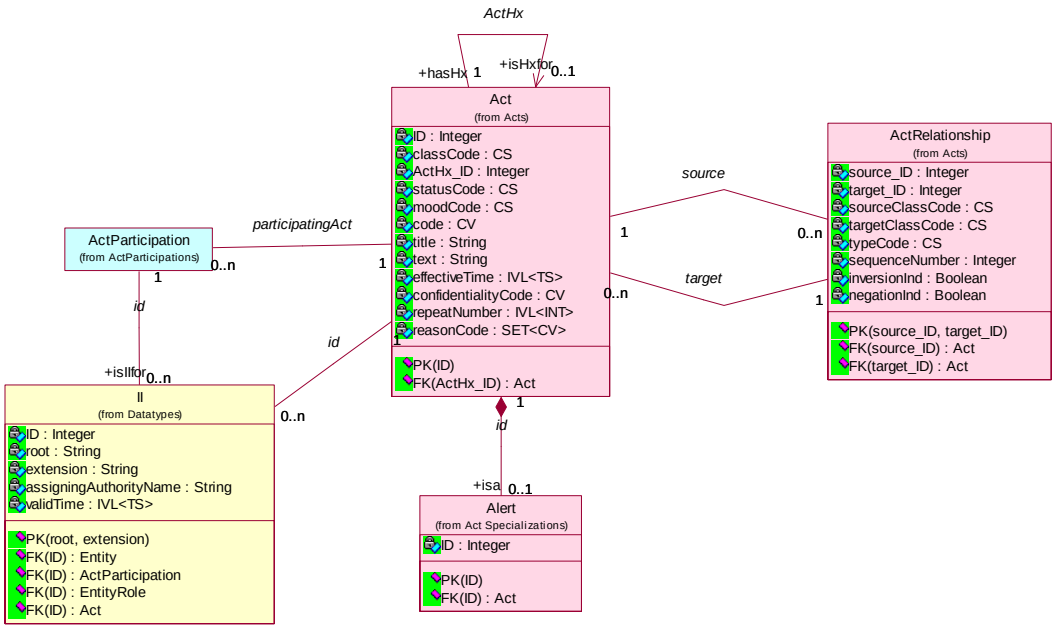
A Summary Notification is represented simply as an Act without special attributes.

The actual values conveyed in a summary notification are domain dependant, and thus represented in this logical model by Observations related to the SummaryNotification via the “COMP” (has Component) relationship. Textual report information can be conveyed in the SummaryNotification.text attribute.



5.2.3.11 Alert

An Alert is represented simply as an Act without special attributes.



5.2.3.12 Document

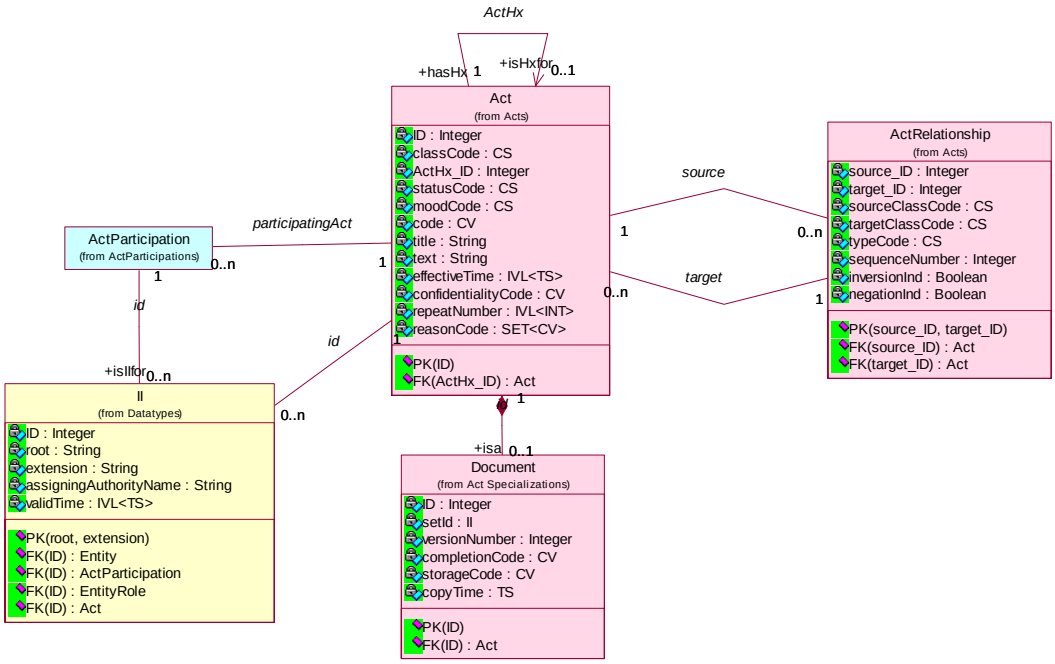
The notion of a document comes particularly from the paper world, where it corresponds to the contents recorded on discrete pieces of paper. In the electronic world, a document is a kind of composition that bears resemblance to their paper world counter-parts. Documents typically are meant to be human-readable.

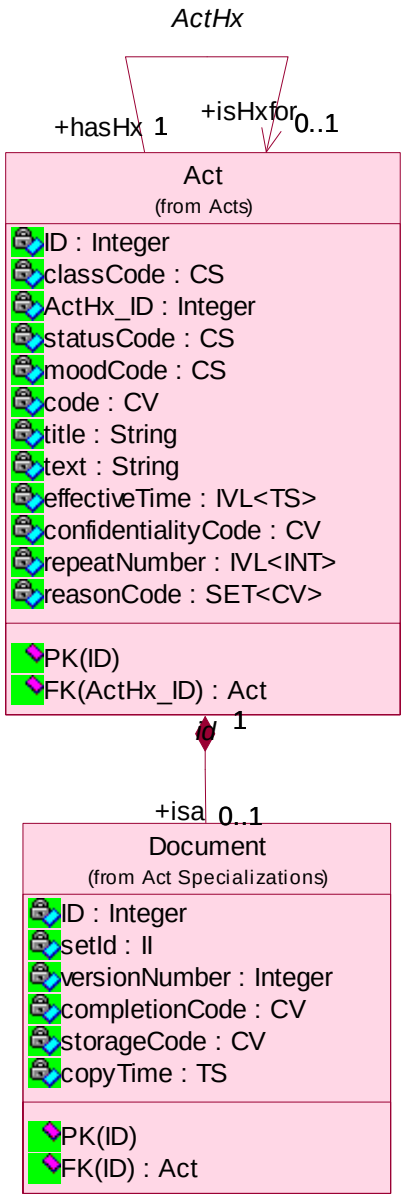
A Document is represented simply as an Act without special attributes. The document itself is carried in the Act.text attribute.

5.2.3.12.1 ClinicalDocument

A document may additionally be a clinical document (CDA). The appropriate attributes for clinical documents are included for that purpose. A clinical document is a documentation of clinical observations and services, with the following characteristics: Persistence - A clinical document continues to exist in an unaltered state, for a time period defined by local and regulatory requirements; Stewardship - A clinical document is maintained by a person or organization entrusted with its care; Potential for authentication - A clinical document is an assemblage of information that is intended to be legally authenticated; Wholeness - Authentication of a clinical document applies to the whole and does not apply to portions of the document without the full context of the document; Human readability - A clinical document is human readable. The PHIN LDM does not address requirements for persistence, authentication, and storage that may arise for a clinical document.

Use of CDA documents should follow the standards given by The Clinical Document Architecture, November 2000, HL7.


ActHx
+hasHx
1
+isHxfor
0..1
Act
(from Acts)
ID : Integer
classCode : CS
ActHx_ID : Integer
statusCode : CS
moodCode : CS
code : CV
title : String
text : String
effectiveTime : IVL<TS>
confidentialityCode : CV
repeatNumber : IVL<INT>
reasonCode : SET<CV>
PK(ID)
FK(ActHx_ID) : Act
source
target
1
0..n
0..n
1
ActRelationship
(from Acts)
source_ID : Integer
target_ID : Integer
sourceClassCode : CS
targetClassCode : CS
typeCode : CS
sequenceNumber : Integer
inversionInd : Boolean
negationInd : Boolean
PK(source_ID, target_ID)
FK(source_ID) : Act
FK(target_ID) : Act
ActParticipation
(from ActParticipations)
participatingAct
0..n
1
1
id
+isIIfor
0..n
II
(from Datatypes)
ID : Integer
root : String
extension : String
assigningAuthorityName : String
validTime : IVL<TS>
PK(root, extension)
FK(ID) : Entity
FK(ID) : ActParticipation
FK(ID) : EntityRole
FK(ID) : Act
id
1
0..n
+isa
0..1
Document
(from Act Specializations)
ID : Integer
setId : II
versionNumber : Integer
completionCode : CV
storageCode : CV
copyTime : TS
PK(ID)
FK(ID) : Act


ActHx
+hasHx
1
+isHxfor
0..1
Act
(from Acts)
ID : Integer
classCode : CS
ActHx_ID : Integer
statusCode : CS
moodCode : CS
code : CV
title : String
text : String
effectiveTime : IVL<TS>
confidentialityCode : CV
repeatNumber : IVL<INT>
reasonCode : SET<CV>
PK(ID)
FK(ActHx_ID) : Act
1
+isa
0..1
Document
(from Act Specializations)
ID : Integer
setId : II
versionNumber : Integer
completionCode : CV
storageCode : CV
copyTime : TS
PK(ID)
FK(ID) : Act

Document

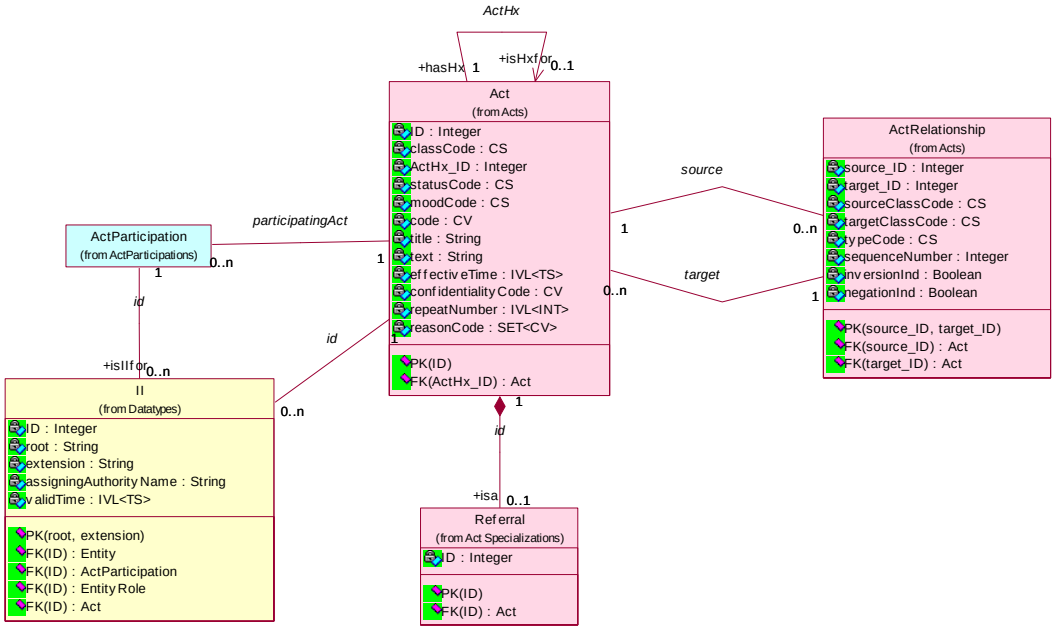
Attribute	Type/Cardinality	Notes
setId	II[0..1]	A report identifier that remains constant across all document revisions that derive from a common original document. An original report is the first version of a report. It gets a new unique value for Document.setId, and has the value of Document.versionNumber set to equal "1".
versionNumber	Int[0..1]	The version of the document identified by setId. Version number is an integer starting at '1' and incrementing by 1. The first instance or original report should always be valued as '1'.
completionCode	CV[0..1]	A code depicting the completion status of a report (e.g., incomplete, authenticated, legally authenticated). Vocabulary Domain=*DocumentCompletion*
storageCode	CV[0..1]	A code depicting the storage status (e.g., active, archived, purged) of a report. Vocabulary domain=*StorageCode*
copyTime	TS[0..1]	Time a document is released (i.e., copied or sent to a display device) from a document management system that maintains revision control over the document.

5.2.3.13 Referral

A referral is the health related activity of recommendation of a medical or public health person.

A Referral is represented simply as an Act without special attributes.

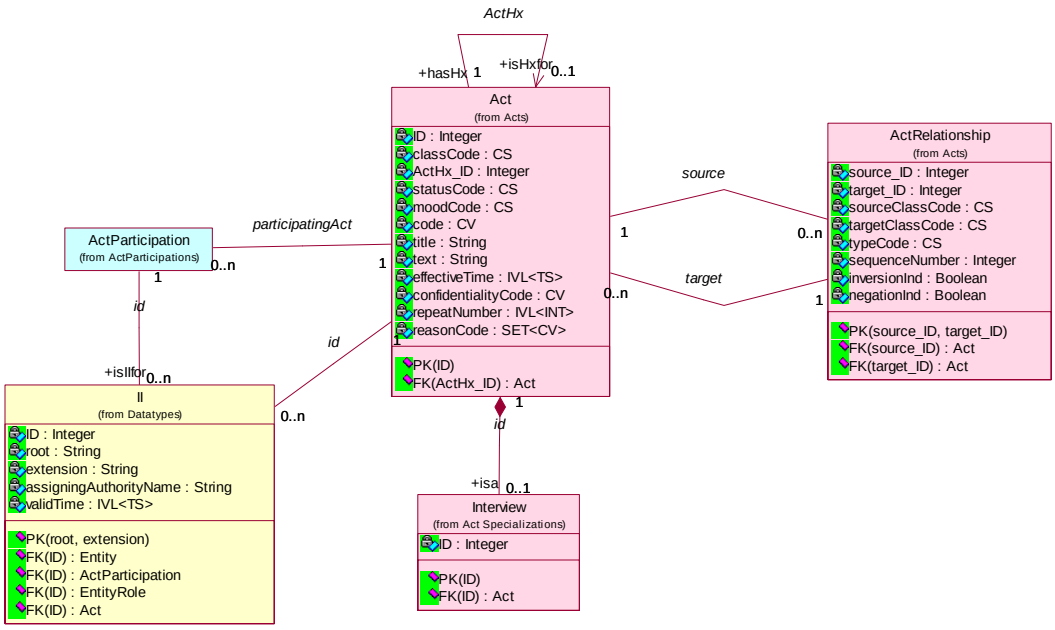
The referrer is represented by a participation with participation.typeCode of “REF” (Referrer). The referrer is a person having referred the subject of the Referral to the performer (referring physician). Typically, a referring physician will provide a report. The person who receives the referral is represented by a participation with participation.typeCode of “REFT” (Referred to).



5.2.3.14 Interview

An interview is a form of encounter. It may correspond to a conversation with an individual concerning items of interest to a public health case or investigation.

An Interview is represented simply as an Act without special attributes.

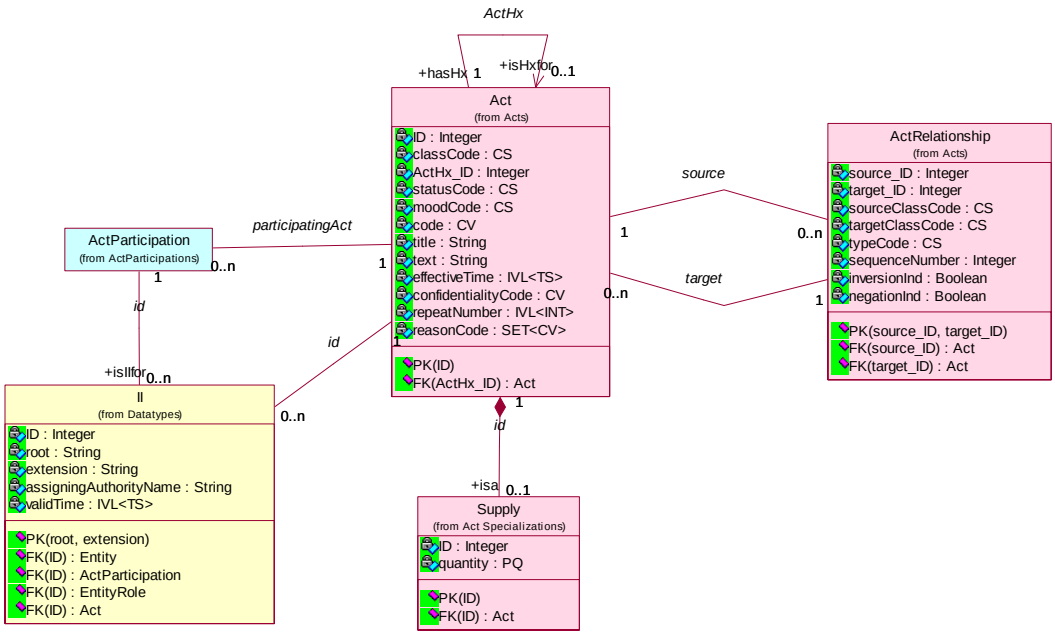


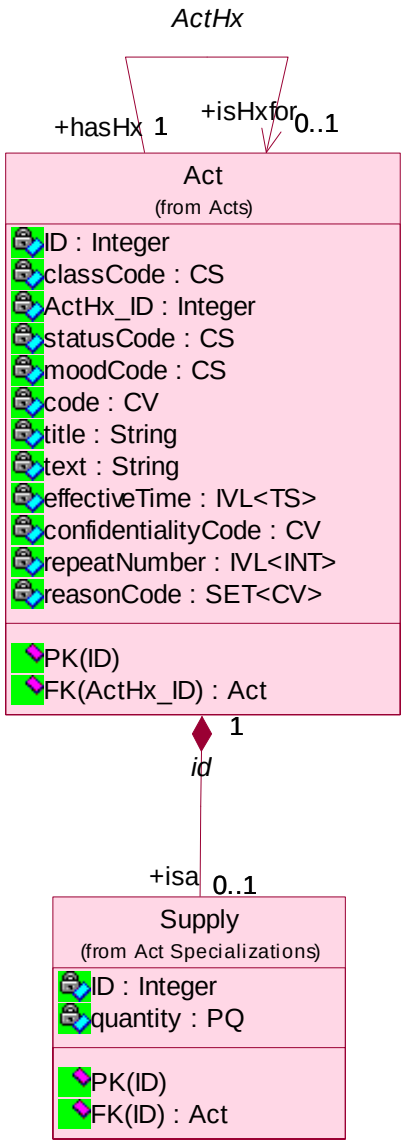
5.2.3.15 Supply

An act that involves provision of a material by one entity to another.

Discussion: The product is associated with the Supply Act via Participation.typeCode="product". With general Supply Acts, the precise identification of the Material (manufacturer, serial numbers, etc.) is important. Most of the detailed information about the Supply should be represented using the Material class.

Examples: Ordering bed sheets; Dispensing of a drug; Issuing medical supplies from storage





Supply

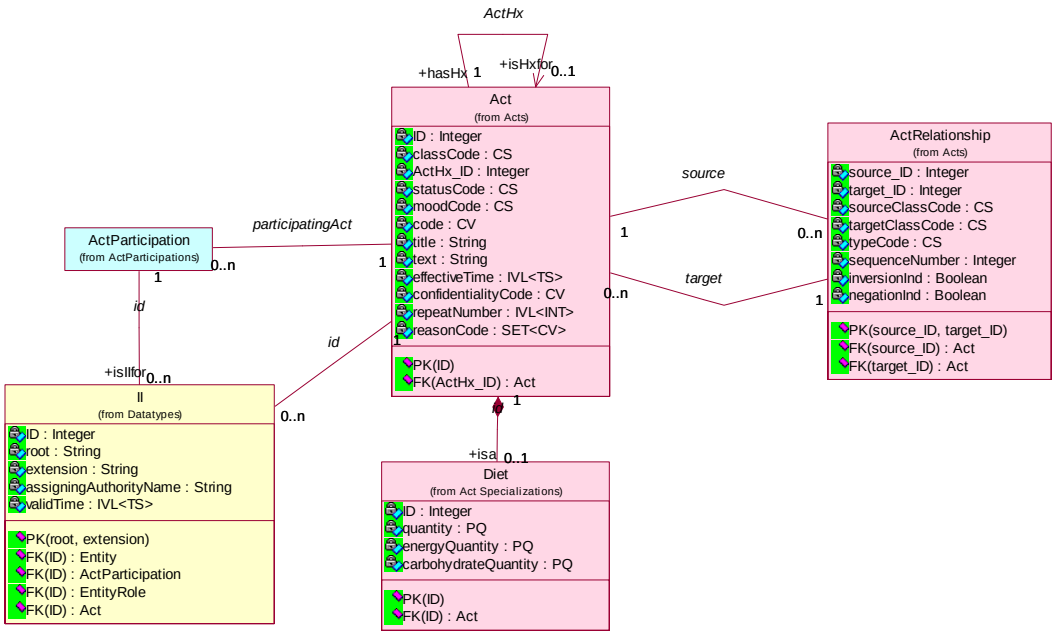
Attribute	Type/Cardinality	Notes
quantity	PQ[0..1]	The amount that was or is to be supplied (depending on the moodCode)

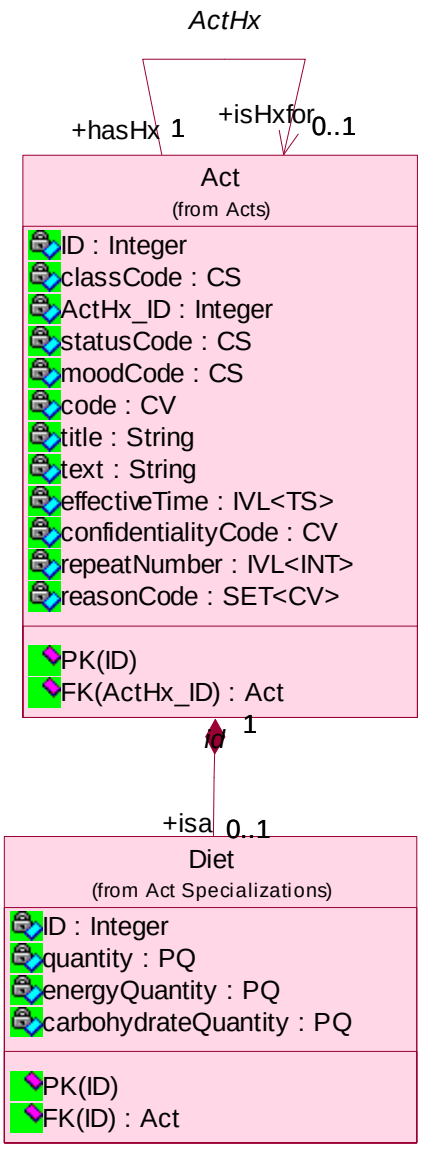
5.2.3.16 Diet

A supply act dealing specifically with the feeding or nourishment of a subject.

Discussion: The detail of the diet is given as a description of the Material associated via Participation.typeCode="product". Medically relevant diet types may be communicated in the Diet.code, however, the detail of the food supplied and the various combinations of dishes should be communicated as Material instances.

Examples: Gluten free; Low sodium





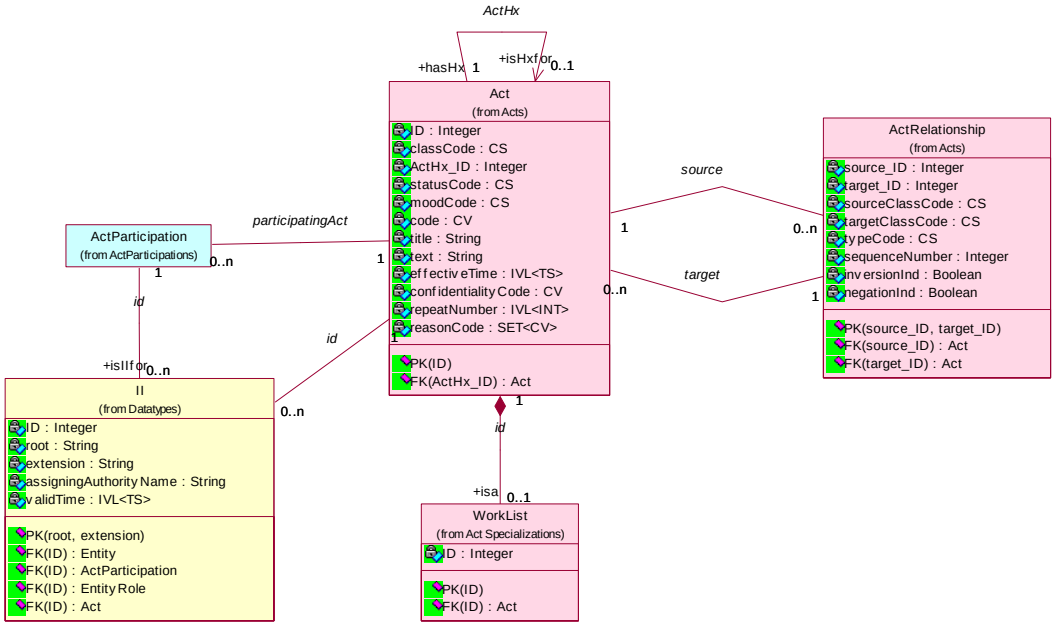
Diet

Attribute	Type/Cardinality	Notes
quantity	PQ[0..1]	The amount that was or is to be supplied (depending on the moodCode)
energyQuantity	PQ[0..1]	The supplied biologic energy (Calories) per day.
carbohydrateQuantity	PQ[0..1]	The supplied amount of carbohydrates (g) per day.

5.2.3.17 WorkList

A dynamic list of individual instances of Act which reflect the needs of an individual worker, team of workers, or an organization to view groups of Acts for clinical or administrative reasons. The grouped Acts are related to the WorkList via an ActRelationship of type 'COMP' (component). Examples: Problem lists, goal lists, allergy lists, to-do lists, etc.

A WorkList is represented simply as an Act without special attributes.



5.2.3.18 Workup

A Workup is a document that describes any relevant information to a Public Health Case. In the PHIN LDM, it is expressed via the Document class.

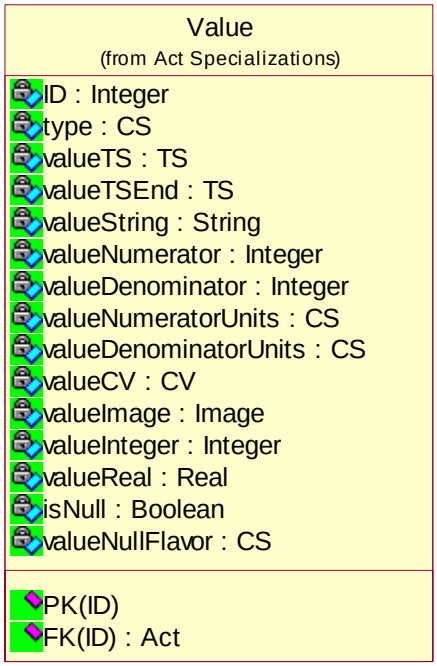
5.2.4 Value

The value class represents the value that may be expressed by the attribute value in the Observation Act and its specializations, currently PublicHealthCase.

The domain of the value attribute is defined as *Any*, to allow observation values of any appropriate type to be expressed. The PHIN LDM represents this as a value class. It expresses reasonable representations for the datatypes required by the PHIN LDM. While not the only such representation, it is a sufficient one.

A value is expressed as an instance of the Value class (row in the Value table). The attribute value.type is used as a discriminator to determine how to interpret the remaining attributes of the instance. For example, if the datatype is a String, value.type=ST, and the string itself is carried in value.valueString. If a value is null, the isNull attribute is set true, and the valueNullFlavor attribute is used to determine the flavor of null, e.g. unknown, not asked, etc.

Refer to the Datatypes chapter of this guide for definitions of the datatypes.



Value

Attribute	Type/Cardinality	Notes
Value_ID	integer	Local ID, Primary Key
Act_ID	Integer (Act)	Foreign key to Act/Observation
type	CS [1..1]	Discriminator for value. Vocabulary Domain=*ValueType*
isNull	Boolean	True if this value is Null, false otherwise. If isNull, only valueNullFlavor is meaningful.
valueNullFlavor	CS [0..1]	If isNull, flavor of null. Vocabulary domain=*NullFlavor*
valueTS	TS [0..1]	Valued if TS or IVL<TS>. Holds an individual TS value or the start of time IVL, depending on the type.
valueTSEnd	TS [0..1]	End of time IVL
valueString	String [0..1]	Valued if String
valueNumerator	Integer [0..1]	Valued if RTO
valueDenominator	Integer [0..1]	Valued if RTO
valueNumeratorUnits	CS [0..1]	Valued if RTO. Vocabulary domain=UCUM (*UnitsOfMeasureCaseInsensitive*)
valueDenominatorUnits	CS [0..1]	Valued if RTO. Vocabukary domain=UCUM (*UnitsOfMeasureCaseInsensitive*)
valueCoded	CV [0..1]	Valued if Coded Value. Gives term, Value Set OID, Version, and original text.
valueImage	Binary [0..n]	Valued if image. Arbitrary size image. Implementation defined.
valueReal	Real [0..1]	Valued if Real
valueInteger	Integer [0..1]	Valued if Integer

5.3 Relationships between Acts and Entities

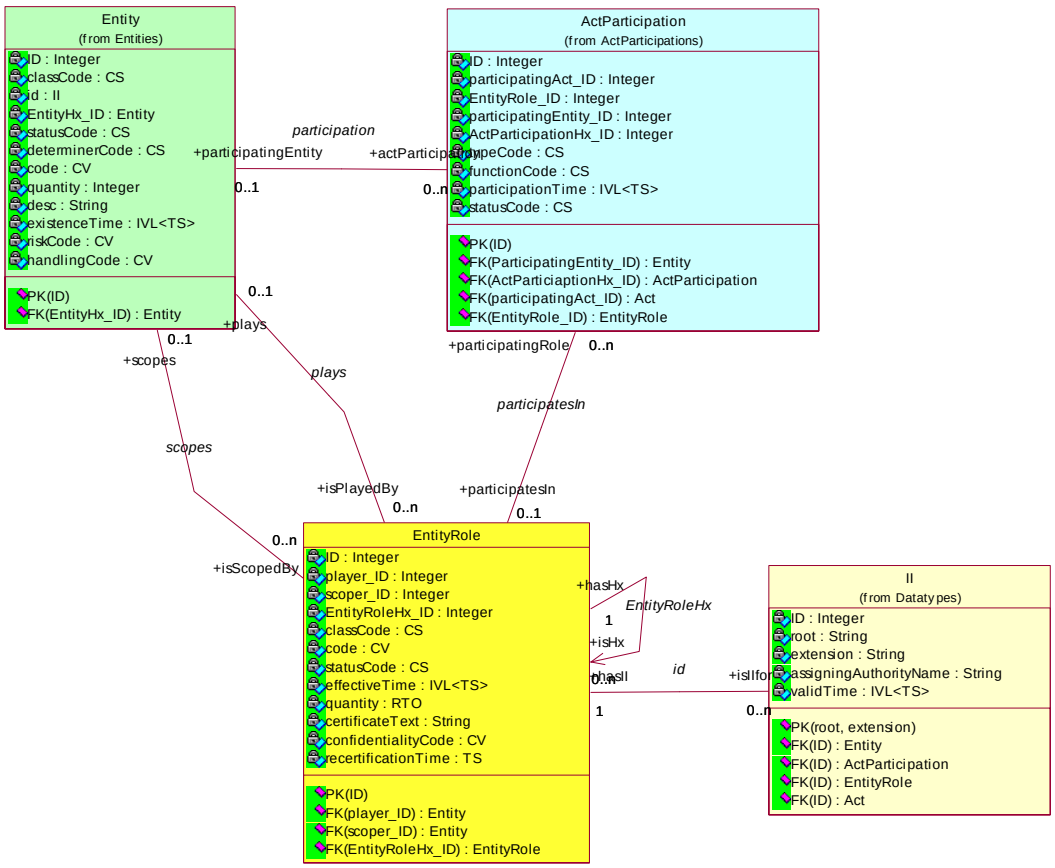
In the PHIN LDM, relationships between Acts and Entities are represented by ActParticipations and EntityRoles, both derived from the HL7 RIM model.

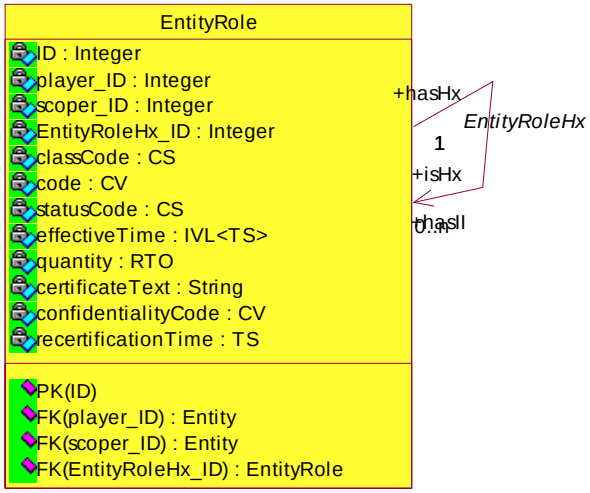
5.3.1 EntityRole

An EntityRole typically represents a relationship between one or more Entities that exists independently of an Act. EntityRole may be specialized into subclasses suich as EntityRoleEmployee.

The particular type of EntityRole is described by the attribute roleClass, which is a code specifying the kind of EntityRole and acts as a discriminator for the EntityRole specialization. Its vocabulary domain is *RoleClass*.

Typical EntityRole classes are Patient, Employee, Practitioner and Agent.





EntityRole

Attribute	Type/Cardinality	Notes
ID	Integer	Local ID, primary key.
classCode	CS	An HL7 defined value representing the class or category of the Role that this instance represents. HL7 Defined. Vocabulary Domain=*RoleClass*
entityRoleHx	EntityRole[0..1]	A recursive FK reference back to EntityRole, that can be used to represent a history of EntityRoles, together with the statusCode attribute. See discussion in Section xx.
id	II [0..*]	A unique identifier for the EntityRole. The id attribute is implemented as a reference from the II table.
code	CV [0..1]	A code that further classifies the Role classCode. Vocabulary Domain=*RoleCode*
effectiveTime	IVL<TS> [0..1]	An interval of time specifying the period during which the role is in effect, if such time limit is applicable and known.
statusCode	CS [0..1]	A code specifying the state of this role, as defined by the HL7 state-transition model. This attribute can be used to

		represent historical information for the role. Vocabulary domain=*RoleStatus*
quantity	RTO [0..1]	A ratio specifying the relative quantities of player to scoper. Used for roles that represent composition relationships between the playing and scoping entities.
certificateText	ED	A textual description of a certificate issued by the scoping entity, certifying that this role is indeed played by the player entity.
confidentialityCode	CV [0..1]	This code may be valued if the EntityRole is that of a Patient, null otherwise. The code specifies the privacy protection policies in place for this patient. HL7 defined. Vocabulary Domain=*Confidentiality*
recertificationTime	dateTime [0..1]	This attribute may be valued if the EntityRole is that of a licensedEntity. The attribute contains the date recertification of the license is required.
participatesIn	ActParticipation [0..*]	An Entity participates in 0 or more Acts, via ActParticipation. An FK relationshiop will exist from ActParticiaption to Entity if such a relationship exists.
player	Entity [0..*]	An Entity may *play* roles (have competence), which may occur independently of ActParticipations. An FK relationship will exist from EntityRole to Entity if such a relationship exists.
scoper	Entity [0..*]	An Entity may *scope* roles (have competence), which may occur independently of ActParticipations. An FK relationship will exist from EntityRole to Entity if such a relationship exists

5.3.2 Specialized EntityRoles

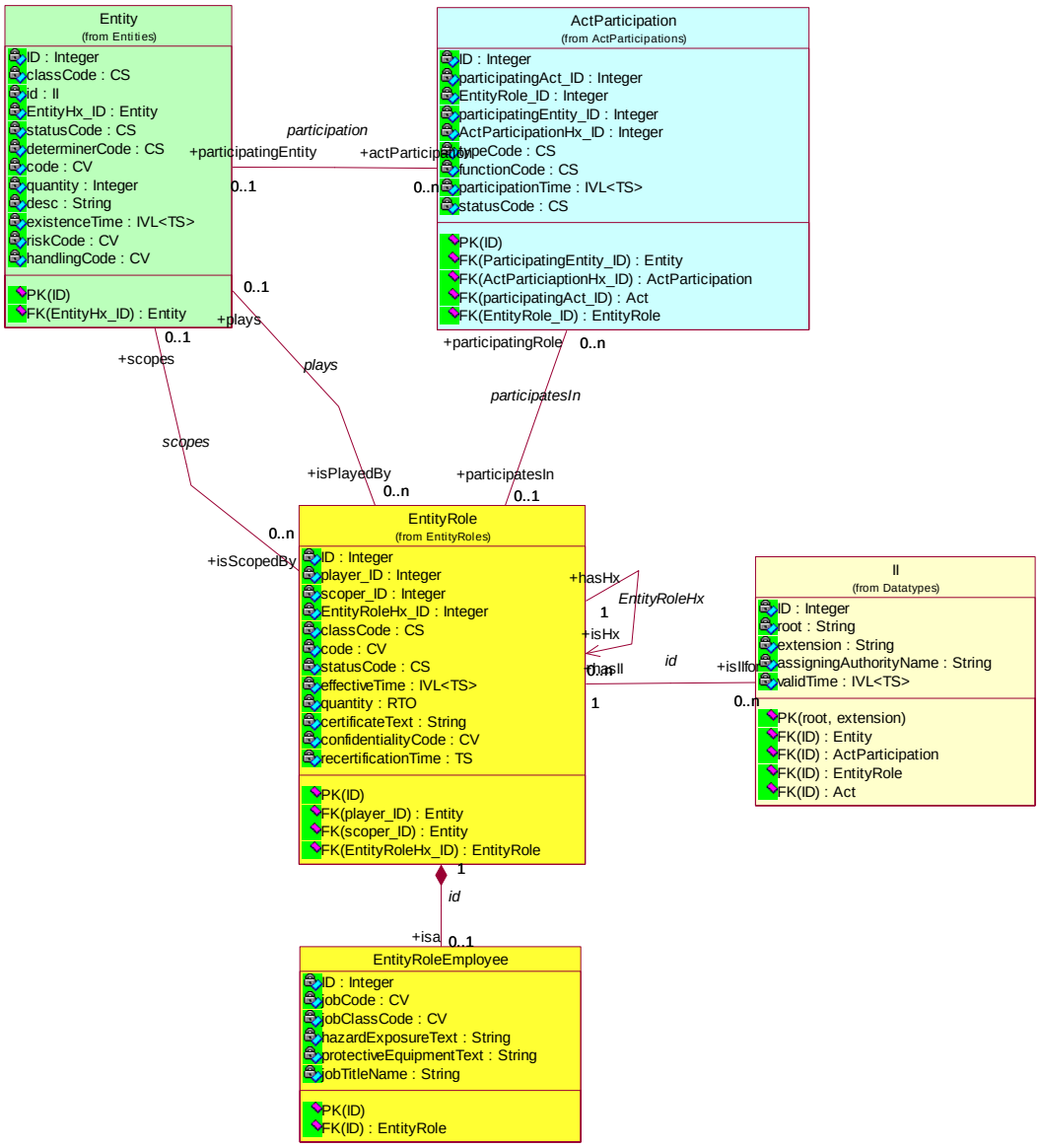
The inheritance pattern is slightly different for EntityRole than for Entity and Act, in that the specializations of EntityRole, in general, do not add many attributes to the superclass. The great majority of roles can be represented with the superclass along with perhaps an additional attribute. Accordingly, for this inheritance hierarchy, for most specializations, we migrate the specialized attributes to the superclass, and access them after considering the classCode discriminator.

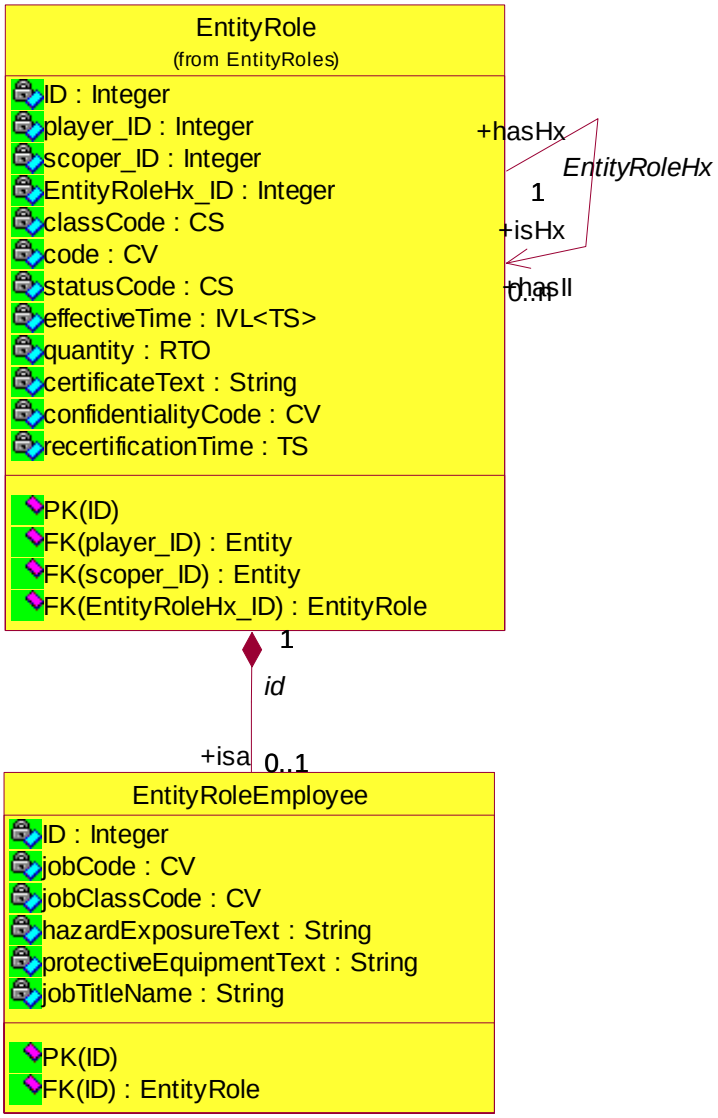
In the current model, only the employee class is specialized further, such that its attributes are accessed via the EntityRoleEmployee class.

5.3.2.1 EntityRoleEmployee

The role of employee is handled as a specialization of the EntityRole class. See the discussion under EntityRoleSpecialized (above).

An employee role is a role played by a person who is associated with an organization (the employer, scoper) to receive wages or salary. The purpose of the role is to identify the type of relationship the employee has to the employer rather than the nature of the work actually performed.


Entity
(from Entities)
ID : Integer
classCode : CS
id : II
EntityHx_ID : Entity
statusCode : CS
determinerCode : CS
code : CV
quantity : Integer
desc : String
existenceTime : IVL<TS>
riskCode : CV
handlingCode : CV
PK(ID)
FK(EntityHx_ID) : Entity
ActParticipation
(from ActParticipations)
ID : Integer
participatingAct_ID : Integer
EntityRole_ID : Integer
participatingEntity_ID : Integer
ActParticipationHx_ID : Integer
typeCode : CS
functionCode : CS
participationTime : IVL<TS>
statusCode : CS
PK(ID)
FK(ParticipatingEntity_ID) : Entity
FK(ActParticiaptionHx_ID) : ActParticipation
FK(participatingAct_ID) : Act
FK(EntityRole_ID) : EntityRole
participation
+participatingEntity
+actParticipation
0..1
0..n
+plays
plays
+scopes
scopes
+participatingRole
participatesIn
+isPlayedBy
+participatesIn
+isScopedBy
EntityRole
(from EntityRoles)
ID : Integer
player_ID : Integer
scoper_ID : Integer
EntityRoleHx_ID : Integer
classCode : CS
code : CV
statusCode : CS
effectiveTime : IVL<TS>
quantity : RTO
certificateText : String
confidentialityCode : CV
recertificationTime : TS
PK(ID)
FK(player_ID) : Entity
FK(scoper_ID) : Entity
FK(EntityRoleHx_ID) : EntityRole
+hasHx
EntityRoleHx
+isHx
id
+isIIfor
II
(from Datatypes)
ID : Integer
root : String
extension : String
assigningAuthorityName : String
validTime : IVL<TS>
PK(root, extension)
FK(ID) : Entity
FK(ID) : ActParticipation
FK(ID) : EntityRole
FK(ID) : Act
+isa
id
EntityRoleEmployee
ID : Integer
jobCode : CV
jobClassCode : CV
hazardExposureText : String
protectiveEquipmentText : String
jobTitleName : String
PK(ID)
FK(ID) : EntityRole


EntityRole
(from EntityRoles)
ID : Integer
player_ID : Integer
scoper_ID : Integer
EntityRoleHx_ID : Integer
classCode : CS
code : CV
statusCode : CS
effectiveTime : IVL<TS>
quantity : RTO
certificateText : String
confidentialityCode : CV
recertificationTime : TS
PK(ID)
FK(player_ID) : Entity
FK(scoper_ID) : Entity
FK(EntityRoleHx_ID) : EntityRole
+hasHx
EntityRoleHx
1
+isHx
0..n
1
id
+isa
0..1
EntityRoleEmployee
ID : Integer
jobCode : CV
jobClassCode : CV
hazardExposureText : String
protectiveEquipmentText : String
jobTitleName : String
PK(ID)
FK(ID) : EntityRole

EntityRoleEmployee

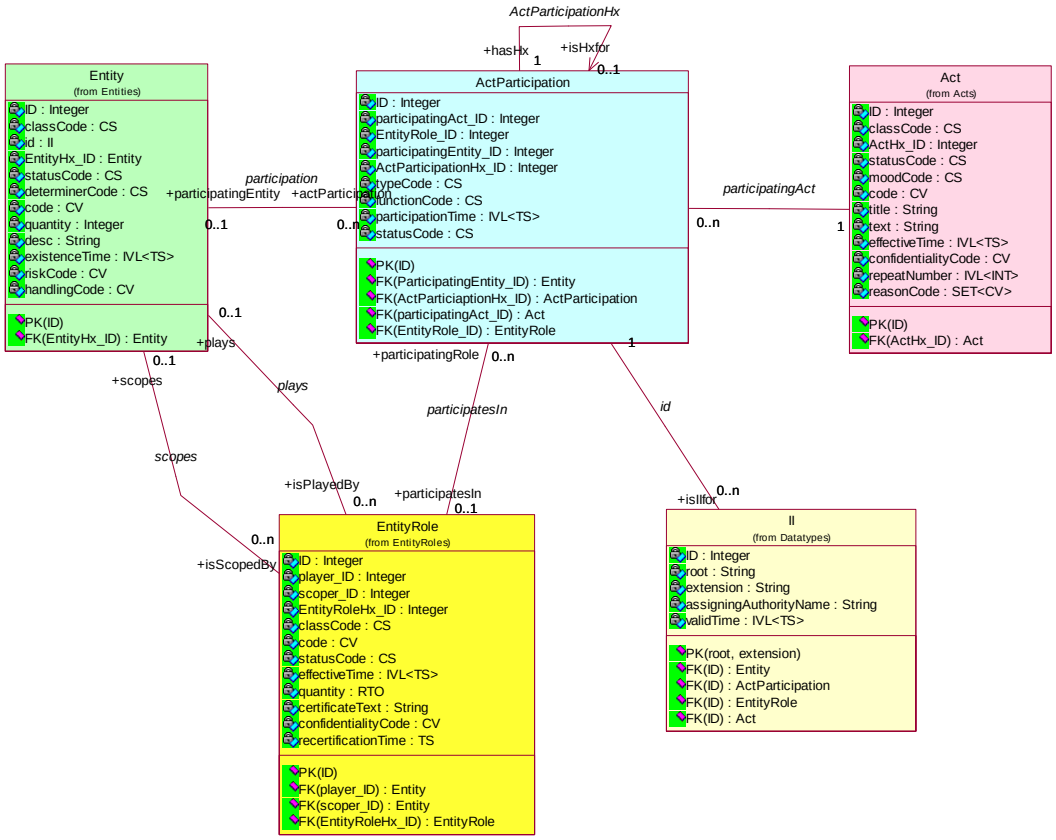
Attribute	Type/Cardinality	Notes
jobCode	CV[0..1]	A code specifying the job performed by the employee for the employer. For example, accountant, programmer analyst, patient care associate, staff nurse, etc. Vocabulary domain=*EmployeeJob*
jobClassCode	CV[0..1]	A code qualifying the employment in various ways, such as, full-time vs. part-time, etc. VocabularyDOmain=*EmployeeJobClass*
hazardExposureText	String[0..1]	The type of hazards associated with the work performed by the employee for the employer. For example, asbestos, infectious agents.
protectiveEquipmentText	String[0..1]	Protective equipment needed for the job performed by the employee for the employer. For example, safety glasses, hardhat.
jobTitleName	String[0..1]	The title of the job held, for example, Vice President, Senior Technical Analyst

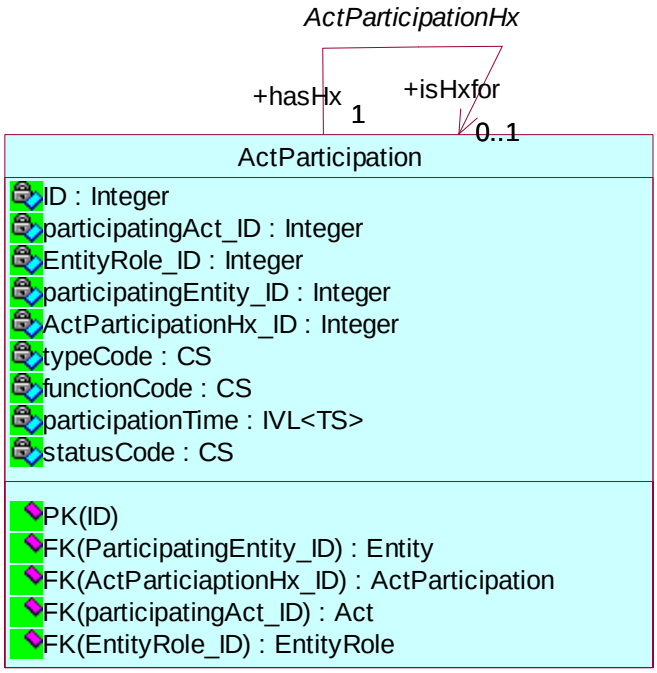
5.3.3 ActParticipation

An ActParticipation relates an Entity or a EntityRole to an Act, where the relationship is defined in the context of the Act. An ActParticipation tells you what specific action an EntityRole or Entity in a role is taking in a particular Act.

The particular type of ActParticipation is described by the attribute typeCode, which is a code specifying the kind of ActParticipation or involvement the Entity playing the EnitytRole associated with the ActParticipation has with regard to the associated Act. Its vocabulary domain is *ParticipationType*.

Typical ActParticipation types are Subject, Author, Performer, and Location.




ActParticipationHx
+hasHx
1
+isHxfor
0..1
ActParticipation
ID : Integer
participatingAct_ID : Integer
EntityRole_ID : Integer
participatingEntity_ID : Integer
ActParticipationHx_ID : Integer
typeCode : CS
functionCode : CS
participationTime : IVL<TS>
statusCode : CS
PK(ID)
FK(ParticipatingEntity_ID) : Entity
FK(ActParticiaptionHx_ID) : ActParticipation
FK(participatingAct_ID) : Act
FK(EntityRole_ID) : EntityRole

ActParticipation

Attribute	Type/Cardinality	Notes
ID	Integer	Local ID, primary key.
typeCode	CS	An HL7 defined value representing the type of the participation for the Act associated with this ActParticipation. Vocabulary Domain=*ParticipationType*
participatingAct	Act [1..1]	This is an FK reference to the Act for which this participation is a part.
participatingEntity	Entity [0..1]	This is an FK reference to the primary Entity that participated in the participating Act. This is the player of the role, if it exists, else the scoper.
entityRole	EntityRole[0..1]	This is an FK reference to the EntityRole through which the primary Entity participates in the Act. It is used to associate a particular role which the participation.
actParticipationHx	ActParticipation[0..1]	A recursive FK reference back to ActParticipation, that can be used to represent a history of ActParticipations, together with the statusCode attribute. See discussion in Section xx.
functionCode	CV [0..1]	An optional code specifying additional detail about the function that the Participation has in the Act, if such detail is not implied by the typeCode. *Examples include:* First surgeon, scrub nurse, circulating nurse, nurse assistant, anesthetist. Vocabulary domain=*ParticipationFunction*
participationTime	IVL<TS> [0..1]	The interval of time specifying the time during which the participant is involved in the act through this ActParticipation. ActParticipation time is needed when the participant's involvement in the act spans only part of the Act's time, or needs to be described independently from the Act.
statusCode	CS[0..1]	A code specifying whether the participation instance is pending, active, complete, or cancelled. Vocabulary domain=*ManagedParticipationStatus*

5.4 Datatypes

A **Data Type** defines the allowable values of an attribute and what those values "mean."

Every data element has a data type. Data types define the meaning (semantics) of data values that can be assigned to a data element. Meaningful exchange of data requires that we know the definition of values so exchanged. This is true for complex "values" such as business messages as well as for simpler values such as character strings or integer numbers.

Each data element of the PHIN LDM is assigned a datatype. The PHIN LDM datatypes are based on and are a subset of the datatypes defined by the HL7 Version 3 Abstract Data Type specification [6].

In general, the abstract datatypes are mapped to (implemented by) concrete physical datatypes in a final physical data model. At the logical data model level, we do not know the actual physical characteristics of the data representations eventually used at the physical level – thus we continue to describe the datatypes in an abstract manner. Mappings from the logical datatypes to physical datatypes are part of the logical to physical mapping specifications that must be employed in any implementation of this PHIN LDM.

Examples of physical mapping details that are deferred to implementation include:

Are integers represented as 16, 32, or 64 bit signed binary, or decimal digits?
Is a primitive “money” type used to represent some reals?
Is a Boolean represented as a bit or a byte?
What is the maximum varying character string length?
Are binary data represented?
In what formats are dates stored? Times?
Are constraints available to redefine simple types?

5.4.1 Properties of Data Values

Data values have properties and operations defined by their data type. Each property is referred to by name, and is likely to be thought of as a “field” when the property is implemented in a computer system. Operations describe the behavior of the data type, such as arithmetic operations, string manipulation, and comparison tests. This guide lists

[6] HL7 Version 3 Standard: Data Types Abstract Specification, Health Level Seven, Inc. 3300 Washtenaw Avenue, Suite 227, Ann Arbor, MI 48104, http://www.hl7.org

the primary properties for the PHIN LDM data types. Full detail of the properties and operations is presented in the HL7 Version 3 Abstract Data Type specification.

The properties of a data type are described with

Name – the name of the property.
Type – the data type of the property. It is useful to describe the actual data type in terms of a meta-type – typically a primitive type that is directly expressible by the computer system.
Description – Short text describing the meaning of the property.

We divide the datatypes into basic types, and collection types. The basic types consist of atomic, simple, and composite types.

5.4.2 Basic Datatypes

- **Atomic Datatypes**

Atomic datatypes are those for which a one-to-one mapping exists from the logical model to a primitive type in the physical model. Examples are characters, integers, and real numbers.

- **Simple Datatypes**

Simple datatypes are atomic datatypes that additionally are constrained by a pattern. For example, an OID might be defined as a String up to 128 characters in length, consisting of groups of decimal numbers separated by the decimal point symbol. Such a datatype is usually represented by an atomic type, with a defined constraint. Some systems may offer mechanisms to enforce the constraint.

- **Composite Datatypes**

Composite datatypes are those that are represented by an associated group of attributes having primitive datatype mappings. The attributes are evaluated together, and should not be independently evaluated.

5.4.3 Collection Datatypes

Collection datatypes are used to represent attributes that are set valued. Set valued attributes may further be constrained by order, and by treatment of duplicate values. If a set is ordered, it is called a list, if a set allows duplicates, it is called a bag.

Sets can be implemented as normalized tables, which are then further constrained, if necessary, by keys, and ordering. Obviously, a set can be denormalized, into the parent table, if the cardinality if known and sufficiently small.

The following table is a summary of the subset of HL7 RIM datatypes currently used in the PHIN LDM:

Boolean	BL	The Boolean type stands for the values of two-valued logic. A Boolean value can be either *true* or *false*, or, as any other value may be NULL.
Integer Number	INT	Integer numbers (-1,0,1,2, 100, 3398129, etc.) are precise numbers that are results of counting and enumerating. Integer numbers are discrete, the set of integers is infinite but countable. No arbitrary limit is imposed on the range of integer numbers.
Real Number	REAL	Fractional numbers. Typically used whenever quantities are measured, estimated, or computed from other real numbers. The typical representation is decimal, where the number of significant decimal digits is known as the precision.
Character String	ST	The character string data type stands for text data, primarily intended for machine processing (e.g., sorting, querying, indexing, etc.) Used for names, symbols, and formal expressions.
Encapsulated Data	ED	Data that is primarily intended for human interpretation or for further machine processing. This includes unformatted or formatted written language, multimedia data, or structured information. Instead of the data itself, an ED may contain only a reference (see TEL.) Note that the ST data type is a specialization of the ED data type when the ED media type is text/plain.
Coded Simple Value	CS	Coded data in its simplest form, where only the code and display name is not predetermined. The code system and code system version is fixed by the context in which the CS value occurs. CS is used for coded attributes that have a single HL7-defined value set.
Coded Value	CV	Coded data, specifying only a code, code system, and optionally display name and original text.
Object Identifier	OID	A globally unique string representing an ISO Object Identifier (OID) in a form that consists only of numbers and dots (e.g., "2.16.840.1.113883.3.1").
Instance Identifier	II	An identifier that uniquely identifies a thing or object. Examples are object identifier for PHIN LDM objects, medical record number, order id, service catalog item id, Vehicle Identification Number (VIN), etc. Instance identifiers are defined based on ISO object identifiers.

Ratio	RTO	A quantity constructed as the quotient of a numerator quantity divided by a denominator quantity. Common factors in the numerator and denominator are not automatically cancelled out. The *RTO* data type supports titers (e.g., "1:128") and other quantities produced by laboratories that truly represent ratios. Ratios are not simply "structured numerics", particularly blood pressure measurements (e.g. "120/60") are not ratios. In many cases the REAL should be used instead of the *RTO*.
Physical Quantity	PQ	A dimensioned quantity expressing the result of measuring.
Interval	IVL	A set of consecutive values of an ordered base data type.
Point in Time	TS	A quantity specifying a point on the axis of natural time. A point in time is most often represented as a calendar expression.
Entity Telecom	TEL	A telephone number (voice or fax), e-mail address, or other locator for a resource (information or service) mediated by telecommunication equipment. The address is specified as a Universal Resource Locator (URL) qualified by time specification and use codes that help in deciding which address to use for a given time and purpose.
Address Part	ADXP	A character string that may have a type-tag signifying its role in the address. Typical parts that exist in about every address are street, house number, or post box, postal code, city, country but other roles may be defined regionally, nationally, or on an enterprise level (e.g. in military addresses). Addresses are usually broken up into lines, which are indicated by special line-breaking delimiter elements (e.g., DEL).
Entity Address	AD	Mailing and home or office addresses. A sequence of address parts, such as street or post office Box, city, postal code, country, etc.
Entity Name	EN	A name for a person, organization, place or thing. A sequence of name parts, such as given name or family name, prefix, suffix, etc. Examples for entity name values are "Jim Bob Walton, Jr.", "Health Level Seven, Inc.", "Lake Tahoe", etc. An entity name may be as simple as a character string or may consist of several entity name parts, such as, "Jim", "Bob", "Walton", and "Jr.", "Health Level Seven" and "Inc.", "Lake" and "Tahoe".
Entity Name	ENXP	A character string token representing a part of a

Part		name. May have a type code signifying the role of the part in the whole entity name, and a qualifier code for more detail about the name part type. Typical name parts for person names are given names, and family names, titles, etc.
Set	SET	A value that contains other distinct values in no particular order.
Sequence	LIST	A value that contains other discrete values in a defined sequence.
Bag	BAG	An unordered collection of values, where each value can be contained more than once in the bag.
General Timing Specification	GTS	A set of points in time, specifying the timing of events and actions and the cyclical validity-patterns that may exist for certain kinds of information, such as phone numbers (evening, daytime), addresses (so called "snowbirds," residing closer to the equator during winter and farther from the equator during summer) and office hours.

NULL Values

A Null value is used to indicate that no information is available for a data value, the information does not exist, is not available or cannot be expressed in the data type's normal value set. Null is considered an exceptional value.

Every data element has either a proper value or it is considered null. An *is-null* property, indicates that the value is an exceptional or null value.

A null may be used for any data value where 0 is allowed as the cardinality for that element.

The HL7 RIM defines a set of null flavors, that provide more detail as to in what way or why a proper value was not supplied. The list of null flavors is included below. With one exception, the PHIN LDM does not require the use of a null flavor, and in their absence, assumes that null values have the default null flavor of NI (No Information).

When an attribute has a value domain of coded, the PHIN LDM does expect a system to handle the null flavor of *other*. This indicates that the actual value (code) is not an element in the value domain of the attribute. (e.g., concept not provided by required code system). If this is the case, the original text attribute of the coded value contains the code.

HL7 RIM Flavors of Null

code	Name	definition
NI	NoInformation	No information whatsoever can be inferred from this exceptional value. This is the most general exceptional value. It is also the default exceptional value.
NA	not applicable	No proper value is applicable in this context (e.g., last menstrual period for a male).
UNK	Unknown	A proper value is applicable, but not known.
NASK	not asked	This information has not been sought (e.g., patient was not asked)
ASKU	asked but unknown	Information was sought but not found (e.g., patient was asked but didn't know)
NAV	temporarily unavailable	Information is not available at this time but it is expected that it will be available later.
OTH	Other	The actual value is not an element in the value domain of a variable. (e.g., concept not provided by required code system).
PINF	positive infinity	Positive infinity of numbers.
NINF	negative infinity	Negative infinity of numbers.
MSK	Masked	There is information on this item available but it has not been provided by the sender due to security, privacy or other reasons. There may be an alternate mechanism for gaining access to this information. Note: using this null flavor does provide information that may be a breach of confidentiality. Its primary purpose is for those circumstances where it is necessary to inform the receiver that the information does exist.

Extensions

The PHIN LDM anticipates the possible future definition of additional data types during its normal release schedule. These data types would be defined by the addition of datatype codes in the metamodel, and appropriate abstract specification as to be mappable to one or more physical implementations.

5.4.3.1 Basic Datatypes

[*Additional descriptions to be adde*d]

5.4.3.1.1 Coded Datatypes

The PHIN LDM expresses a coded attribute's datatype as either *Coded Simple* (CS), or *Coded Value* (CV). Both are datatypes derived from the HL7 RIM abstract data types.

CS and CV have similar properties, however the properties of CS are implied from its context, rather than being explicitly supplied. CS is a restriction on CV.

A coded value is a tuple of the form

```
<Code System, Version, Value>
```

where Code System is uniquely identified by an OID, Version is an identifier, which together with the Code System OID uniquely identifies a version of a specific Code Set, and the Value is the coded term.

In the PHIN LDM, we specify the vocabulary domain that is bound to an attribute in the model. For attributes of type CS, we are able to specify a value set of coded terms (each belonging to one or more code systems) that is bound to the domain.

For attributes of type CV, we are only able to specify the vocabulary domain that is bound to the attribute. The appropriate value sets belonging to that domain are expressed via an additional context mapping that depends upon the application domain. A reference such as the PHIN VS vocabulary server is necessary to determine the appropriate value sets and code systems for use in those contexts.

5.4.3.1.1.1 CS Data Type

The CS data type represents coded data in its simplest form, where only the code is not predetermined. The code system and code system version are fixed by the context in which the CS value occurs. CS is used for coded attributes that have a single LDM-defined value set.

CS (Coded Simple) data type

Name	Type	Description	Notes
Code	st	The plain code symbol defined by the code system. For example, "784.0" is a code symbol in "ICD-9"	Stored as part of attribute
codeSystem	uid	Specified the code	Stored as

		system that defines the code. In the PHIN LDM, this will usually be a code system OID.	metadata
codeSystemName	st	A common name of the code system. In the PHIN LDM, this will usually be the code system name.	Stored as metadata
codeSystemVersion	st	If applicable, a version descriptor defined specifically for the given code system	Stored as metadata

The CS data type is used strictly to store LDM defined coded structural attributes. The context for structural attributes is represented in metadata. Note that for CS, the codeSystemVersion is specified as metadata, as part of the context. Contrast this with CV, where the version is effectively part of the attribute. CS is expected to change infrequently, and will be constrained such that when/if codes (terms) are deprecated and/or retired, utilities can be employed to update any affected values in the repository.

5.4.3.1.1.2 CV Data Type

The CV data type represents coded data, specifying only a code, code system, and optionally display name and original text.

CV (Coded Value) data type

Name	Type	Description	Notes
code	st	The plain code symbol defined by the code system. For example, “784.0” is a code symbol in “ICD-9”	Stored as part of attribute
codeSystem	uid	Specified the code system that defines the code. In the PHIN LDM, this will usually be a code system OID.	Stored as metadata
codeSystemName	st	A common name of the code system. In the PHIN LDM, this will usually be the code system name.	Stored as metadata
codeSystemVersion	st	If applicable, a version descriptor defined specifically for the given code system	Stored as part of attribute
displayName	st	A name or title for the code, under which the sending system shows the code value to its users	Stored as metadata, lookup from Vocabulary Services
originalText	st	The text or phrase used as the basis for coding.	Stored as part of attribute, when “OTHER” or equivalent is term.

The PHIN Logical Model assigns specific vocabulary domains for its coded attributes. These are implemented as CV (Coded Vocabulary) data types. CV is a restriction from the HL7 CE type, which eliminates the equivalent coded term. Because the PHIN LDM specifies the exact vocabulary domain, equivalent domains are not needed to be stored. If there is some application requirement for an equivalent code, it is incumbent upon that application to determine the equivalent codes needed via a vocabulary server, or equivalent. In general, a vocabulary server, such as PHIN VS, is assumed. It is assumed that CE data types are handled via a vocabulary mapping, such that the primary code is

always stored as the value of an attribute, and other equivalent codes may be determined via the vocabulary mapping. It is implementation defined whether the equivalent codes are actually stored with the primary code, or whether they are derivable via a vocabulary server.

Original Text is used with a code such as “other”, and supplies the text used as a basis for that code. Use of Original Text is discouraged. Rather, the code value(s) implied by the Original Text should be added to the vocabulary code system in a new version.

5.4.3.2 Collection (Set Valued) Datatypes

In the PHIN LDM, collection data types are data types that “collect” other data values. These types consist of set, sequence, interval, and bag. Collection types are parameterized, meaning that a collection of <t> is a collection type of values of type “t”.

5.4.3.2.1 SET <t>

A set is an unordered collection of distinct data values, of type t. Exceptional values (NULL-values) can not be elements of a set. The empty set is a set without any elements. The empty set is a proper set value, not an exceptional value (NULL-value).

In the PHIN LDM, a SET is usually modeled as a normalized table of values of type t. In practical application, denormalizations are likely to occur.

5.4.3.2.2 LIST <t>

A list is an ordered collection of distinct data values, of type t.

In the PHIN LDM, a LIST is usually modeled as a normalized table of values of type t. In practical application, denormalizations are likely to occur.

5.4.3.2.3 BAG <t>

A bag is an unordered collection of values, where each value can be contained more than once in the bag.

In the PHIN LDM, a BAG is usually modeled as a normalized table of values of type t. In practical application, denormalizations are likely to occur.

5.4.3.2.4 Interval <t> (IVL)

A set of consecutive values of an ordered base data type
Examples:

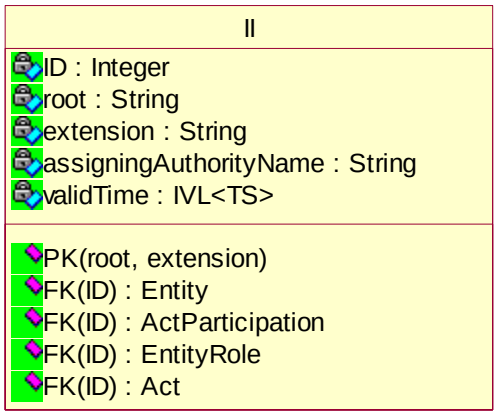
1. There is an interval between the integers 2 and 4
2. There is an interval between the real numbers 2.01 and 3.95
3. There is an interval between December 4, 2000, 10:00 am and 10:30 am the same day

Attribute	Type/Cardinality	Notes
low	t [1..1]	The low limit of the interval
high	t [1..1]	The upper limit of the interval
lowClosed	Boolean	Specifies whether the low limit is included in the interval (interval is closed) or excluded from the interval (interval is open).
highClosed	Boolean	Specifies whether the high limit is included in the interval (interval is closed) or excluded from the interval (interval is open).
center	t [0..1]	The arithmetic mean of the interval (low plus high divided by 2). The purpose of distinguishing the center as a semantic property is for conversions of intervals from and to point values.
width	t.diff	The difference between high and low boundary. The purpose of distinguishing a width property is to handle all cases of incomplete information symmetrically. In any interval representation only two of the three properties high, low, and width need to be stated and the third can be derived.

Note that applications needs only deal with any two of the four attributes low, high, center, width, as the others may be inferred or computed from those two. For example, if low and high are used, then width is derived from high and low, and center is its midpoint.

In the PHIN LDM, an IVL is usually modeled as a normalized table of values of type t. In practical application, denormalizations are likely to occur.

5.4.3.2.5 Instance Identifier



In the PHIN LDM, a SET<II> is modeled as a normalized table of values of type II. In practical application, denormalizations are likely to occur.

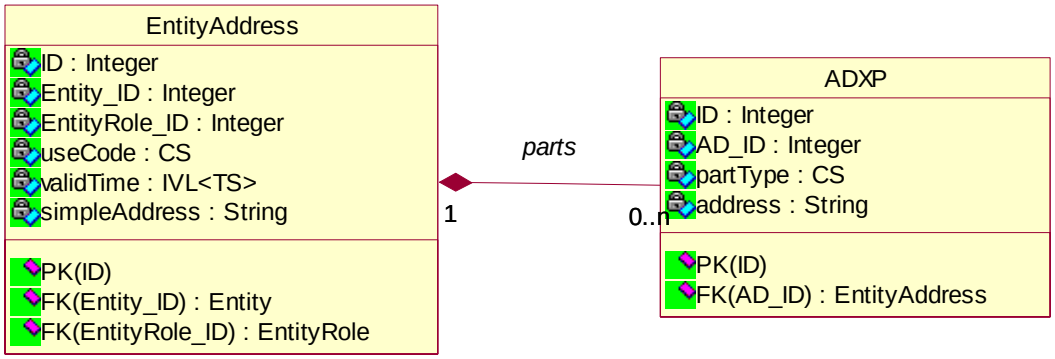
Attribute	Type/Cardinality	Notes
ID	Integer[1..1]	Local ID, Primary key
Root	OID[1..1]	A unique identifier expressed as an OID that guarantees the global uniqueness of the instance identifier. The root alone may be the entire instance identifier.
Extension	String[0..1]	character string as a unique identifier within the scope of the identifier root.
assigningAuthorityName	String[0..1]	A human readable name or mnemonic for the assigning authority. The Assigning Authority Name has no computational value. The purpose of a Assigning Authority Name is to assist an unaided human interpreter of an II value to interpret the authority. Note: no automated processing must depend on the assigning authority name to be present in any form.
validTime	IVL<TS>[0..1]	Period of time during which this

		instance identifier is valid.

5.4.3.2.6 EntityAddress

In the PHIN LDM, addresses are represented by the EntityAddress class. Both Entity specializations and EntityRoles contain attributes of type EntityAddress, which are normalized as the EntityAddress class, to allow collections of addresses to be expressed.

In the PHIN LDM, a BAG<EntityAddress> is modeled as a normalized table of values of type EntityAddress. In practical application, denormalizations are likely to occur.



EntityAddress

Attribute	Type/Cardinality	Notes
ID	integer	Local ID, Primary key
Entity_ID	Entity[0..1]	Foreign key to Entity. May be null if address is not associated with an Entity. Either Entity_ID or EntityRole_ID must be valued.
EntityRole_ID	EntityRole[0..1]	Foreign key to EntityRole. May be null if address is not associated with an EntityRole. Either Entity_ID or EntityRole_ID must be valued.
useCode	CS [0..1]	HL7 code to advise a system or user which address in a set of like addresses to select for a given purpose. Vocabulary domain=*PostalAddressUse*
validTime	IVL<TS>	Specifies the periods of time during

		which the address can be used. This is used to specify different addresses for different times of the week or year.
simpleAddress	String	If the address is represented as a simple string, it is represented here. Addresses are usually broken up into lines, which are indicated by special line-breaking delimiter elements (e.g., DEL)

ADXP

Attribute	Type/Cardinality	Notes
ID	Integer	Local ID, primary key
AD_ID	EntityAddress[0..1]	Foreign Key to EntityAddress
partType	CS [0..1]	A code that specifies whether an address part names the street, city, country, postal code, post box, etc. If the type is NULL the address part is unclassified and would simply appear on an address label as is. Vocabulary domain=*AddressPartType*
address	String	The string value of the actual address line represented by this ADXP instance.

Properties of type AD:

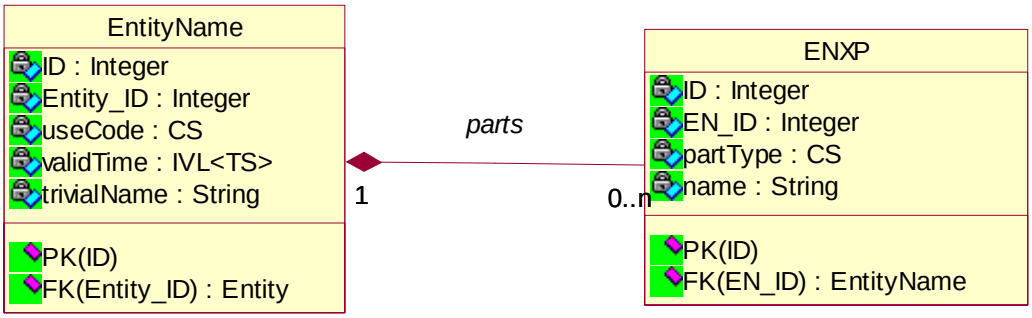
Two address values are considered equal if both contain the same address *parts*, independent of ordering. Use code and valid time are excluded from the equality test.

In the PHIN LDM, a BAG<ADXP> is modeled as a normalized table of values of type ADXP In practical application, denormalizations are likely to occur

5.4.3.2.7 EntityName

In the PHIN LDM, names are represented by the EntityName class. Only Entity specializations contain attributes of type EntityName, which are normalized as the EntityName class, to allow collections of names to be expressed.

In the PHIN LDM, a BAG<EntityName> is modeled as a normalized table of values of type EntityName In practical application, denormalizations are likely to occur



EntityName

Attribute	Type/Cardinality	Notes
ID	integer	Local ID, Primary key
Entity_ID	Entity[0..1]	Foreign key to Entity
useCode	CS [0..1]	A code advising which name (in a set) to select for a given purpose. Vocabulary domain=*EntityNameUse*
validTime	IVL<TS>	Specifies the periods of time during which the name is, was, or expected to be used. Accomodates the fact that people change names for people, places, and things.
trivialName	String[0..1]	If the name is represented as a trivial name, i.e. a simple string, this attribute is valued. Else, the name is represented as a set of of ENXP, or name parts.

ENXP

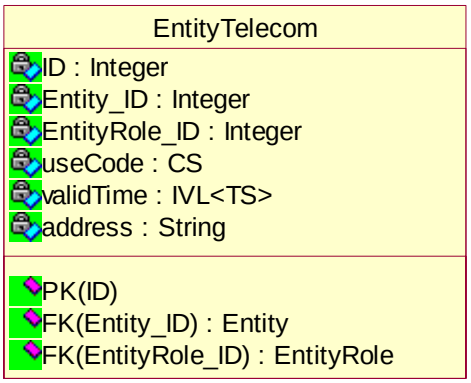
Attribute	Type/Cardinality	Notes
ID	Integer	Local ID, primary key
EN_ID	EntityName[0..1]	Foreign Key to EntityName
partType	CS [0..1]	A code that specifies whether the the value contained in the name attribute is a given name, family name, prefix, suffix, etc. Vocabulary domain=*EntityNamePartType*
name	String[0..1]	The string value of the actual name part represented by this ENXP instance.

In the PHIN LDM, a BAG<ENXP> is modeled as a normalized table of values of type ENXP. In practical application, denormalizations are likely to occur

5.4.3.2.8 EntityTelecom

In the PHIN LDM, telecommunications addresses are represented by the EntityTelecom class. Both Entity specializations and EntityRoles contain attributes of type EntityTelecom, which are normalized as the EntityTelecom class, to allow collections of telecommunications addresses to be expressed. Note that this class expresses the address as a URL (Uniform Resource Locator), expressed in the literal formed according to the Internet standard RFC 2396 [http://www.ietf.org/rfc/rfc2396.txt]. The URL consists of a scheme type and the actual address, which are combined into the address string. The address string has the form <scheme> ":" <telecom address>, allows for different communications protocols to be defined. For example, a simple telephone number would be expressed "tel:1-404-555-1212", a FAX number as "fax:1-404-555-1212", and an email address as "mailto:info@someemaildomain.com". Separator characters have no bearing on the meaning of the number. See the complete list of scheme codes (Vocabulary domain *URLScheme*) in the vocabulary appendix. Also, refer to the HL7 RIM Abstract Data Types specification for a more detailed

In the PHIN LDM, a BAG<EntityTelecom> is modeled as a normalized table of values of type EntityTelecom In practical application, denormalizations are likely to occur



EntityTelecom

Attribute	Type/Cardinality	Notes
ID	Integer	Local ID, Primary Key
Entity_ID	Entity[0..1]	FK reference to Entity, if such a relationship exists.
EntityRole_ID	EntityRole[0..1]	FK reference to EntityRole, if such a relationship exists.
useCode	CS [0..1]	A code advising which telecommunication address to use for a given telecommunication need. Examples are home, work place, mobile contact. Vocabulary domain=*TelecommunicationAddressUse*

validTime	IVL<TS>	Specifies the periods of time during which the telecommunications address can be used. For a telephone number, this can indicate the time of day in which the party can be reached on that telephone. For a web address, it may specify the time range in which the web content is promised to be available under the given address.
address	String	The string value of the actual telecommunication address, both scheme and address, as a string literal according to the Internet standard, described above.

5.5 Historical Information

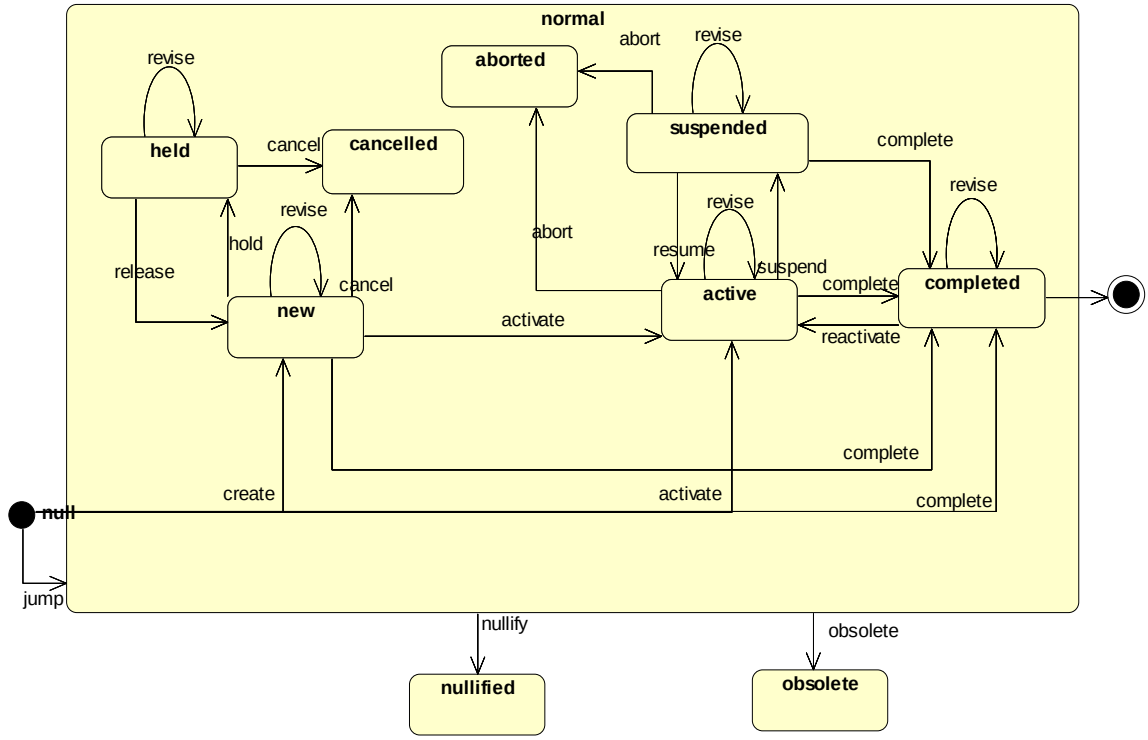
The logical model contains the notion of temporality, such that objects carry a history of the values of their attributes. This is shown/modeled simply as a recursive self-reference, rather than as a history class. The statusCode attribute of the temporal classes is used to maintain *state* information about the object (not status!).

The earlier NLDM maintained a specific "History" class as a shadow of each core class, where the history class maintained the values of all attributes before any change to an object was performed. Each time a change was made to a core class, a row in the history table was added. The NLDM went further to define other characteristics of the history, including who made a change, when the program area, etc.

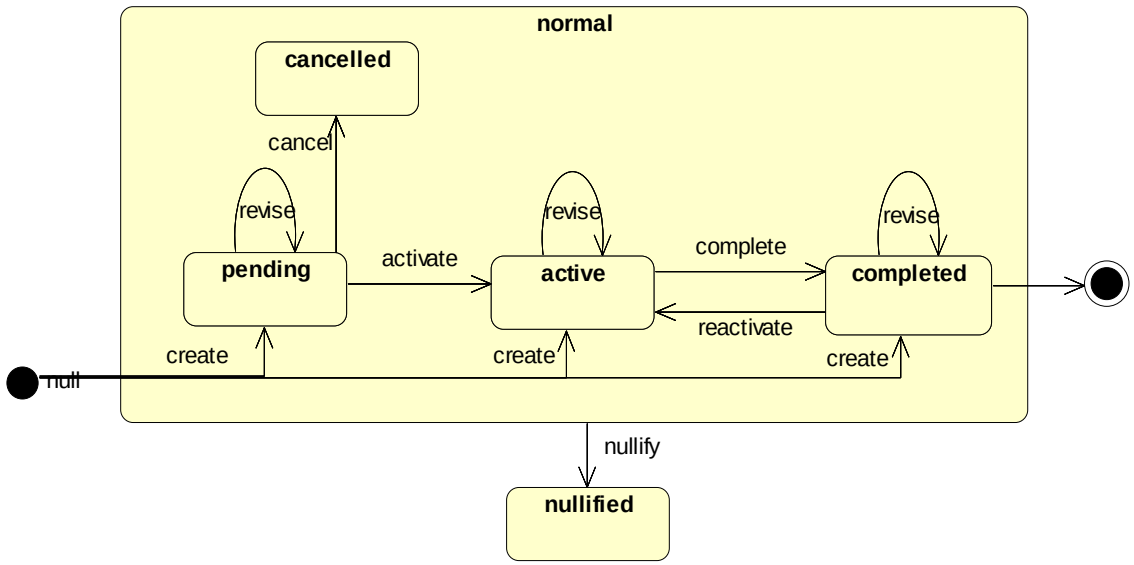
The PHIN LDM takes the approach that historical values of a class are more precisely modeled as a recursive self-relationship, that should be treated as an association class. In all cases, at the logical level, historical information capture is treated as a system implementation detail, thus the full details of such an association class are not modeled further.

However, correct use of the statusCode attribute follows the HL7 V3 RIM statusCode state machine, which is shown here:

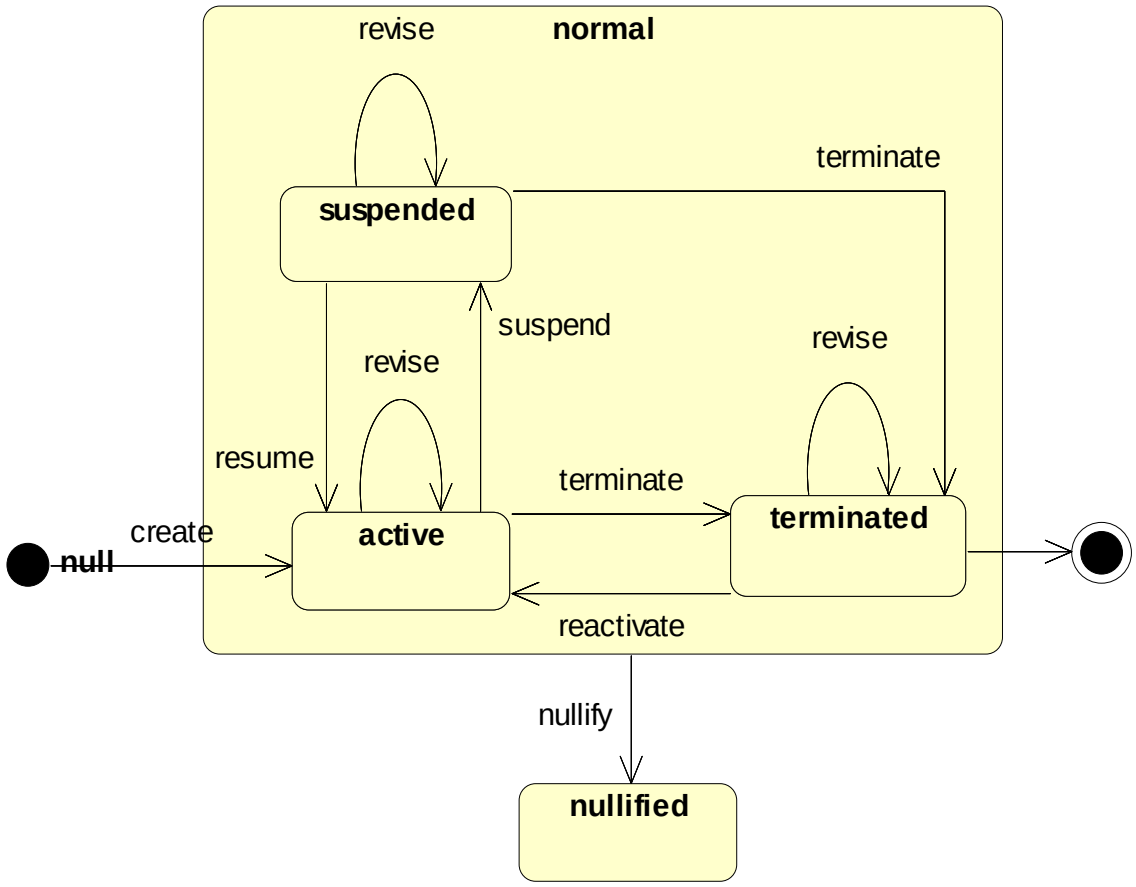
5.5.1 Act State Machine:



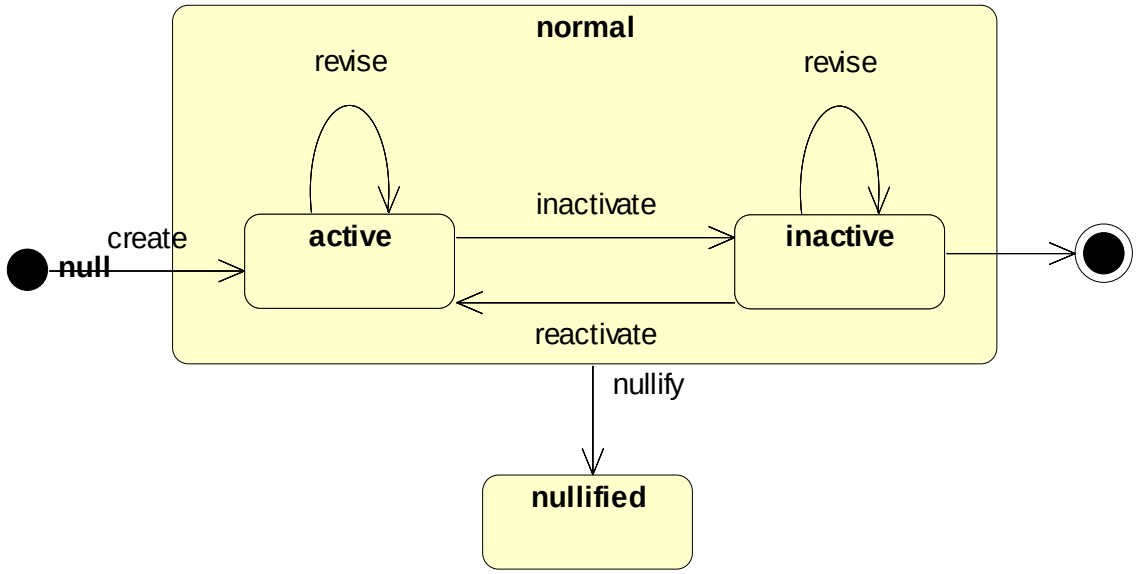
5.5.2 ActParticipation State Machine:



5.5.3 EntityRole State Machine



5.5.4 Entity State Machine



6 Appendix A PHIN LDM Vocabulary

This appendix defines the vocabulary domains that are bound to attributes in the PHIN LDM.

Structural codes are used to define the structure of the classes that comprise the PHIN Logical Data Model, and are derived from the HL7 Version 3 structural vocabulary domains. The value sets for these domains are well-known, and relatively static. They are enumerated below.

Non-structural codes are used elsewhere. These codes may be derived from multiple code systems. The value sets bound to an attribute in the logical data model are context dependant and thus can only be determined in the within a specific *vocabulary context*, defined by the scope and context of the application(s) utilizing this model. For this reason, only the domains are specified in the PHIN LDM. It is application specific which value sets are to be bound.

NOTE: The contents of this chapter is preliminary, and subject to change. OIDs for some domains and value sets have not been finalized.

6.1 Domain EntityClass

Vocabulary for Parent Domain *EntityClass*

Domain Name	Referenced By	Context	Value Set
PHX_EntityClassPerson	Person.classCode	PHIN	PHVS_EntityClassPerson
EntityClassNonPersonLivingSubject	NonPersonLivingSubject.classCode	PHIN	PHVS_NonPersonLivingSubject
EntityClassMaterial	Material.classCode	PHIN	PHVS_EntityClassMaterial
EntityClassContainer	Container.classCode	PHIN	PHVS_EntityClassContainer
EntityClassDevice	Device.classCode	PHIN	PHVS_EntityClassDevice
EntityClassOrganization	Organization.classCode	PHIN	PHVS_EntityClassOrganization
EntityClassPlace	Place.classCode	PHIN	PHVS_EntityClassPlace
PHX_EntityClassGroup	Group.classCode	PHIN	PHVS_EntityClassGroup

6.1.1 *Value Set* PHVS_EntityClassPerson

Value Set OID 2.16.840.1.114222.4.11.TBD
Built on: 2.16.840.1.113883.5.41 EntityClass
Description Codes describing living subjects of the species homo sapiens.

Values

Code	Code System	Name	Description/Notes
PSN	EntityClass	Person	A living subject of the species homo sapiens.

6.1.2 *Value Set* PHVS_EntityClassNonPersonLivingSubject

Value Set OID 2.16.840.1.114222.4.11.TBD
Built on: 2.16.840.1.113883.5.41 EntityClass
Description Living subjects of other than the species homo sapiens.

Values

Code	Code System	Name	Description/Notes
NLIV	EntityClass	Non-Person Living Subject	A living subject of other than the species homo sapiens..

ANM	EntityClass	Animal	A living subject from the animal kingdom
MIC	EntityClass	Microorganism	A single celled living organism including protozoa, bacteria, yeast, viruses, etc.
PLNT	EntityClass	Plant	A living subject from the order of plants.

6.1.3 *Value Set* PHVS_EntityClassMaterial

Value Set OID 2.16.840.1.114222.4.11.TBD
Built on: 2.16.840.1.113883.5.41 EntityClass
Description Any thing that has existence in space and mass, may be of living or non-living origin.

Values

Code	Code System	Name	Description/Notes
MAT	EntityClass	Material	Any thing that has existence in space and mass, may be of living or non-living origin.
CHEM	EntityClass	Chemical substance	A substance that is fully defined by an organic or inorganic chamical formula, includes mixtures of other chemical substances.
FOOD	EntityClass	Food	Naturally occurring, processed or manufactured entities that are primarily used as food for humans and animals.
MMAT	EntityClass	Manufactured Material	A material that is manufactured, as contrasted to naturally occurring.

6.1.4 *Value Set* PHVS_EntityClassContainer

Value Set OID 2.16.840.1.114222.4.11.TBD
Built on: 2.16.840.1.113883.5.41 EntityClass
Description A container of other entities.

Values

Code	Code System	Name	Description/Notes
CONT	EntityClass	Container	A container of other entities.

6.1.5 *Value Set* PHVS_EntityClassDevice

Value Set OID 2.16.840.1.114222.4.11.TBD
Built on: 2.16.840.1.113883.5.41 EntityClass
Description A subtype of manufactured material used in an activity, without being substantially changed through that activity.

Values

Code	Code System	Name	Description/Notes
DEV	EntityClass	Device	A subtype of manufactured material used in an activity, without being substantially changed through that activity.
MODDV	EntityClass	Imaging modality	Diagnostic imaging equipment.

6.1.6 *Value Set* PHVS_EntityClassOrganization

Value Set OID 2.16.840.1.114222.4.11.TBD
Built on: 2.16.840.1.113883.5.41 EntityClass
Description A social or legal structure formed by human beings.

Values

Code	Code System	Name	Description/Notes
ORG	EntityClass	Organization	A social or legal structure formed by human beings.
PUB	EntityClass	Public Institution	An agency of the people of a state often assuming some authority over a certain matter. Includes government, governmental agencies, associations.
STATE	EntityClass	State	A politically organized body of people bounded by territory, culture, or ethnicity, having sovereignty (to a certain extetn) granted by other states (enclosing or neighboring states). This includes countries (nations), provinces, countries, or municipalities.
NAT	EntityClass	Nation	A politically organized body of people bonded by territory and known as a nation.

6.1.7 *Value Set* PHVS_EntityClassPlace

Value Set OID 2.16.840.1.114222.4.11.TBD
Built on: 2.16.840.1.113883.5.41 EntityClass
Description A physical place or site with its containing structure. May be natural or man-made.

Values

Code	Code System	Name	Description/Notes
PLC	EntityClass	Place	A physical place or site with its containing structure. May be natural or man-made. The geographic position of a place may or may not be constant.
CITY	EntityClass	City or Town	The territory of a city, town or other municipality.
COUNTRY	EntityClass	Country	The territory of a sovereign nation.
COUNTY	EntityClass	County	The territiory of a county, parish or other dicision of a state or province.
PROVINCE	EntityClass	State or Province	The territory of a state, province, department or other division of a sovereign country.

6.1.8 *Value Set* PHVS_EntityClassGroup

Value Set OID 2.16.840.1.114222.4.11.TBD
Built on: 2.16.840.1.113883.5.41 EntityClass
Description A formal group of entities. A cluster of entities.

Values

Code	Code System	Name	Description/Notes
RGRP	EntityClass	Group	A formal group of entities. A cluster of entities. Scopes a role of part or member.

6.2 Domain ActClass

Vocabulary for Parent Domain *ActClass*

Domain Name	Referenced By	Context	Value Set
PHX_ActClassEncounter	Encounter.classCode	PHIN	PHVS_ActClassEncounter
ActClassObservation	Observation.classCode	PHIN	PHVS_ActClassObservation
ActClassPublicHealthCase	PublicHealthCase.classCode	PHIN	PHVS_ActClassPublicHealthCase
PHX_ActClassOutBreak	Outbreak.classCode	PHIN	PHVS_ActClassOutbreak
PHX_ActClassInvestigation	Investigation.classCode	PHIN	PHVS_ActClassInvestigation
PHX_ActClassNotification	Notification.classCode	PHIN	PHVS_ActClassNotification
PHX_ActClassSummaryNotification	SummaryNotification.classCode	PHIN	PHVS_ActClassSummaryNotification
PHX_ActClassProcedure	Procedure.classCode	PHIN	PHVS_ActClassProcedure
PHX_ActClassSubstanceAdministration	SubstanceAdministration.classCode	PHIN	PHVS_ActClassSubstanceAdministration
PHX_ActClassAlert	Alert.classCode	PHIN	PHVS_ActClassAlert
PHX_ActClassInterview	Interview.classCode	PHIN	PHVS_ActClassInterview
PHX_ActClassReferral	Referral.classCode	PHIN	PHVS_ActClassReferral
PHX_ActClassTransportation	Transportation.classCode	PHIN	PHVS_ActClassTransportation
PHX_ActClassWorklist	Worklist.classCode	PHIN	PHVS_ActClassWorklist
ActClassDocument	Document.classCode	PHIN	PHVS_ActClassDocument
PHX_ActClassWorkup	Workup.classCode	PHIN	PHVS_ActClassWorkup
ActClassSupply	Supply.classCode	PHIN	PHVS_ActClassSupply
PHX_ActClassDiet	Diet.classCode	PHIN	PHVS_ActClassDiet

6.2.1 *Value Set* PHVS_ActClassEncounter

Value Set OID 2.16.840.1.114222.4.11.TBD
Built on: 2.16.840.1.113883.5.41 ActClass
Description An interaction between a patient and healthcare participant(s) for the purpose of providing patient service(s) or assessing the health status of a patient. For example, outpatient visit to multiple departments, home health support (including physical therapy), inpatient hospital stay, emergency room visit, field visit (e.g., traffic accident), office visit, occupational therapy, telephone call.

Values

Code	Code System	Name	Description/Notes
ENC	ActClass	Patient Encounter	.

6.2.2 *Value Set* PHVS_ActClassObservation

Value Set OID 2.16.840.1.114222.4.11.TBD
Built on: 2.16.840.1.113883.5.41 ActClass
Description Observations are actions performed in order to determine an answer or result value. Observation result values (Observation.value) include specific information about the observed object. The type and constraints of result values depend on the kind of action performed.

Values

Code	Code System	Name	Description/Notes
OBS	ActClass	Observation	
DGIMG	ActClass	Diagnostic Image	

6.2.3 *Value Set* PHVS_ActClassPublicHealthCase

Value Set OID 2.16.840.1.114222.4.11.TBD
Built on: 2.16.840.1.113883.5.41 ActClass
Description A public health case is an Observation representing a condition or event that has a specific significance for public health. Typically it involves an instance or instances of a reportable infectious disease or other condition. The public health case can include a health-related event concerning a single individual or it may refer to multiple health-related events that are occurrences of the same disease or condition of interest to public health. A public health case definition (Act.moodCode = "definition") includes the description of the clinical, laboratory, and epidemiologic indicators associated with a disease or condition of interest to public health. There are case definitions for conditions that are reportable, as well as for those that are not. A public health case definition is a

construct used by public health for the purpose of counting cases, and should not be used as clinical indications for treatment. Examples include AIDS, toxic-shock syndrome, and salmonellosis and their associated indicators that are used to define a case.

Note that the PHIN LDM does NOT consider an outbreak involving multiple individuals to be a type of public health case, as in the HL7 RIM. In the PHIN LDM, an outbreak is modeled with the Outbreak class.

Values

Code	Code System	Name	Description/Notes
CASE	ActClass	Public Health Case	.

6.2.4 *Value Set* PHVS_ActClassOutbreak

Value Set OID 2.16.840.1.114222.4.11.TBD
Built on: 2.16.840.1.113883.5.41 ActClass
Description An outbreak represents a series of public health cases.

Note that the PHIN LDM does NOT consider an outbreak to be a type of public health case, as in the HL7 RIM, but rather represents a collection of public health cases.

Values

Code	Code System	Name	Description/Notes
OUTB	ActClass	Outbreak	.

6.2.5 *Value Set* PHVS_ActClassInvestigation

Value Set OID 2.16.840.1.114222.4.11.TBD
Built on: 2.16.840.1. 114222.5.11 PHCDC_STRUCT_EXT
Description zzz

Values

Code	Code System	Name	Description/Notes
INVEST	PHCDC_STRUCT_EXT	Investigation	.

6.2.6 *Value Set* PHVS_ActClassNotification

Value Set OID 2.16.840.1.114222.4.11.TBD
Built on: 2.16.840.1. 114222.5.11 PHCDC_STRUCT_EXT
Description zzz

Values

Code	Code System	Name	Description/Notes
NOTIF	PHCDC_STRUCT_EXT	Notification	.

6.2.7 *Value Set* PHVS_ActClassSummaryNotification

Value Set OID 2.16.840.1.114222.4.11.TBD
Built on: 2.16.840.1. 114222.5.11 PHCDC_STRUCT_EXT
Description zzz

Values

Code	Code System	Name	Description/Notes
SUMMARY	PHCDC_STRUCT_EXT	Summary Notification	.

6.2.8 *Value Set* PHVS_ActClassProcedure

Value Set OID 2.16.840.1.114222.4.11.TBD
Built on: 2.16.840.1.113883.5.41 ActClass
Description zzz

Values

Code	Code System	Name	Description/Notes
PROC	ActClass	Procedure	.

6.2.9 *Value Set* PHVS_ActClassSubstanceAdministration

Value Set OID 2.16.840.1.114222.4.11.TBD
Built on: 2.16.840.1.113883.5.41 ActClass
Description The act of introducing or otherwise applying a substance to the subject. The effect of the substance is typically established on a biochemical basis, however, that is not a requirement. For example, radiotherapy can largely be described in the same way, especially if it is a systemic therapy such as radio-iodine. This class also includes the application of chemical treatments to an area. Examples: Chemotherapy protocol; Drug prescription; Vaccination record.

Values

Code	Code System	Name	Description/Notes
SBADM	ActClass	Substance Administration	.

6.2.10 *Value Set* PHVS_ActClassAlert

Value Set OID 2.16.840.1.114222.4.11.TBD
Built on: 2.16.840.1.113883.5.41 ActClass
Description An observation identifying a potential adverse outcome as a result of an Act or combination of Acts. Examples: Detection of a drug-drug interaction; Identification of a late-submission for an invoice; Requesting discharge for a patient who does not meet hospital-defined discharge criteria.

Values

Code	Code System	Name	Description/Notes
ALRT	ActClass	Alert	.

6.2.11 *Value Set* PHVS_ActClassInterview

Value Set OID 2.16.840.1.114222.4.11.TBD
Built on: 2.16.840.1. 114222.5.11 PHCDC_STRUCT_EXT
Description zzz

Values

Code	Code System	Name	Description/Notes
INTVW	PHCDC_STRUCT_EXT	Interview	.

6.2.12 *Value Set* PHVS_ActClassReferral

Value Set OID 2.16.840.1.114222.4.11.TBD
Built on: 2.16.840.1.114222.5.11 PHCDC_STRUCT_EXT
Description Represents a referral from one person, organization, or jurisdiction to another. For example, a referral from general practitioner to specialist.

Values

Code	Code System	Name	Description/Notes
REFER	PHCDC_STRUCT_EXT	Referral	.

6.2.13 *Value Set* PHVS_ActClassTransportation

Value Set OID 2.16.840.1.114222.4.11.TBD
Built on: 2.16.840.1.113883.5.41 ActClass
Description Transportation is the moving of a payload (people or material) from a location of origin to a destination location.

Values

Code	Code System	Name	Description/Notes
TRANS	ActClass	Transportation	.

6.2.14 *Value Set* PHVS_ActClassWorklist

Value Set OID 2.16.840.1.114222.4.11.TBD
Built on: 2.16.840.1.113883.5.41 ActClass
Description Worklist collects a dynamic list of individual instances of Act via ActRelationship which reflects the need of an individual worker, team of workers, or an organization to manage lists of acts for many different clinical and administrative reasons. Examples of worklists include problem lists, goal lists, allergy lists, and to-do lists.

Values

Code	Code System	Name	Description/Notes
LIST	ActClass	Worklist	.

6.2.15 *Value Set* PHVS_ActClassDocument

Value Set OID 2.16.840.1.114222.4.11.TBD
Built on: 2.16.840.1.113883.5.41 ActClass
Description The notion of a document comes particularly from the paper world, where it corresponds to the contents recorded on discrete pieces of paper. In the electronic world, a document is a kind of composition that bears resemblance to their paper world counter-parts. Documents typically are meant to be human-readable.

Values

Code	Code System	Name	Description/Notes
DOC	ActClass	Document	.

6.2.16 *Value Set* PHVS_ActClassWorkup

Value Set OID 2.16.840.1.114222.4.11.TBD
Built on: 2.16.840.1. 114222.5.11 PHCDC_STRUCT_EXT
Description zzz

Values

Code	Code System	Name	Description/Notes
WORKUP	PHCDC_STRUCT_EXT	Workup	.

6.2.17 *Value Set* PHVS_ActClassSupply

Value Set OID 2.16.840.1.114222.4.11.TBD
Built on: 2.16.840.1.113883.5.41 ActClass
Description Supply orders and deliveries are simple Acts that focus on the delivered product. The product is associated with the Supply Act via Participation.typeCode="product".

Values

Code	Code System	Name	Description/Notes
SPLY	ActClass	Substance Administration	.

6.2.18 *Value Set* PHVS_ActClassDiet

Value Set OID 2.16.840.1.114222.4.11.TBD
Built on: 2.16.840.1.113883.5.41 ActClass
Description Diet services are supply services, representing medically relevant diet types.

Values

Code	Code System	Name	Description/Notes
DIET	ActClass	Diet	.

6.3 Domain EntityDeterminer

Vocabulary for Parent Domain *EntityDeterminer*

Domain Name	Referenced By	Context	Value Set
EntityDeterminer	(All Entity Classes).determinerCode	PHIN	PHVS_EntityDeterminer

6.3.1 Value Set PHVS_EntityDeterminer

Value Set OID 2.16.840.1.114222.4.11.TBD
Built on: 2.16.840.1.113883.5.30 EntityDeterminer
Description zzz

Values

Code	Code System	Name	Description/Notes
INSTANCE	EntityDeterminer	Instance	The specific determiner indicates that the given Entity is taken as one specific thing instance. For example, a human INSTANCE (quantity = 1,) stands for exactly one human being.
KIND	EntityDeterminer	Described	The described determiner is used to indicate that the given Entity is taken as a general description of a kind of thing that can be taken in whole, in part, or in multiples.
QUANTIFIED_KIND	EntityDeterminer	Described Quantified	The described quantified determiner indicates that the given Entity is taken as a general description of a specific amount of a thing. For example, QUANTIFIED_KIND of syringe (quantity = 3,) stands for exactly three syringes.

6.4 Domain EntityStatus

Vocabulary for Parent Domain *EntityStatus*

Domain Name	Referenced By	Context	Value Set
EntityStatus	(All Entity Classes).statusCode	PHIN	PHVS_EntityStatus

6.4.1 *Value Set* PHVS_EntityStatus

Value Set OID 2.16.840.1.114222.4.11.TBD
Built on: 2.16.840.1.113883.5.1061 EntityStatus
Description zzz

Values

Code	Code System	Name	Description/Notes
ACTIVE	EntityStatus	Active	The state representing the fact that the Entity record is currently active.
TERMINATED	EntityStatus	Terminated	The state representing the normal termination of an Entity record.
NULLIFIED	EntityStatus	Nullified	The state representing the termination of an Entity record instance that was created in error.

6.5 *Domain* ActMood

Vocabulary for Parent Domain *ActMood*

Domain Name	Referenced By	Context	Value Set
ActMood	(All Acts).moodCode	PHIN	PHVS_ActMood

6.5.1 *Value Set* PHVS_ActMood

Value Set OID 2.16.840.1.114222.4.11.TBD
Built on: 2.16.840.1.113883.5.1001 ActMood
Description zzz

Values

Code	Code System	Name	Description/Notes
EVN	ActMood	Event	A service that actually happens, may be an ongoing service or a documentation of a past service.
DEF	ActMood	Definition	A definition of a service (master).
INT	ActMood	Intent	An intention or plan to perform a service.
APT	ActMood	Appointment	A planned Act for a specific time and place.
RQO	ActMood	Request	A request or order for a service is an intent directed from a placer (request author) to a fulfiller (service performer). Rationale: The concepts of a "request" and an "order" are viewed as different, because there is an implication of a mandate associated with order. In practice, however, this distinction has no general functional value in the inter-operation of health care computing.

6.6 Domain ActStatus

Vocabulary for Parent Domain *ActStatus*

Domain Name	Referenced By	Context	Value Set
ActStatus	(All Acts).statusCode	PHIN	PHVS_ActStatus

6.6.1 *Value Set* PHVS_ActStatus

Value Set OID 2.16.840.1.114222.4.11.TBD
Built on: 2.16.840.1.113883.5.14 ActStatus
Description zzz

Values

Code	Code System	Name	Description/Notes
ABORTED	ActStatus	Aborted	The Act has been terminated prior to the originally intended completion
ACTIVE	ActStatus	Active	The Act can be performed or is being performed
CANCELLED	ActStatus	Cancelled	The Act has been abandoned before activation.
COMPLETED	ActStatus	Completed	An Act that has terminated normally after all of its constituents have been performed.
HELD	ActStatus	Held	An Act that is still in the preparatory stages has been put aside. No action can occur until the Act is released.
NEW	ActStatus	New	An Act that is in the preparatory stages and may not yet be acted upon
SUSPENDED	ActStatus	Suspended	An Act that has been activated (actions could or have been performed against it), but has been temporarily disabled. No further action should be taken against it until it is released
NULLIFIED	ActStatus	Nullified	This Act instance was created in error and has been 'removed' and is treated as though it never existed. A record is retained for audit purposes only.
OBSOLETE	ActStatus	Obsolete	This Act instance has been replaced by a new instance.

6.7 Domain ActRelationshipType

Vocabulary for Parent Domain *ActRelationshipType*

Domain Name	Referenced By	Context	Value Set
ActRelationshipType	ActRelationship.typeCode	PHIN	PHVS_ActRelationshipType

6.7.1 *Value Set* ActRelationshipType

Value Set OID 2.16.840.1.114222.4.11.TBD
Built on: 2.16.840.1.113883.5.1002 ActRelationshipType
Description zzz

Values

Code	Code System	Name	Description/Notes
COMP	ActRelationshipType	has component	A collection of sub-services as steps or subtasks performed for the source service. Services may be performed sequentially or concurrently.
PRCN	ActRelationshipType	has pre-condition	A requirement to be true before a service is performed. The target can be any service in criterion mood. For multiple pre-conditions a conjunction attribute (AND, OR, XOR) is applicable.
TRIG	ActRelationshipType	has trigger	<p>A pre-condition that if true should result in the source Act being executed. The target is in typically in criterion mood. When reported after the fact (i.e. the criterion has been met) it may be in Event mood. A delay between the trigger and the tr
RSON	ActRelationshipType	has reason	<p>The reason or rationale for a service. A reason link is weaker than a trigger, it only suggests that some service may be or might have been a reason for some action, but not that this reason requires/required the action to be taken. Also, as opposed
CIND	ActRelationshipType	has contra-indication	A contraindication is just a negation of a reason, i.e. it gives a condition under which the action is not to be done. Both, source and target can be any kind of service; target service is in criterion mood. How the strength of a contraindication is expre

OUTC	ActRelationshipType	has outcome	An observation that should follow or does actually follow as a result or consequence of a condition or action (sometimes called "post-conditional".) Target must be an observation as a goal, risk or any criterion. For complex outcomes a conjunction attribu
GOAL	ActRelationshipType	has goal	A goal that one defines given a patient's health condition. Subsequently planned actions aim to meet that goal. Source is an observation or condition node, target must be an observation in goal mood.
OBJF	ActRelationshipType	has final objective	A desired outcome that a service action aims to meet finally. Source is any service (typically an intervention). Target must be an observation in criterion mood.
OBJC	ActRelationshipType	has continuing objective	A desired state that a service action aims to maintain. E.g., keep systolic blood pressure between 90 and 110 mm Hg. Source is an intervention service. Target must be an observation in criterion mood.
RISK	ActRelationshipType	has risk	A noteworthy undesired outcome of a patient's condition that is either likely enough to become an issue or is less likely but dangerous enough to be addressed.
PERT	ActRelationshipType	has pertinent information	This is a very unspecific relationship from one item of clinical information to another. It does not judge about the role the pertinent information plays.
SPRT	ActRelationshipType	has support	Used to indicate that an existing service is suggesting evidence for a new observation. The assumption of support is attributed to the same actor who asserts the observation. Source must be an observation, target may be any service (e.g., to indicate a s
EXPL	ActRelationshipType	has explanation	This is the inversion of support. Used to indicate that a given observation is explained by another observation or condition.
CAUS	ActRelationshipType	is etiology for	An assertion that a new observation was assumed to be the cause for another existing observation. The assumption is attributed to the same actor who asserts the observation. This is stronger and more specific than the support link. For example, a growt
MFST	ActRelationshipType	is manifestation of	An assertion that a new observation may be the manifestation of another existing observation or action. This assumption is attributed to the same actor who

			asserts the manifestation. This is stronger and more specific than an inverted support link. For
DRIV	ActRelationshipType	is derived from	Associates a derived Act with its input parameters. E.G., an anion-gap observation can be associated as being derived from given sodium-, (potassium-,), chloride-, and bicarbonate-observations. The narrative content (Act.text) of a source act is wholly ma
REFV	ActRelationshipType	has reference values	Reference ranges are essentially descriptors of a class of result values assumed to be “normal”, “abnormal”, or “critical.” Those can vary by sex, age, or any other criterion. Source and target are observations, the target is in criterion mood. This lin
NAME	ActRelationshipType	assigns name	Used to assign a “name” to a condition thread. Source is a condition node, target can be any service.
SEQL	ActRelationshipType	is sequel	An act relationship indicating that the source act follows the target act. The source act should in principle represent the same kind of act as the target. Source and target need not have the same mood code (mood will often differ). The target of a sequel
RPLC	ActRelationshipType	replaces	A replacement source act replaces an existing target act. The state of the target act being replaced becomes obselete, but the act is typically still retained in the system for historical reference. The source and target must be of the same type.
APND	ActRelationshipType	is appendage	An addendum (source) to an existing service object (target), containing supplemental information. The addendum is itself an original service object linked to the supplemented service object. The supplemented service object remains in place and its conte
UPDT	ActRelationshipType	updates (condition)	A condition thread relationship specifically links condition nodes together to form a condition thread. The source is the new condition node and the target links to the most recent node of the existing condition thread.
INST	ActRelationshipType	instantiates (master)	Used to capture the link between a potential service (“master” or plan) and an actual service, where the actual service instantiates the potential service. The instantiation may override the master’s defaults.
FLFS	ActRelationshipType	fulfills	The source act fulfills (in whole or in part) the target act. Source act must be in

			a mood equal or more actual than the target act.
MTCH	ActRelationshipType	matches (trigger)	A trigger-match links an actual service (e.g., an observation or procedure that took place) with a service in criterion mood. For example if the trigger is “observation of pain” and pain is actually observed, and if that pain-observation caused the trigg
GEVL	ActRelationshipType	evaluates (goal)	A goal-evaluation links an observation (intent or actual) to a goal to indicate that the observation evaluates the goal. Given the goal and the observation, a "goal distance" (e.g., goal to observation) can be "calculated" and need not be sent explicitly.
OPTN	ActRelationshipType	has option	A relationship between a source Act that provides more detailed properties to the target Act. The source act thus is a specialization of the target act, but instead of mentioning all the inherited properties it only mentions new property bindings or refi
GEN	ActRelationshipType	has generalization	The generalization relationship can be used to express categorical knowledge about services (e.g., amilorid, triamterene, and spironolactone have the common generalization potassium sparing diuretic).
DOC	ActRelationshipType	documents	The source act documents the target act.
OCCR	ActRelationshipType	is occurrence of	The source act is a single occurrence of a repeatable target act. The source and target act can be in any mood on the "completion track" but the source act must be as far as or further along the track than the target act (i.e., the occurrence of
OCCR	ActRelationshipType	occurrence	The source act is a single occurrence of a repeatable target act. The source and target act can be in any mood on the "completion track" but the source act must be as far as or further along the track than the target act (i.e., the occurrence of
SUCC	ActRelationshipType	succeeds	A new order that adds to, but does not completely replace its predecessor.
XFRM	ActRelationshipType	transformation	Used when the target Act is a transformation of the source Act. (For instance, used to show that a CDA document is a transformation of a DICOM SR document.)
SCH	ActRelationshipType	schedules	Associates a specific time (and associated resources) with a scheduling request or other intent.

SCH	ActRelationshipType	schedules request	Associates a specific time (and associated resources) with a scheduling request or other intent.
OREF	ActRelationshipType	references order	Relates either an appointment request or an appointment to the order for the service being scheduled.
SUBJ	ActRelationshipType	has subject	Relates an Act to its subject Act that the first Act is primarily concerned with. Examples The first Act may be a ControlAct manipulating the subject Act The first act is a region of interest (ROI) that defines a re
PREV	ActRelationshipType	has previous instance	A relationship in which the target act is a predecessor instance to the source act. Generally each of these instances is similar, but no identical. In healthcare coverage it is used to link a claim item to a previous claim item that might have claimed f
PREV	ActRelationshipType	Previous instance	A relationship in which the target act is a predecessor instance to the source act. Generally each of these instances is similar, but no identical. In healthcare coverage it is used to link a claim item to a previous claim item that might have claimed f
AUTH	ActRelationshipType	authorized by	A relationship in which the target act authorizes or certifies the source act.
REFR	ActRelationshipType	refers to	A relationship in which the target act is referred to by the source act. This permits a simple reference relationship that distinguishes between the referent and the referee.
COVBY	ActRelationshipType	covered by	A relationship in which the source act is covered by or is under the authority of a target act. A financial instrument such as an Invoice Element is covered by one or more specific instances of an Insurance Policy.
LIMIT	ActRelationshipType	limited by	A relationship that limits or restricts the source act by the elements of the target act. For example, an authorization may be limited by a financial amount (up to $500). Target Act must be in EVN.CRIT mood.
REV	ActRelationshipType	reverses	A relationship between a source Act that seeks to reverse or undo the action of the prior target Act. Example: A posted financial transaction (e.g., a debit transaction) was applied in

			error and must be reversed (e.g., by a credit transaction) the credit
DEBIT	ActRelationshipType	has debit	A debit relationship ties a financial transaction (target) to an account (source). A debit, once applied (posted), may have either a positive or negative effect on the account balance, depending on the type of account. An asset account debit will increa
CREDIT	ActRelationshipType	has credit	A credit relationship ties a financial transaction to an account. A credit, once applied (posted), may have either a positive or negative effect on the account balance, depending on the type of account. An asset account credit will decrease the account
COST	ActRelationshipType	has cost	A relationship that provides an ability to associate a financial transaction (target) as a cost to a clinical act (source). A clinical act may have an inherit cost associated with the execution or delivery of the service. The financial transaction wil
CHRG	ActRelationshipType	has charge	A relationship that provides an ability to associate a financial transaction (target) as a charge to a clinical act (source). A clinical act may have a charge associated with the execution or delivery of the service. The financial transaction will def
SUMM	ActRelationshipType	summarized by	An act that contains summary values for a list or set of subordinate acts. For example, a summary of transactions for a particular accounting period.
SPRTBND	ActRelationshipType	has bounded support	A specialization of "has support" (SPRT), used to relate a secondary observation to a Region of Interest on a multidimensional observation, if the ROI specifies the true boundaries of the secondary observation as opposed to only marking the approximate ar
CTRLV	ActRelationshipType	has control variable	A relationship from an Act to a Control Variable. For example, if a Device makes an Observation, this relates the Observation to its Control Variables documenting the device's settings that influenced the observation.
ARR	ActRelationshipType	arrival	The relationship that links to a Transportation Act (target) from another Act (source) indicating that the subject of the source Act entered into the source Act by means of the target Transportation act.

DEP	ActRelationshipType	departure	The relationship that links to a Transportation Act (target) from another Act (source) indicating that the subject of the source Act departed from the source Act by means of the target Transportation act.
XCRPT	ActRelationshipType	Excerpts	The source is an excerpt from the target.
VRXCRPT	ActRelationshipType	Excerpt verbatim	The source is a direct quote from the target.
ELNK	ActRelationshipType	episodeLink	Expresses an association that links two instances of the same act over time, indicating that the instance are part of the same episode, e.g. linking two condition nodes for episode of illness; linking two encounters for episode of encounter.
MITGT	ActRelationshipType	mitigates	The source act removes or lessens the occurrence or effect of the target act.
ITEMSLOC	ActRelationshipType	ItemsLocated	Items located

6.8 Domain ActParticipationType

Vocabulary for Parent Domain *ActParticipationType*

Domain Name	Referenced By	Context	Value Set
ActParticipationType	ActParticipation.typeCode	PHIN	PHVS_ActParticipationType

6.8.1 *Value Set* PHVS_ActParticipationType

Value Set OID 2.16.840.1.114222.4.11.TBD
Built on: 2.16.840.1.113883.5.1001 ParticipationType
Description zzz

Values

Code	Code System	Name	Description/Notes
PRF	ParticipationType	performer	A person who actually and principally carries out the action. Need not be the principal responsible actor, e.g. a surgery res
ESC	ParticipationType	escort	Only with Transportation services. A person who escorts the patient.
AUT	ParticipationType	author (originator)	A party that originates the Act and therefore has responsibility for the information given in the Act and ownership of this Act
ENT	ParticipationType	data entry person	A person entering the data into the originating system. The data entry person is collected optionally for internal quality con
INF	ParticipationType	informant	A source of reported information (e.g., a next of kin who answers questions about the patient's history). For history question
CON	ParticipationType	consultant	An advisor participating in the service by performing evaluations and making recommendations.
VRF	ParticipationType	verifier	A person who verifies the correctness and appropriateness of the service (plan, order, event, etc.) and hence takes on accounta
WIT	ParticipationType	witness	Only with service events. A person witnessing the action happening without doing anything. A witness is not necessarily aware
IRCP	ParticipationType	information	A party, who may or should receive or

		recipient	who has recieved the Act or subsequent or derivative information of that Act. Information
REF	ParticipationType	referrer	A person having referred the subject of the service to the performer (referring physician). Typically, a referring physician w
TRC	ParticipationType	tracker	A secondary information recipient, who receives copies (e.g., a primary care provider receiving copies of results as ordered by
CST	ParticipationType	custodian	A person (or organization) who is in charge of maintaining the information of this service object (e.g., who maintains the repo
DIR	ParticipationType	direct target	Target that is substantially present in the service and which is directly affected by the service action (includes consumed mat
SBJ	ParticipationType	subject	The principle target that the service acts on. E.g. the patient in physical examination, a specimen in a lab observation. May
BEN	ParticipationType	beneficiary	Target on behalf of whom the service happens, but that is not necessarily present in the service. Can occur together with dire
RCT	ParticipationType	record target	The record target indicates whose medical record holds the documentation of this act. This is especially important when the su
DON	ParticipationType	donor	In some organ transplantation services and rarely in transfusion services a donor will be a target participant in the service.
BBY	ParticipationType	baby	In an obstetric service, the baby.
SPC	ParticipationType	specimen	The subject of non-clinical (e.g. laboratory) observation services is a specimen.
PRD	ParticipationType	product	A material target that is brought forth (produced) in the service (e.g., specimen in a specimen collection, access or drainage
CSM	ParticipationType	consumable	Target that is taken up, is diminished, and disappears in the service.
TPA	ParticipationType	therapeutic agent	Something incorporated in the subject of a therapy service to achieve a physiologic effect (e.g., heal, relieve, provoke a cond
DEV	ParticipationType	device	Something used in delivering the service without being substantially affected by the service (i.e. durable or inert with respec
NRD	ParticipationType	non-reuseable device	A device that changes ownership due to the service, e.g., a pacemaker, a prosthesis, an insulin injection equipment

			(pen), etc.
RDV	ParticipationType	reusable device	A device that does not change ownership due to the service, i.e., a surgical instrument or tool or an endoscope. The distincti
LOC	ParticipationType	location	The facility where the service is done. May be a static building (or room therein) or a moving location (e.g., ambulance, heli
ORG	ParticipationType	origin	The location of origin for services. May be a static building (or room therein) or a movable facility (e.g., ship).
DST	ParticipationType	destination	The destination for services. May be a static building (or room therein) or a movable facility (e.g., ship).
VIA	ParticipationType	via	For services, an intermediate location that specifies a path between origin an destination.
RML	ParticipationType	remote	Some services take place at multiple concurrent locations (e.g., telemedicine, telephone consultation). The location where the
ELOC	ParticipationType	entry location	A location where data about an Act was entered.
RCV	ParticipationType	receiver	The person (or organization) who receives the product of an Act.
COV	ParticipationType	coverage target	The target participation for an individual in a health care coverage act in which the target role is either the policy holder o
HLD	ParticipationType	holder	Participant who posses an instrument such as a financial contract (insurance policy) usually based on some agreement with the a
ATND	ParticipationType	attender	The attending practitioner that has responsibility for a patient's care during a hospital stay.
DIS	ParticipationType	discharger	The practitioner who is responsible for the discharge of a patient from a hospital stay.
ADM	ParticipationType	admitter	The practitioner who is responsible for admitting a patient to a hospital stay.
RESP	ParticipationType	responsible party	The provider (person or organization) who has primary responsibility for the act. The responsible provider is not necessarily p
REFT	ParticipationType	Referred to	The person who receives the patient
IND	ParticipationType	indirect target	Target that is not substantially present in the act and which is not directly affected by the act, but which will be a focus of
PRCP	ParticipationType	primary information recipient	Information recipient to whom an act statement is primarily directed. E.g., a primary care provider receiving a discharge lette
NOT	ParticipationType	ugent notification	An information recipient to notify for

		contact	urgent matters about this Act. (e.g., in a laboratory order, critical results are being
DIST	ParticipationType	distributor	Distributes material used in or generated during the act.
PPRF	ParticipationType	primary performer	The principal or primary performer of the act.
SPRF	ParticipationType	secondary performer	A person assisting in an act through his substantial presence and involvement This includes: assistants, technicians, associa
AUTHEN	ParticipationType	authenticator	A verifier who attests to the accuracy of an act, but who does not have privileges to legally authenticate the act. An example
LA	ParticipationType	legal authenticator	A verifier who legally authenticates the accuracy of an act. An example would be a staff physician who sees a patient and dicta
REFB	ParticipationType	Referred By	A participant (e.g. provider) who has referred the subject of an act (e.g. patient). Typically, a referred by particip

6.9 Domain EntityRole

Vocabulary for Parent Domain *EntityRole*

Domain Name	Referenced By	Context	Value Set
RoleClass	EntityRole.classCode	PHIN	PHVS_EntityRoleClass

6.9.1 *Value Set* PHVS_EntityRoleClass

Value Set OID 2.16.840.1.114222.4.11.TBD
Built on: 2.16.840.1.113883.5.110 RoleClass
Description Codes for the EntityRole class hierarchy. The values represent an EntityRole which is an association or relationship between two entities - the entity that plays the role and the entity that scopes the role. EntityRoles names are derived from the name of the playing entity in that role.

Values

Code	Code System	Name	Description/Notes
DST	RoleClass	distributed material	A material (player) distributed by a distributor (scoper) who functions between a manufacturer and a buyer or retailer.
RET	RoleClass	retailed material	Material (player) sold by a retailer (scoper), who also give advice to prospective buyers.
OWN	RoleClass	owned entity	An Entity (player) for which someone (scoper) is granted by law the right to call the material (player) his own. This entitles
HLD	RoleClass	held entity	Entity that is currently in the possession of a holder (scoper), who holds, or uses it, usually based on some agreement with th
MNT	RoleClass	maintained entity	An entity (player) that is maintained by another entity (scoper). This is typical role held by durable equipment. The scoper a
INGR	RoleClass	ingredient	Relates a component (player) to a mixture (scoper). E.g., Glucose and Water are ingredients of D5W, latex may be an ingredient
BASE	RoleClass	base	A base ingredient (player) is what comprises the major part of a mixture (scoper). E.g., Water in most i.v. solutions, or Vasel

ADTV	RoleClass	additive	An ingredient (player) that is added to a base (scoper), that amounts to a minor part of the overall mixture.
ACTI	RoleClass	active ingredient	A therapeutically active ingredient (player) in a mixture (scoper), where the mixture is typically a manufactured pharmaceutica
STBL	RoleClass	stabilizer	A stabilizer (player) added to a mixture (scoper) in order to prevent the molecular disintegration of the main substance.
PRSV	RoleClass	preservative	A substance (player) added to a mixture (scoper) to prevent microorganisms (fungi, bacteria) to spoil the mixture.
FLVR	RoleClass	flavor	A substance (player) added to a mixture (scoper) to make it taste a certain way. In food the use is obvious, in pharmaceutical
FLVR	RoleClass	flavor additive	A substance (player) added to a mixture (scoper) to make it taste a certain way. In food the use is obvious, in pharmaceutical
COLR	RoleClass	color	A substance (player) influencing the optical aspect of material (scoper).
COLR	RoleClass	color additive	A substance (player) influencing the optical aspect of material (scoper).
CONT	RoleClass	content	Relates a material as the content (player) to a container (scoper). Unlike ingredients, the content and a container remain sep
GEN	RoleClass	has generalization	Relates a specialized material concept (player) to its generalization (scoper).
GRIC	RoleClass	has generic	A special link between pharmaceuticals indicating that the target (scoper) is a generic for the source (player).
INST	RoleClass	instance	An individual piece of material (player) instantiating a class of material (scoper).
CHILD	RoleClass	child	The player of the role is a child of the scoping entity, in a generic sense.
CIT	RoleClass	citizen	Citizen of apolitical entity
EMP	RoleClass	employee	A relationship between a person or organization and a person or organization formed for the purpose of exchanging work for comp
MIL	RoleClass	military person	A role played by a member of a military service. Scoper is the military service (e.g. Army, Navy, Air Force, etc.) or, more spe
PAT	RoleClass	patient	Scoped by a provider
MANU	RoleClass	manufactured product	Scoped by the manufacturer
THER	RoleClass	therapeutic agent	A manufactured material (player) that is used for its therapeutic properties. The manufacturer is the scoper.

TERR	RoleClass	territory of authority	Relates a place entity (player) as the region over which the scoper (typically an Organization) has certain authority (jurisdic
BIRTHPL	RoleClass	birthplace	Relates a place (playing Entity) as the location where a living subject (scoping Entity) was born.
SPEC	RoleClass	specimen	A role played by a material entity that is a specimen for an act. It is scoped by the source of the specimen.
ACCESS	RoleClass	access	A role in which the playing entity (material) provides access to another entity. The principal use case is intravenous (or othe
ASSIGNED	RoleClass	assigned entity	An agent role in which the agent is an Entity acting in the employ of an organization. The focus is on functional role on beha
PROV	RoleClass	healthcare provider	An Entity (player) that is authorized to provide health care services by some authorizing agency (scoper).
DSDLOC	RoleClass	dedicated service delivery location	A role of a place (player) that is intended to house the provision of services. Scoper is the Entity (typically Organization) t
DSDLOC	RoleClass	health care facility	A role of a place (player) that is intended to house the provision of services. Scoper is the Entity (typically Organization) t
HLTHCHRT	RoleClass	health chart	The role of a material (player) that is the physical health chart belonging to an organization (scoper).
QUAL	RoleClass	qualified entity	An entity (player) that has been recognized as having certain training/experience or other characteristics that would make said
MBR	RoleClass	member	A role played by an entity that is a member of a group. The group provides the scope for this role. Among other uses, gro
CON	RoleClass	contact	A person or an organization (player) which provides or receives information regarding another entity (scoper). Examples; patie
STD	RoleClass	student	A role played by an individual who is a student of a school, which is the scoping entity.
ROL	RoleClass	role	Corresponds to the Role class
GUAR	RoleClass	guarantor	A person or organization (player) that serves as a financial guarantor for another person or organization (scoper).
GUAR	RoleClass	GuarantorRole	A person or organization (player) that serves as a financial guarantor for another person or organization (scoper).

AGNT	RoleClass	agent	An entity (player) that acts or is authorized to act on behalf of another entity (scoper).
SGNOFF	RoleClass	signing authority or officer	The role of a person (player) who is the officer or signature authority for of a scoping entity, usually an organization (scope
UNDWRT	RoleClass	underwriter	A role played by an organization that underwrites or accepts fiscal responsibility for insurance plans and the policies created
POLHOLD	RoleClass	policy holder	A role played by an entity, usually an individual who holds an insurance policy. The underwriter of that policy is the scoping
COVPTY	RoleClass	covered party	A role class played by a person who receives benefit coverage under the terms of a particular insurance policy. The underwrite
SPNSR	RoleClass	sponsor	A role played by an entity, usually an organization that is the sponsor of an insurance plan. The underwriter of that plan is
PAYOR	RoleClass	invoice payor	The role of an organization that undertakes to accept claims invoices, assess the coverage or payments due for those invoices a
PAYEE	RoleClass	payee	The role of an organization or individual designated to receive payment for a claim against a particular coverage. The scoping
ALQT	RoleClass	aliquot	A portion (player) of an original or source specimen (scoper) used for testing or transportation.
SUBS	RoleClass	subsumer	<p>An entity that subsumes the identity of another. Used in the context of merging documented entity instances. Both the playe
WRTE	RoleClass	warranted product	A role a product plays when a guarantee is given to the purchaser by the seller (scoping entity) stating that the product is re
ISLT	RoleClass	isolate	A microorganism that has been isolated from other microorganisms or a source matrix.
GUARD	RoleClass	guardian	Guardian of a ward
IDENT	RoleClass	identified entity	Roles played by entities and scoped by entities that identify them for various purposes.
LIC	RoleClass	licensed entity	A relationship in which the scoper certifies the player (e. g. a medical care giver, a medical device or a provider organizati
LOCE	RoleClass	located entity	Relates an entity (player) to a location (scoper) at which it is present in some

			way. This presence may be limited in time.
STOR	RoleClass	stored entity	Relates an entity (player) (e.g. a device) to a location (scoper) at which it is normally found or stored when not used.
SDLOC	RoleClass	service delivery location	A role played by a place at which services may be provided.
ISDLOC	RoleClass	incidental service delivery location	A role played by a place at which health care services may be provided without prior designation or authorization.
CRED	RoleClass	credentialed entity	A role played by an entity that receives credentials from the scoping entity.
PART	RoleClass	part	An association between two Entities where the playing Entity is considered in some way "part" of the scoping Entity, e.g., as a
EXPR	RoleClass	exposed entity	A role played by an entity that has been exposed to a person or animal suffering a contagious disease, or with a location from
RGPR	RoleClass	regulated product	A product regulated by some governmentatl orgnization. The role is played by Material and scoped by Organization. Rationale:
ECON	RoleClass	emergency contact	An entity to be contacted in the event of an emergency.
NOK	RoleClass	next of kin	An individual designated for notification as the next of kin for a given entity.
CRINV	RoleClass	clinical research investigator	A role played by a provider, always a person, who has agency authority from a Clinical Research Sponsor to direct the conduct o
CRSPNSR	RoleClass	clinical research sponsor	A role played by an entity, usually an organization, that is the sponsor of a clinical research trial or study. The sponsor co
RESBJ	RoleClass	research subject	A living subject to whom, or on behalf of whom, the procedures of an experiment are applied.
PRS	RoleClass	personal relationship	Links two people in a personal relationship. The character of the relationship must be defined by a PersonalRelationshipRoleTy
SUBY	RoleClass	subsumed by	Relates a prevailing record of an Entity (scoper) with another record (player) that it subsumes. Examples: Sho
INVSBJ	RoleClass	Investigation Subject	An entity that is the subject of an investigation. This role is scoped by the party responsible for the investigation.
CASESBJ	RoleClass	Case Subject	A person, non-person living subject, or place that is the subject of an investigation related to a notifiable

			condition (health
COMPAR	RoleClass	commissioning party	An Entity that is authorized to issue or instantiate permissions, privileges, credentials or other formal/legal authorizations.

6.10 Domain ActParticipationStatus

Vocabulary for Parent Domain *EntityRole*

Domain Name	Referenced By	Context	Value Set
PHX_ActParticipationStatus	ActParticipation.statusCode	PHIN	PHVS_ActParticipationStatus

6.10.1 *Value Set* PHVS_ActParticipationStatus

Value Set OID 2.16.840.1.114222.4.11.TBD
Built on: 2.16.840.1.113883.5.1062 ManagedParticipationStatus
Description

Values

Code	Code System	Name	Description/Notes
ACTIVE	ManagedParticipationStatus	active	The state representing the fact that the ActParticipation is in progress.
CANCELLED	ManagedParticipationStatus	cancelled	The terminal state resulting from cancellation of the ActParticipation prior to activation.
COMPLETED	ManagedParticipationStatus	completed	The terminal state representing the successful completion of the ActParticipation.
PENDING	ManagedParticipationStatus	pending	The state representing the fact that the ActParticipation has not yet become active.
NULLIFIED	ManagedParticipationStatus	nullified	The state representing the termination of an ActParticipation instance that was created in error.

6.11 Domain PostalAddressUse

Vocabulary for Parent Domain *PostalAddressUse*

Domain Name	Referenced By	Context	Value Set
PostalAddressUse	EntityAddress.useCode	PHIN	PHVS_PostalAddressUse

6.11.1 *Value Set* PHVS_PostalAddressUse

Value Set OID 2.16.840.1.114222.4.11.TBD
Built on: 2.16.840.1.113883.5.TBD PostalAddressUse
Description A set of codes advising a system or user which address in a set of like addresses to select for a given purpose.

Values

Code	Code System	Name	Description/Notes
PHYS	PostalAddressUse	visit address	A physical address, used primarily to visit the addressee.
PST	PostalAddressUse	postal address	Used to send mail
TMP	PostalAddressUse	temporary address	A temporary address, may be good for visiting or mailing
BAD	PostalAddressUse	bad address	A flag indicating that the address is bad, in fact, useless.
H	PostalAddressUse	home	A home address.
HP	PostalAddressUse	primary home	The primary home, to reach a person after business hours.
HV	PostalAddressUse	vacation home	A vaction home, to reach a person while on vacation.
WP	PostalAddressUse	work place	An office address. First choice for business related contacts during business hours.
ABC	PostalAddressUse	Alphabetic transcription of name	Alphabetic transcription of address
SYL	PostalAddressUse	Syllabic	Syllabic transcription of address
IDE	PostalAddressUse	Ideographic	Ideographic transcription of address.

6.12 Domain AddressPartType

Vocabulary for Parent Domain *AddressPartType*

Domain Name	Referenced By	Context	Value Set
AddressPartType	ADXP.partType	PHIN	PHVS_AddressPartType

6.12.1 *Value Set* PHVS_AddressPartType

Value Set OID 2.16.840.1.114222.4.11.TBD
Built on: 2.16.840.1.113883.5.TBD AddressPartType
Description Specifies whether an address part names the street, city, country, postal code, pots box, etc. If the type is NULL, the address part is unclassified and would simply appear on the address label as is.

Values

Code	Code System	Name	Description/Notes
DEL	AddressPartType	delimiter	Delimiters are printed without framing white space. If no value component is provided, the delimiter appears as a line break.
CNT	AddressPartType	country	Country
STA	AddressPartType	state or province	A sub-unit of a country with limited sovereignty in a federally organized country.
CPA	AddressPartType	county or parish	A sub-unit of a state or province. (49 of the United States of America use the term “county”; Louisiana uses the term “parish”.
CTY	AddressPartType	municipality	The name of the city, town, village, or other community of delivery center
ZIP	AddressPartType	postal code	A postal code designating a region defined by the postal service.
SAL	AddressPartType	street address line	
BNR	AddressPartType	building number	The number of a building, house or lot alongside the street. Also known as “primary street number”. This does not number the street, but rather the building.
BNN	AddressPartType	building number numeric	The numeric portion of the building number
DIR	AddressPartType	direction	Direction (e.g. N, S, E, W)
STR	AddressPartType	street name	
STB	AddressPartType	street name base	The base name of a roadway or artery recognized by a municipality (excluding street type and direction)
STTYP	AddressPartType	street type	The designation given to the street. (e.g.

			Street, Avenue, Crescent, etc.)
ADL	AddressPartType	additional locator	This can be a unit designator, such as apartment number, suite number, or floor. There may be several unit designators in an address (e.g., "3rd floor, Apt. 342). This can also be a designator pointing away from the location, rather than specifying some smaller location within the larger one.
UNID	AddressPartType	unit identifier	The number or name of a specific unit contained within a building or complex, as assigned by that building or complex.
UNIT	AddressPartType	unit designator	Indicates the type of specific unit contained within a building or complex. (e.g., Apartment, Floor)
CAR	AddressPartType	care of	The name of the party who will take receipt at the specific address, and will take on responsibility for ensuring delivery to the target recipient.
CEN	AddressPartType	census tract	A geographic sub-unit delineated for demographic purposes.

6.13 Domain EntityNameUse

Vocabulary for Parent Domain *EntityNameUse*

Domain Name	Referenced By	Context	Value Set
EntityNameUse	EntityName.useCode	PHIN	PHVS_EntityNameUse

6.13.1 *Value Set* PHVS_EntityNameUse

Value Set OID 2.16.840.1.114222.4.11.TBD
Built on: 2.16.840.1.113883.5.TBD EntityNameUse
Description A set of codes advising a system or user which name in a set of names to select for a given purpose.

Values

Code	Code System	Name	Description/Notes
L	EntityNameUse	Legal	Known as/conventional/the one you use
A	EntityNameUse	Artist/Stage	Includes writer's pseudonym, stage name, etc.
I	EntityNameUse	Indigenous/Tribal	e.g. Chief Red Cloud
R	EntityNameUse	Religious	e.g.Sister Mary Francis, Brother John
ABC	EntityNameUse	Alphabetic transcription of name	Alphabetic transcription of name
SYL	EntityNameUse	Syllabic	Syllabic transcription of name
IDE	EntityNameUse	Ideographic	Ideographic transcription of name.

6.14 Domain EntityNamePartType

Vocabulary for Parent Domain *EntityNamePartType*

Domain Name	Referenced By	Context	Value Set
EntityNamePartType	ENXP.partType	PHIN	PHVS_EntityNamePartType

6.14.1 *Value Set* PHVS_EntityNamePartType

Value Set OID 2.16.840.1.114222.4.11.TBD
Built on: 2.16.840.1.113883.5.TBD EntityNamePartType
Description Indicates whether the name part is a given name, family name, prefix, suffix, etc.

Values

Code	Code System	Name	Description/Notes
FAM	EntityNamePartType	Family	Family name, this is the name that links to the geneology.
GIV	EntityNamePartType	Given	Given name. Given names do not always come first. A middle name is given.
PFX	EntityNamePartType	Prefix	A prefix has a strong association to the immediately following name part. A prefix has no implicit trailing trailing white space. It may be inverted.
SFX	EntityNamePartType	Suffix	A suffix has a strong association to the immediately following name part. A suffix has no implicit leading white space. It can not be inverted.
DEL	EntityNamePartType	Delimiter	A delimiter has no meaning other than being literally printed in this name representation.

6.15 Domain TelecommunicationAddressUse

Vocabulary for Parent Domain *TelecommunicationAddressUse*

Domain Name	Referenced By	Context	Value Set
TelecommunicationAddressUse	EntityAddress.useCode	PHIN	PHVS_TelecommunicationAddressUse

6.15.1 *Value Set* PHVS_TelecommunicationAddressUse

Value Set OID 2.16.840.1.114222.4.11.TBD
Built on: 2.16.840.1.113883.5.TBD TelecommunicationAddressUse
Description A code advising a system or user which telecommunication address in a set of like addresses to select for a given telecommunication need.

Values

Code	Code System	Name	Description/Notes
H	TelecommunicationAddressUse	home	A communication address at a home, attempted contacts for business purposes might intrude privacy and chances are one will contact family or other household members instead of the person one wishes to call. Typically used with urgent cases, or if no other contacts are available.
HP	TelecommunicationAddressUse	primary home	The primary home, to reach a person after business hours.
HV	TelecommunicationAddressUse	vacation home	A vacation home, to reach a person while on vacation.
WP	TelecommunicationAddressUse	work place	An office address. First choice for business related contacts during business hours.
AS	TelecommunicationAddressUse	answering service	An automated answering machine used for less urgent cases and if the main purpose of contact is to leave a message or access an automated announcement.
EC	TelecommunicationAddressUse	emergency contact	A contact specifically designated to be used for emergencies. This is the first choice in emergencies, independent of any other use codes
PG		pager	A paging device suitable to solicit a callback or to leave a very short message.
MC		mobile contact	A telecommunication device that moves and stays with its owner. May

			have characteristics of all other use codes, suitable for urgent matters, not the first choice for routine business.

6.16 Domain URLScheme

Vocabulary for Parent Domain *URLScheme*

Domain Name	Referenced By	Context	Value Set
URLScheme	EntityTelecom.address	PHIN	PHVS_URLScheme

6.16.1 *Value Set* PHVS_URLScheme

Value Set OID 2.16.840.1.114222.4.11.TBD
Built on: 2.16.840.1.113883.5.TBD URLScheme
Description Identifies the protocol used to interpret the address string and access to resource so addressed. See EntityTelecom datatype, and HL7 Version 3 Abstract Data Types.

Values

Code	Code System	Name	Description/Notes
tel	URLScheme	Telephone	A voice telephone number [draft-antti-telephony-url-11.txt].
fax	URLScheme	Fax	A telephone number served by a fax device [draft-antti-telephony-url-11.txt].
mailto	URLScheme	Electronic mail address [RFC 2368].	Electronic mail address [RFC 2368].
http	URLScheme	Hypertext Transfer Protocol [RFC 2068].	Hypertext Transfer Protocol [RFC 2068].
ftp	URLScheme	The File Transfer Protocol (FTP) [RFC 1738].	The File Transfer Protocol (FTP) [RFC 1738].
mllp	URLScheme	HL7 Minimal Lower Layer Protocol	The traditional HL7 Minimal Lower Layer Protocol. The URL has the form of a common IP URL e.g., mllp://<host>:<port>/ with <host> being the IP address or DNS hostname and <port> being a port number on which the MLLP protocol is served.
file	URLScheme	File	Host-specific local file names [RCF 1738]. Note that the file scheme works only for local files. There is little use for exchanging local file names between systems, since the

			receiving system likely will not be able to access the file.
nfs	URLScheme	NFS	Network File System protocol [RFC 2224]. Some sites use NFS servers to share data files.
telnet	URLScheme	Telnet	Reference to interactive sessions [RFC 1738]. Some sites, (e.g., laboratories) have TTY based remote query sessions that can be accessed through telnet.
modem	URLScheme	Modem	A telephone number served by a modem device [draft-antti-telephony-url-11.txt].

7 Appendix B PHIN LDM differences from HL7 RIM

This appendix identified the primary differences between the PHIN logical data model, and the HL7 RIM. This is not an exhaustive list, but summarizes some of the major differences.

1. EN, AD, TEL, and II are modeled as classes rather than datatypes. As such, they have explicit relationships with other classes such as Entity and EntityRole, and do not extend the ANY datatype.
2. The Value class exists to handle the ANY datatype (including set semantics)
3. The LDM introduces Act specializations Interview, Notification, Summary Notification, Group. These do not appear in the RIM.
4. The definition of PublicHealthCase is different in the LDM. Attributes have been added to PublicHealthCase that do not appear in the RIM.
5. The definition of Outbreak is different in the LDM. It does not specialize PublicHealthCase. Attributes have been added to Outbreak that do not appear in the RIM.
6. Act, Entity, EntityRole, ActParticipation have the logical notion of an added history attribute. This does not appear in the RIM.
7. The II datatype includes the validTime attribute in the LDM.
8. Act.derivationExpression is moved to Observation.derivationExpression in the LDM
9. confidentialityCode is rolled-up into the parent class EntityRole in the LDM.
10. recertificationTime is rolled-up into the parent class EntityRole in the LDM.
11. Employee.jobTitleName is ST rather than SC in the LDM
12. ActParticipation subsumes the ManagedParticipation class in the LDM.
13. Observation.negationCode is removed in the LDM.
14. Observation.subjectOrientationCode is removed in the LDM.
15. Several attributes have been removed from SubstanceAdministration in the LDM.
16. Act.activityTime not present in the LDM.