Federal Health Architecture Program

Federal Health Information Model Report

Milestone Publication:FHIM Model

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A. UML Notation Reference

The following document makes use of class diagrams and use case diagrams to convey the scope of information as well as the structure and semantics of this domain information model. Therefore this section provides a convenient guide to how UML is applied throughout this domain and across the Federal Health Information Model (FHIM).

A.1. HL7 Version 3 RIM Considerations

An information model is a structured specification of the information within a specific domain of interest. It expresses the classes of information required and the properties of those classes, including attributes, relationships, constraints, and states. In HL7, the scope of a domain of interest ranges from the domain of the entire system of health services to the specific context of a set of information exchanges to meet a particular identified business purpose. The FHIM model relies on the following three HL7 Version 3 (V3) standards: the Reference Information Model (RIM), abstract data types and vocabulary specifications. The HL7 RIM is a critical component and is the root of all information models and structures developed as part of the V3 development process. The RIM consists of classes assigned to one or more subject area packages. Attributes, Relationships, and State Machines are associated with the classes. The following is a summary of these conventions based on the application of HL7 Version 3 design principles to the development of FHIM information domains. Note that HL7 RIM classes are color coded according their main class type or stereotype.

1. Class

Each class within the RIM represents information about a concept that is documented and communicated within the health care environment. A class is an abstraction of things or concepts that are subjects of interest in a given application domain. Classes are the people, places, roles, things, and events about which information is kept. Classes have a name, description, sets of attributes, relationships, and states. The instances of classes are called objects. While classes represent categories of concepts, people and things, objects represent the individual things themselves. Classes relate to other classes in various ways. Such relationships are of two types: Generalization and Association.

2. Generalization

A generalization relationship is a connection between classes (as opposed to objects). It is an association between two classes (a superclass and a subclass) in which the subclass is derived from the superclass (i.e., the superclass generalizes the subclass and the subclass is a specialization of the superclass). The subclass inherits all properties from the superclass, including attributes, relationships and states. Instances of a subclass are also instances of the superclass. In addition, the subclass has other properties that are unique to the subclass. Each subclass may in turn have subclasses of its own. Thus, a class can be both a subclass of its superclass and a superclass of its subclasses. A generalization usually has multiple specializations. However, not all of the conceptual specializations have to be represented in

the model. Only the concepts that warrant special properties (e.g., attributes, relationships, states) are modeled as specialized classes. If all specializations are fully enumerated as subclasses in the model, the superclass is considered to be an ' abstract' class. An abstract class is designed only as a parent class from which implementable child classes may be derived. Abstract classes are often used to represent abstract concepts or entities. The incomplete features of the abstract class are shared by a group of subclasses which add different variations of the missing pieces. An abstract class is never instantiated directly, but only through one of its specializations.

3. Association

An association defines a relationship between a class to another class or to itself, or a connection between two objects (instances of classes). Associations in the HL7 information models have at least two ends (source and target). The target end of an association must contain an end name (endName) and the multiplicity/cardinality of the relationship. Associations may be directed (one way) or bi-directional. If the association is directed, the association line has an arrow at the target end of the association. If the association is bi-directional, both association end names must be specified (on source and target), but no arrows are included on the association. Each end of the association instance connects with one and only one object. However, one object may be associated with more than one object of the same class by the same association. In this case, multiple association instances exist, each connecting exactly two objects. The number of instances of an association that can connect to one object is regulated by the multiplicity/cardinality of the association. An association multiplicity/cardinality specifies the minimum and maximum number of objects of each class participating in the association. Multiplicity/cardinality is usually expressed as a pair of numbers on the end of the association e.g., [minimum..maximum]. The lower bound minimum is usually zero or one. The upper bound maximum is greater or equal to minimum, but is usually one, or unlimited. To specify that an association (or attribute) can repeat any number of times, the asterisk (*) notation is used. The default is [1..1] if not otherwise specified. In the UML diagrams included within this publication, multiplicity is displayed without the [square brackets] on association endNames, but within the classes themselves, the square bracket notation is used to describe the multiplicity on attributes.

4. Attribute

Class attributes are the core components of an information model. The attributes are the source for all the information content of HL7. The majority of attributes are descriptive and depict aspects of classes that are important for communication between healthcare systems. Beside the descriptive attributes, there are four special kinds of attributes in the information model of note: identifier, classifier, structural and state attributes. a. Identifier Attributes: Identifier attributes can be used to identify an instance of a class. (Sometimes more than one attribute may be needed to identify an instance of a class.) Identifier attributes always have a value and the values of identifier attributes are unique among all instances of the class. Since identity is static, values of identifier attributes never change. Identifier attributes are assigned the “set of instance identifier data type and generally have the name 'id' which allow for multiple identifiers to be specified. Examples of identifier attributes from the RIM include Entity.id and Act.id, which uniquely identify a particular Entity or Act respectively. In each case, the identifier attributes are a set of instance identifiers. This indicates that there may be multiple, unique identifiers for

an Entity or Act. Entity identifiers might include device serial numbers, social security numbers, driver license numbers, and others. Act identifiers might include placer accession numbers, filler accession numbers, and others. b. Classifier Attributes: The classifier attributes are a critical aspect of classes forming the backbone of the RIM (Entity, Role, Act, Participation, ActRelationship and RoleLink classes). Classifier attributes are named 'classCode'. The classifier attributes provide a great flexibility and extensibility in the information model. The vocabulary for classifier attributes include an entry for each specialization of the backbone class. For example, the vocabulary domain specified for Entity.classCode includes living subject, organization, place and material. The vocabulary domain may also include entries that are not explicitly expressed as classes in the model. For example, group is a valid Entity classCode (or specialization of Entity) but does not appear in the RIM as a class. c. Structural Attributes: Structural attributes are attributes whose coded values are needed to fully interpret the classes they classify. They are four mandatory attributes and include the classifier attribute, ClassCode described in the previous paragraph. The other three are moodCode, typeCode and determinerCode. All four are not found in every class (neither Acts or Entities use determinerCode). There is a bounded vocabulary managed by HL7 for each use of a structural attribute. For instance, for Act, there is an actMood vocabulary. d. State Attributes: A state attribute is used in subject classes (subject classes are those that a Technical Committee designates as the central focus of a collection of messages). A state attribute contains a value that indicates the current state (named condition) of the class. A subject class must have only one state attribute. The state attribute must be assigned the data type ' set of code value' that allows multiple state flags to be specified. State attributes are named status_cd and are associated with vocabulary domains defined by HL7 that correspond to the state machine defined for the subject class. For example, Act.status_cd has the domain values which include active, suspended, cancelled, completed, and aborted.

5. Stereotypes based on HL7 V3 RIM Classes

A stereotype is one of three types of extensibility mechanisms in the Unified Modeling Language (UML). They allow designers to extend the vocabulary of UML in order to create new model elements, derived from existing ones, but that have specific properties that are suitable for a particular problem domain or otherwise specialized usage. The nomenclature is derived from the original meaning of stereotype, used in printing. For example, when modeling a network we could symbols for representing routers and hubs. By using stereotyped nodes you can make these things appear as primitive building blocks. Graphically, a stereotype is rendered as a name enclosed by guillemets (« ») and placed above the name of another element. In addition or alternatively it may be indicated by a specific icon. The icon image may even replace the entire UML symbol. We will use the «guillemets» notation in this publication.

6. Terminology Binding

The HL7 vocabulary model allows a coded attribute to be associated with either a coded concept, a coding system or a coding system and a value set consisting of allowable coded concepts. An important aspect of both the FHIM and HL7 models is that they explicitly link ' coded concepts' to their corresponding vocabularies. This is necessary for two reasons: first because external terminologies (such as SNOMED) already exist and must be referenced by the model; and second, because to model those terminologies in UML would be both redundant and overly complex. It is far more efficient to simply link to the existing

terminology. The structural model, expressed in UML, and the terminology are two sides of the same coin; one cannot fully describe the relevant concepts without having both models. Both models must be designed to complement each other.

7. Constraints

Constraints narrow the set of possible values that an attribute can take on. Constraints include vocabulary domain constraints (e.g., this attribute must be a LOINC code), range constraints (e.g., this attribute must be a floating point number between 0 and 1), etc. While the term ' constraint' has the connotation of restricting and limiting, the objective in defining constraints is to provide guidance in the proper use of a class or attribute.

8. Act-Role-Entity Pattern

The ' back-bone' of the RIM is used to express the clinical and administrative content of health care, and is comprised of six classes: • Act – which represents the actions that are executed and must be documented as health care is provided. Act classes are depicted in pale Red on the UML diagrams; • 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. Participation classes are depicted in Blue on UML diagrams; • Entity – which represents the physical things and beings that are of interest to, and take part in health care. Entity classes are depicted in Green on the UML diagrams; • Role – which establishes the roles that entities play as they participate in health care acts. Role classes are depicted in Yellow on the UML diagrams; • 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. ActRelationships may only appear as stereotyped associations between classes; and • RoleLink – which represents relationships between individual roles. RoleLink classes are depicted in pale Yellow/Green on UML diagrams. Three of these classes – Act, Entity and Role – are further represented by a set of specialized classes or sub-types.

A.2 Information Modeling Notation Overview

This section is intended to provide an overview of the Unified Modeling Language (UML) used throughout the FHIM to describe the information contained within the Behavioral Health model.

A.2: Class Diagram Notation and HL7 Reference Information Model Example

Figure A.2 shows how the UML graphical notation elements for class diagrams (e.g. class, associations, attributes) are used to represent a specific set of data (e.g. air flight scheduling and operation) using the HL7 Version 3 Reference Information Model (RIM) pattern and associated conventions specified by the FHIM model. Note that the HL7 RIM classes are color coded according their main class type or stereotype. Entities play a Role (patient, provider, person, etc.) as they participate in Acts (planned or unplanned events or actions). A Participation is an association between an Act and a Role. The Entity playing the Role is the actor. Each Entity involved in an Act is linked to the Act by one Participation-instance. Entities are depicted in green, Roles in yellow, Acts in light red and Participation in blue. A description for additiional HL7 Version 3 stereotypes are included in the description of the illustrative classes and attributes included in the diagram below.

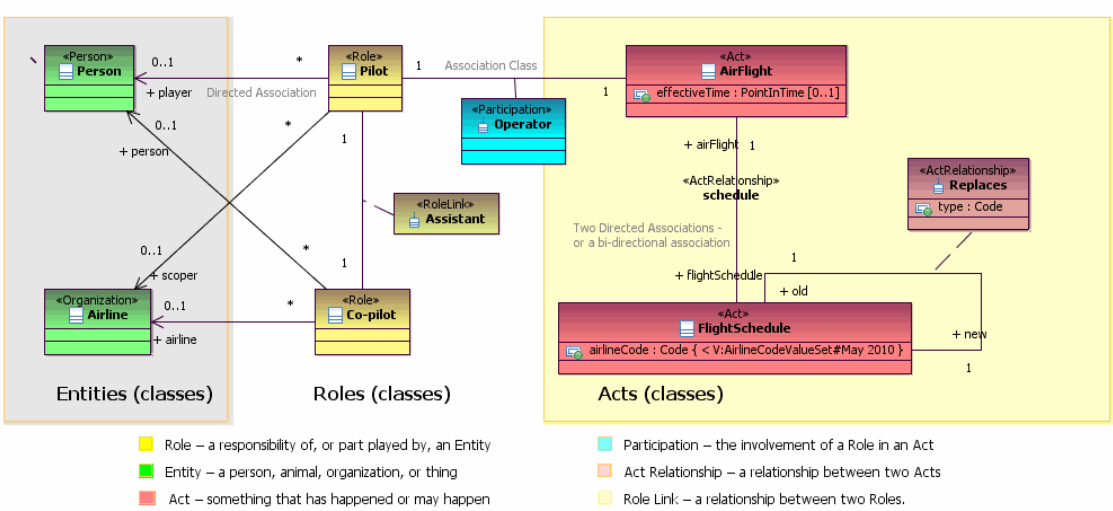

Figure A.2: Class Diagram Notation and HL7 Reference Information Model Example

«Act» Class: AirFlight

This class represents an example 'Act' class declaration as indicated by the stereotype «Act». The HL7 Version Reference Information Model specifies the attributes of any classes intended to as 'a record of something that is being done, has been done, can be done, or is intended or requested to be done. For

example, in this case an Act class is used to document an air flight.

Attribute 'AirFlight.effectiveTime' of type ' PointInTime' with cardinality of [0..1]

This is an example attribute declaration. As seen here the attribute name is 'effectiveTime' and the type of that attribute is 'PointInTime'. PointInTime is a concrete/implementable class defined in the FHIM Datatypes package. The Class notation identifies that PointInTime is a UML class. FHIM domain models reuse the data types defined the HL7 Abstract Data Type specification. The stereotype «TS» specifies that the PointInTime class uses the extensions required for an HL7 TS abstract data type. The [0..1] notation specifies the cardinality/multiplicity allowed for the effectiveTime attribute by specifying the minimum and maximum number of occurrences for this attribute (e.g. minimum 0 and maximum 1 in this case). To specify that an attribute or association can repeat any number of time, the * notation is used for example [0..*] would specify that a an attribute may be omitted or it may be repeated without a predefined limit. The Default is a cardinality is [1..1] if not otherwise specified.

Association 'AirFlight.flightSchedule' of type ' FlightSchedule' with cardinality of [1]

This represents an association of an AirFlight to a FlightSchedule. The association will appear as a property of a class (AirFlight) and named for the far end of the association.

«Organization» Class: Airline

This class represents an entity which is defined as 'a physical thing, group of physical things or an organization capable of participating in Acts while playing a specific role'. The Organization stereotype is a specialization of an Entity class and represents a formalized group of persons or other organizations with a common purpose and the infrastructure to carry out that purpose.

«RoleLink»Assistant

The HL7 Version 3 definition for the RoleLink stereotype is a connection between two roles expressing a dependency between those roles and permitting the authorization or nullification of a dependent role based on status changes in its causal or directing role.' This association class describes a type of relationship between roles (not between people or other entities). People (or other Entities) are primarily related by the player/scoper relationships for player's Role and more generally through their interactions (i.e. their participations in acts). The associations of RoleLink are source (Co-pilot) and target (Pilot). An association class is rendered by a dashed line from the association to the class rectangle. Each link in the association is an object of the association class.

«Role» Class: Co-pilot

This class illustrates how a role (specified by the «Role» stereotype and color coded according to the HL7 RIM convention) is specified in an information model. A role is specified in the HL7 Version 3 RIM as 'a competency of the Entity that plays the Role as identified, defined, guaranteed, or acknowledged by

the Entity that scopes the Role'.

«Act» Class: FlightSchedule

This is an example act class that is used to specify the properties of a flight schedule.

Association 'FlightSchedule.airFlight' of type ' AirFlight' with cardinality of [1]

This represents an association of a FlightSchedule to an AirFlight. The association will appear as a property of a class (FlightSchedule) and named for the far end of the association.

Attribute 'FlightSchedule.airlineCode' of type ' Code' with cardinality of [1]

Vocabulary Binding:

Code System: AirlineCodeSystem , Code System Id: 1.2.4.78.43.1 (Airline Codes for Scheduling) May 2010
Value Set: AirlineCodeValueSetMay 2010 , Value Set Id: 1.2.4.78.43.2
Concept Domain: Airline

This is an example coded attribute with an identified binding to a coding system. In this case, it represents the codes assigned to various airlines which can then be associated to a particular flight schedule. If the coding system is not specified here it may be specified runtime. This example shows how a coding system, coded concept, and value set may be assigned to a coded attribute. Note that if only a coding system is specified, then the graphical representation for the vocabulary binding will identify the coding system (preceded by the prefix 'C:' on the diagram). If however, a specific value set is assigned, then the value set will be identified on the class diagram (preceded by the prefix 'V:').

«Participation»Operator

The HL7 Version 3 definition for Participation class is an association between an Act and a Role. The Entity playing the Role is the actor. In this example, the Entity Pilot is participating in the Act of an AirFlight in the Role of operator of an AirFlight. A Participation represents performance of an Act.

«Person» Class: Person

This is an entity class with a stereotype of «Person». Other entity stereotypes describe other types of physical objects: materials, organizations, etc. In UML stereotypes are used to specify extensions. The stereotypes used in this sample diagram are based on the HL7 RIM profile for UML developed by the Open Health Tools MDHT project.

«Role» Class: Pilot

This class is used to specify the role of pilot in relation to an scheduled flight.

Association 'Pilot.player' of type ' Person' with cardinality of [0..1]

The association to the entity (Person) that plays the role specified by the 'Pilot' role class is

identified by the association end. This notation indicates that the entity Person is played by the Role Pilot.

Association 'Pilot.scoper' of type ' Airline' with cardinality of [0..1]

The association to the entity (Airline) that defines the role specified by the 'Pilot' role class is identified by the association end. This notation indicates that the entity Airline scopes the role of the entity Person played by the Role Pilot.

«ActRelationship»Replaces

This association class represents an example ActRelationship that used to associate two FlightSchedule instances.

«ActRelationship»schedule

This ActRelationship describes the relationship between FlightSchedule and AirFlight. ActRelationship is a directed association between a source Act and a target Act (in this case it is a bi-directional association) as specified by the HL7 V3 RIM. 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, (though not necessarily of the target Acts of those relationships). There are no exceptions to this rule. The meaning and purpose of an ActRelationship is specified in the ActRelationship.typeCode attribute. Every ActRelationship instance is like an arrow with a point (headed to the target) and a butt (coming from the source). The functions 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 targets are the components. In a reason-relationship the source is any Act and the target is the reason or indication for the source-Act.

A.3 Use Case Notation Overview

The following is a brief summary of the UML used to graphically communicate the structure, content, and vocabulary semantics of this domain as well as other FHIM domains.

A.3: Actors, Use Cases, and Relationships

Figure A.3 shows the use of the UML diagram to identify actors, systems and use cases. As seen here, the actor uses a capability implemented by a system. The capabilities supported by the system are directly based on the business use cases analyzed as a part of domain analysis. Those use cases that require interoperability are elaborated further and described using sequence diagrams.

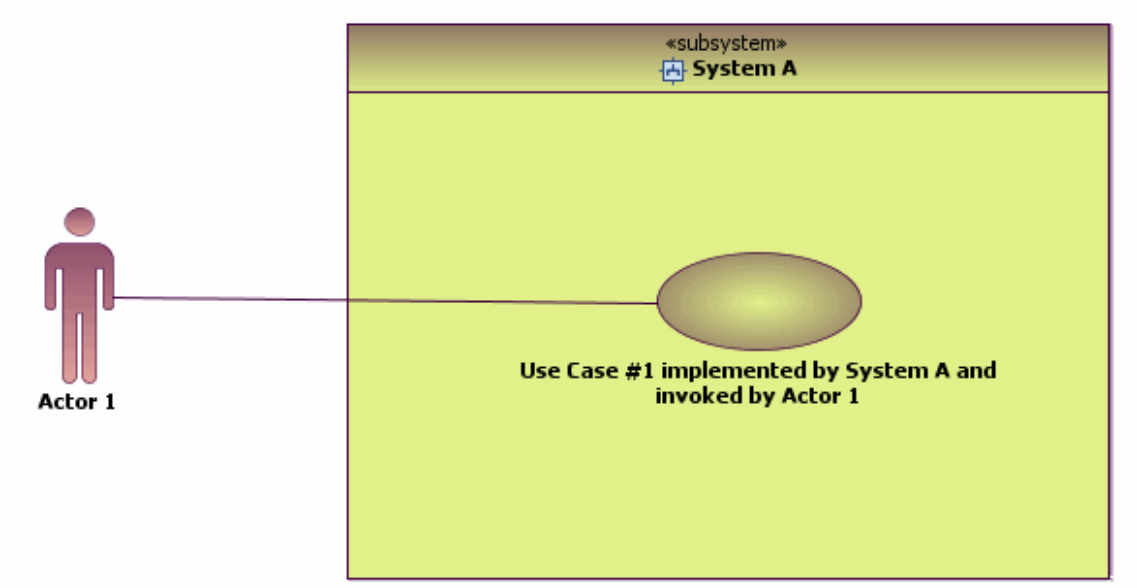

Figure A.3: Actors, Use Cases, and Relationships

Actor 1

An actor in the Unified Modeling Language (UML) specifies a role played by a user or any other system that interacts with the subject (e.g. subsystem). Actors may represent roles played by human users, external hardware, or other subjects. Note that an actor does not necessarily represent a specific physical entity but merely a particular facet (i.e., “role”) of some entity that is relevant to the specification of its associated use cases. Thus, a single physical instance may play the role of several different actors and, conversely, a given actor may be played by multiple different instances. Even though UML 2 does not permit associations between actors, generalization/specialization relationship between actors is useful in modeling overlapping behaviors.

«subsystem»System A

This is an example subsystem (specified by the «subsystem» stereotype) that implements a specific use case as a set of functionality used by business users (i.e. actors). It represents independent, behavioral units in a system. Subsystems are used in class, component, and use case diagrams to represent large-scale components of the system at the center of a interoperability use case.. An entire system may be represented as a hierarchy of subsystems. You can also define the behavior that each subsystem represents by specifying interfaces to the subsystems and the operations that support the interfaces.

Use Case #1 implemented by System A and invoked by Actor 1

A use case describes a sequence of actions that provide something of measurable value to an actor. The use case icon is drawn as a horizontal ellipse. A use case in software engineering and systems is a description of a system’s behavior as it responds to a request that originates from outside that system. In other words, a use case describes 'who' can do 'what' with the system in question. The use case technique is used to capture the business domain’s perspective of a system's behavioral requirements by detailing scenario-driven threads through the functional requirements.

Business Domains

The following domains have been drafted for this milestone and are avaialalble for implementation:

B: Milestone Overview Diagram

The following is a summary diagram describing the contents of the milestone release:

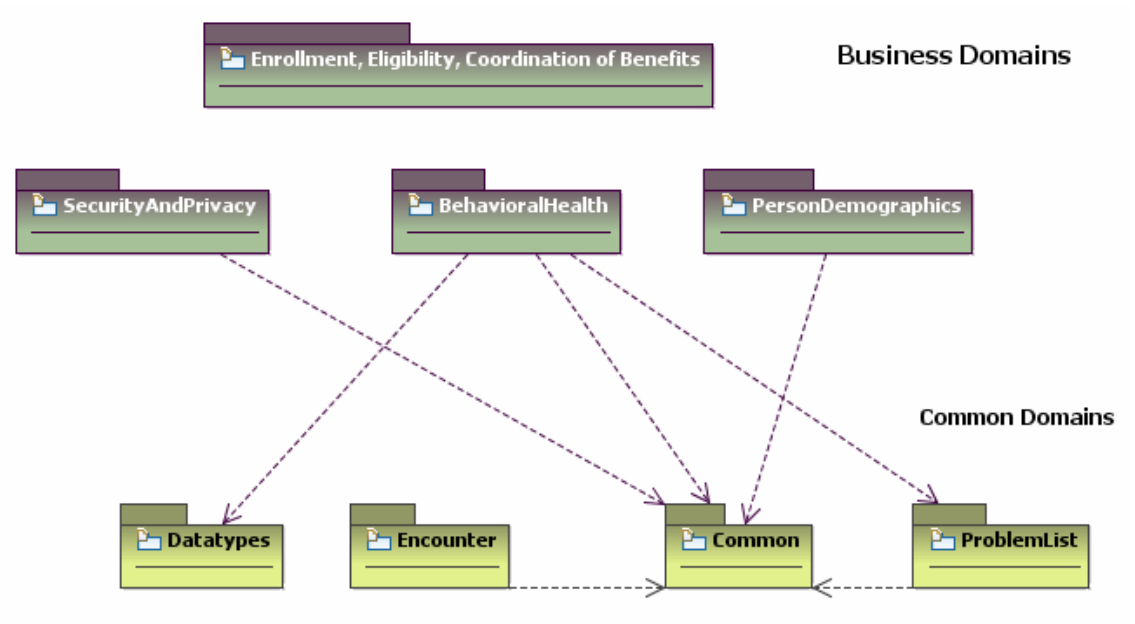

Figure B: Milestone Overview Diagram

BehavioralHealth

BehavioralHealthDomain

_BehavioralHealth

This diagram represents a view of all the classes and attributes defined in this domain.

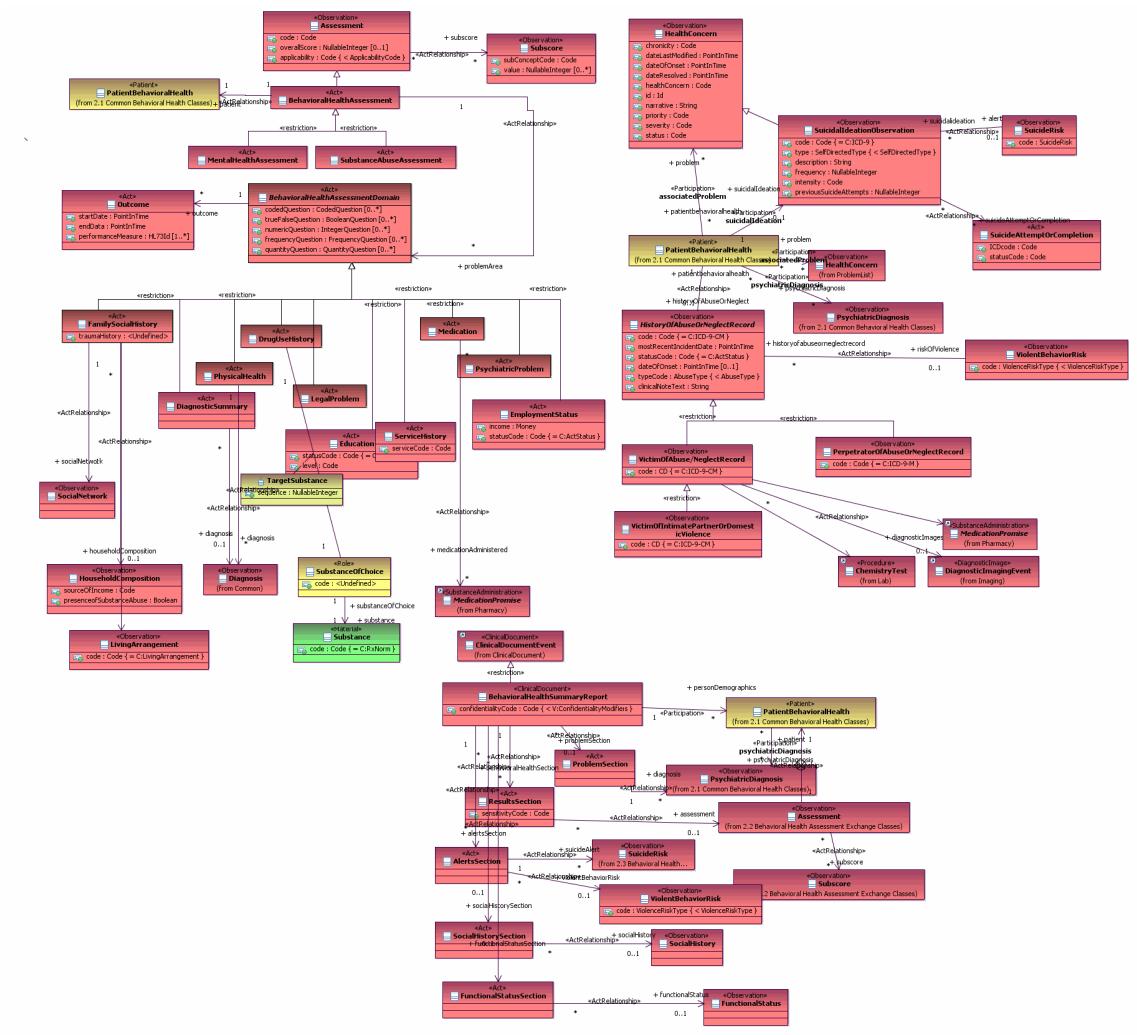

Figure _BehavioralHealth

Behavioral Health Domain

The purpose of this model is to describe the main information classes required to support continuity of care across specialties including information to and from behavioral health facilities. This model describes the information and the most important coded concepts required for semantic interoperability regardless of platform or exchange mechanism (e.g. HL7 CDA, ASTM, NIEM).

Change Log

The following are the changes and revisions applied to this domain model:

1. Peer Review - May 28th, 2010

Peer Review, initial version which includes analysis of Behavioral Health use cases for

information exchange.

2. Interim Draft - July 7th, 2010

This version addresses the peer review comments as well as full alignment with FHIM style and makes use of the vocabulary binding extensions in the HDF UML profile.

3. Final Draft - July 30th, 2010

This is the final draft following editorial edits and feedback from initial peer review comments.

1. FHIM Common Classes

The following section identifies the common FHIM classes that are reused throughout the FHIM Behavioral Health Domain.

1: FHIM Common Classes

The following diagram identifies classes used in this domain that are declared in other FHIM domains. These FHIM Common classes are used in this model by reference from their original namespaces/domain for reuse in the context of substance abuse and mental health treatment. The FHIM Common Class name is found in parenthesis under the Behavioral Health class name.

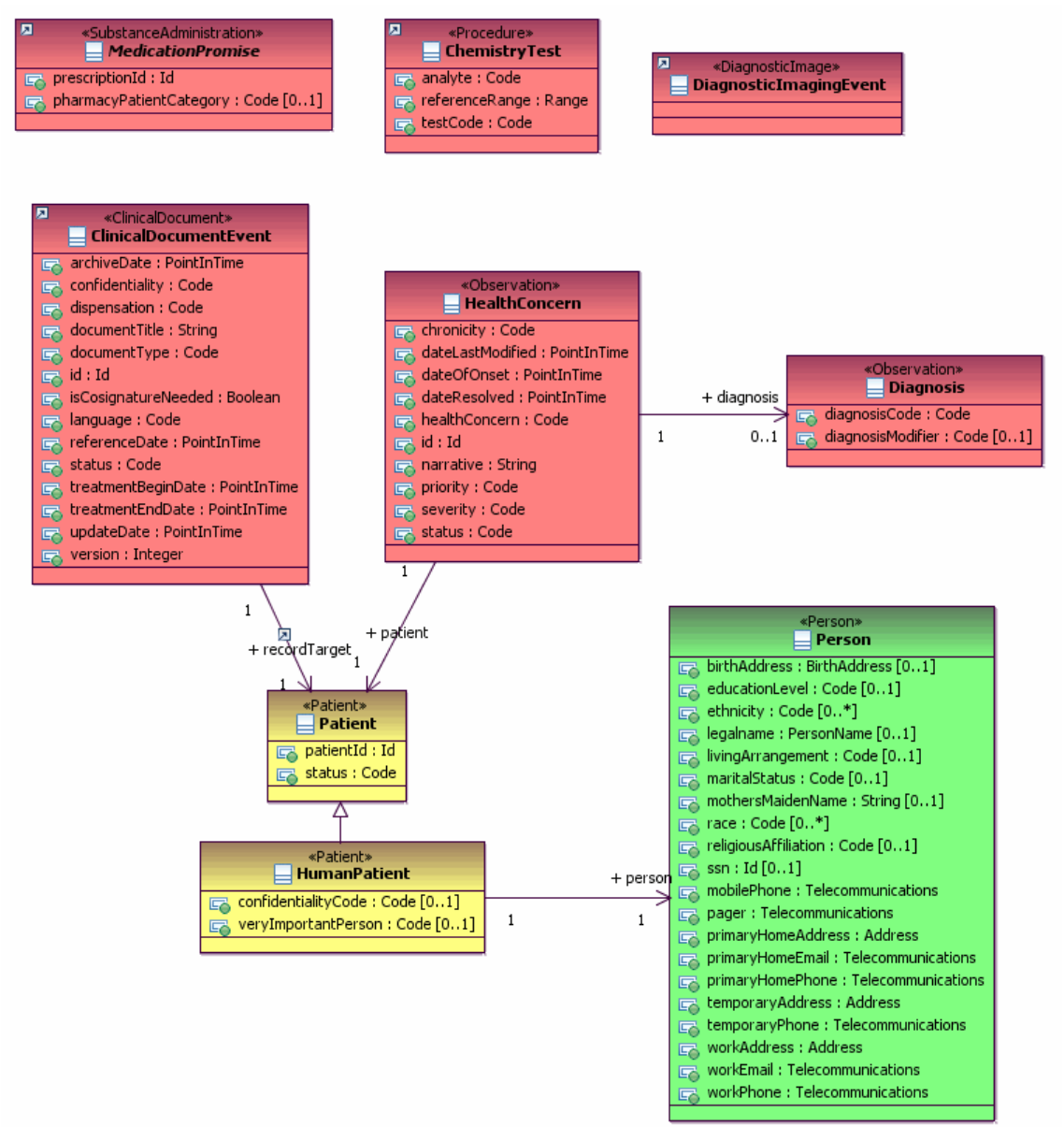

Figure 1: FHIM Common Classes

2. Behavioral Health: Information Model

This section describes the information classes and data elements required to support those interoperability use cases specified in the scope of this domain. The classes identified here are deemed sufficient to support the use cases described in the 'Use Cases' of this document.

2.1 Common Behavioral Health Classes

The following classes are reused across this domain and represent specialization/restrictions of common FHIM classes or classes declared in other FHIM domains.

2.1: Behavioral Health Common Classes

Figure 2.1 displays the classes that are reused to support the use cases identified in this domain. The specializations shown here are intended to extended the FHIM common classes with the traits or terminology specific to Behavioral Health information.

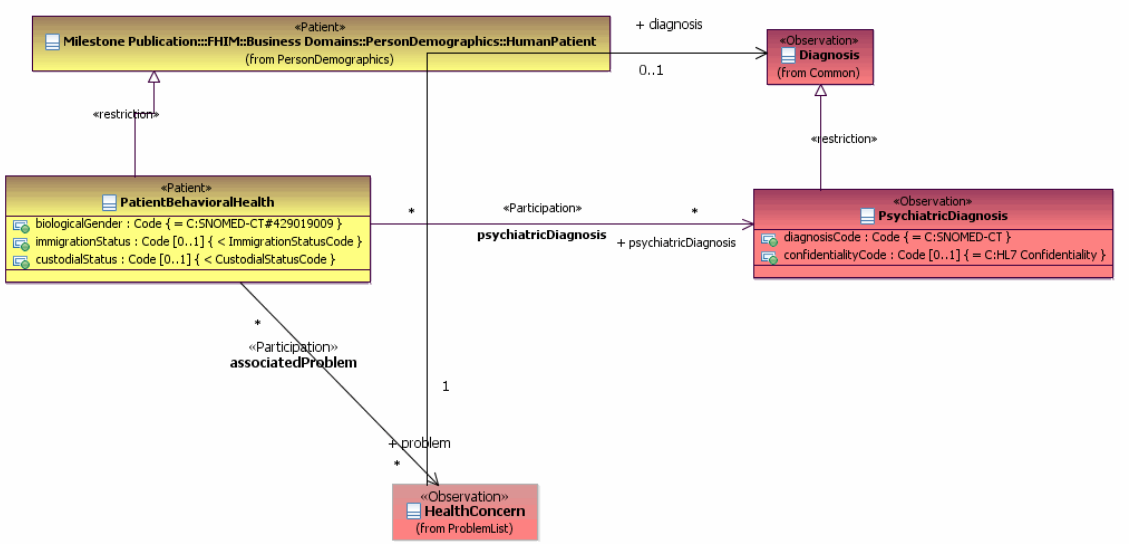

Figure 2.1: Behavioral Health Common Classes

«Participation»associatedProblem

This is a directed association between a behavioral patient/client and all of their behavioral health problems or concerns.

«Patient» Class: PatientBehavioralHealth

This class represents a specialization of the Patient role declared in the FHIM Patient Demographics domain.

Attribute 'PatientBehavioralHealth.biologicalGender' of type ' Code' with cardinality of [1]

Vocabulary Binding:

Code System: SNOMED-CT , Code Value: 429019009

Concept Domain: Biological Gender

This attribute is currently in this domain but it will be moved to 'Person'. It specifies the biological gender of a client/patient. This attribute is optional (i.e. cardinality [0..1]). HL7 Version 3 does not currently have a Concept Domain corresponding to Biological Gender. There is a concept domain for AdministrativeGender which has the definition ' the gender of a person used for administrative purposes (as opposed to clinical gender)' .

Attribute 'PatientBehavioralHealth.custodialStatus' of type ' Code' with cardinality of [0..1]

Vocabulary Binding:

Concept Domain: CustodialStatus

The primary purpose for this attribute is for reporting purposes. Custodial status refers to the legal guardianship according to example enumerations that were provided to this analysis and which appear in the Terminology section of this publication. There are no values currently defined to indicate prison incarceration however. This attribute is optional (i.e. cardinality [0..1]).

Association 'PatientBehavioralHealth.historyOfAbuseOrNeglect' of type ' HistoryOfAbuseOrNeglectRecord' with cardinality of [0..1]

This is an association between the patient and their history of abuse or neglect history records.

Attribute 'PatientBehavioralHealth.immigrationStatus' of type ' Code' with cardinality of [0..1]

Vocabulary Binding:

Concept Domain: ImmigrationStatus

The primary purpose for this attribute is for reporting purposes, although in some instances, immigration status could be used to determine eligibility for Behavioral Health services. Example enumerations have been provided for this attribute in the Terminology section of this publication. This attribute is optional (i.e. cardinality [0..1]).

Attribute 'PatientBehavioralHealth.problem' of type ' HealthConcern' with cardinality of [*]

This is an association between the patient and their problems. The cardinality of this association is * to allow zero or more problems to be specified.

Association 'PatientBehavioralHealth.psychiatricDiagnosis' of type ' PsychiatricDiagnosis' with cardinality of [*]

This is an association between the patient and their psychiatric diagnoses. The cardinality of this association is * to allow zero or more psychiatric diagnoses to be specified.

Association 'PatientBehavioralHealth.suicidalIdeation' of type ' SuicidalIdeationObservation' with cardinality of [0..1]

This is an association between the patient and their records of suicidal ideation, suicide

attempts, and alerts.

«Participation»psychiatricDiagnosis

This is a directed association between a behavioral patient/client and their psychiatric diagnoses.

«Observation» Class: PsychiatricDiagnosis

This class is intended to specialize a generic diagnosis class by adding support for Diagnostic and Statistical Manual of Mental Disorders (DSM) codes and supports any extensions required to communicate information about Behavioral Health diagnoses between organizations and providers.

Attribute 'PsychiatricDiagnosis.confidentialityCode' of type ' Code' with cardinality of [0..1]

Vocabulary Binding:

Code System: HL7 Confidentiality , Code System Id: 2.16.840.1.113883.5.25 (Confidentiality) May 2010

Concept Domain: Confidentiality

This code may be used to specify whether the diagnosis is sensitive (e.g. carries a social stigma). This attribute relies on the sensitivity value set specified by HL7 Confidentiality coding system.

Attribute 'PsychiatricDiagnosis.diagnosisCode' of type ' Code' with cardinality of [1]

Vocabulary Binding:

Code System: SNOMED-CT , Code System Id: SNOMED-CT ()

Concept Domain: Diagnosis

This attribute is intended to store the code for the diagnosis in SNOMED-CT. Since both the DSM IV and the ICD codes corresponding to the psychiatric diagnosis are mapped to SNOMED-CT should be sufficient to represent psychiatric diagnoses.

«Participation»suicidalIdeation

This is a directed association between a patient/client and the details of a health concern related to suicidal ideation.

2.2 Behavioral Health Assessment Exchange Classes

This section focuses on those classes required to exchange either summary or details of a Behavioral Health assessment

2.2.a: Behavioral Health Assessment Classes

Diagram 2.2.a describes the type of information that will be exchanged with behavioral health practitioners when all the details of an assessment are required. These assessments may be exchanged between providers to eliminate redundant assessments. Note that this diagram identifies the structure of an assessment, the type, outcome and the clinical information inferred from the assessment responses.

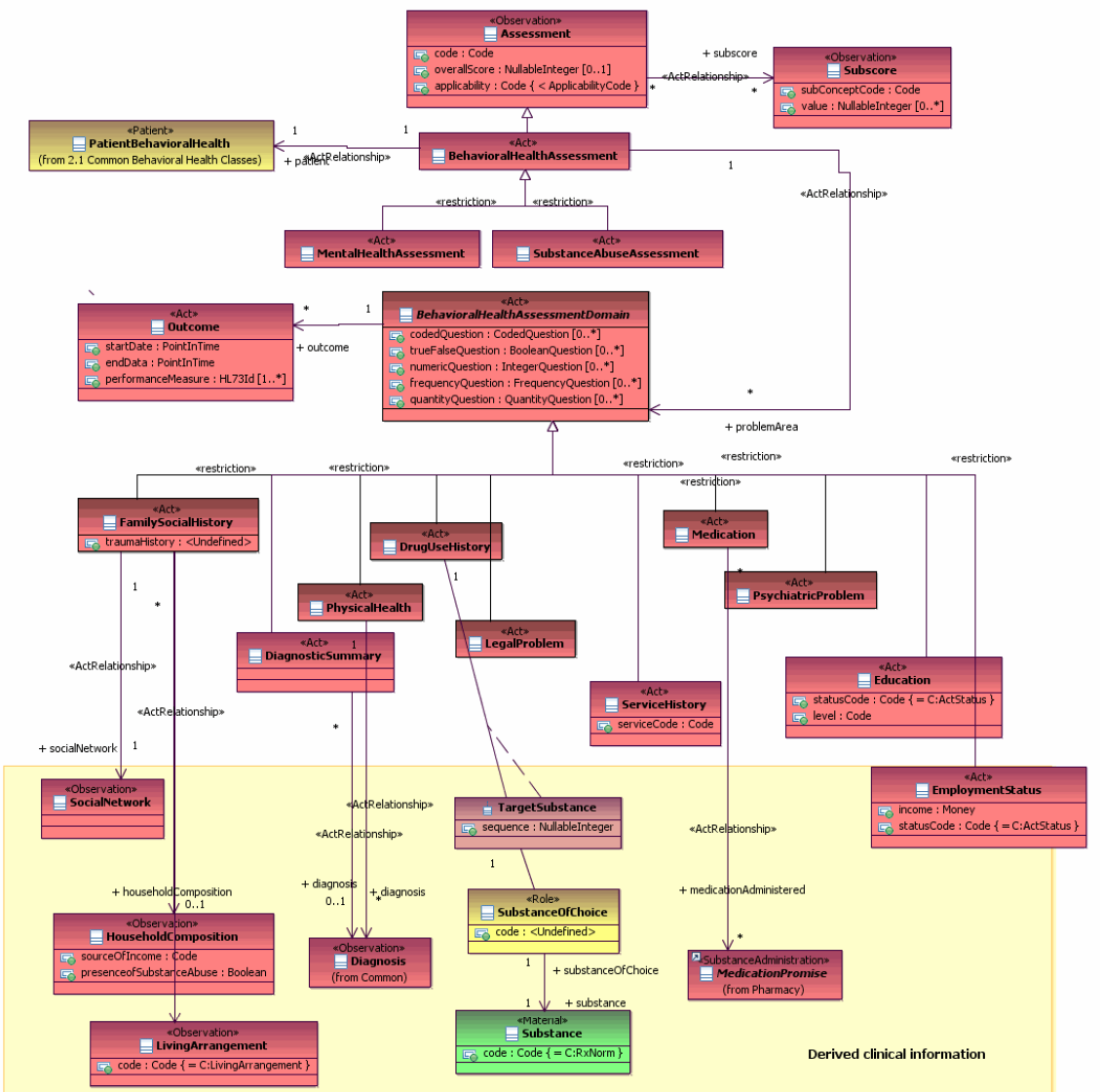

Figure 2.2.a: Behavioral Health Assessment Classes

2.2.b: Assessment Question and Answer Types

Figure 2.2.b details the questions and answers that may be used an in an assessment. A domain may contain any subset of coded, true/false, numeric, frequency, or quantity related answers to questions.

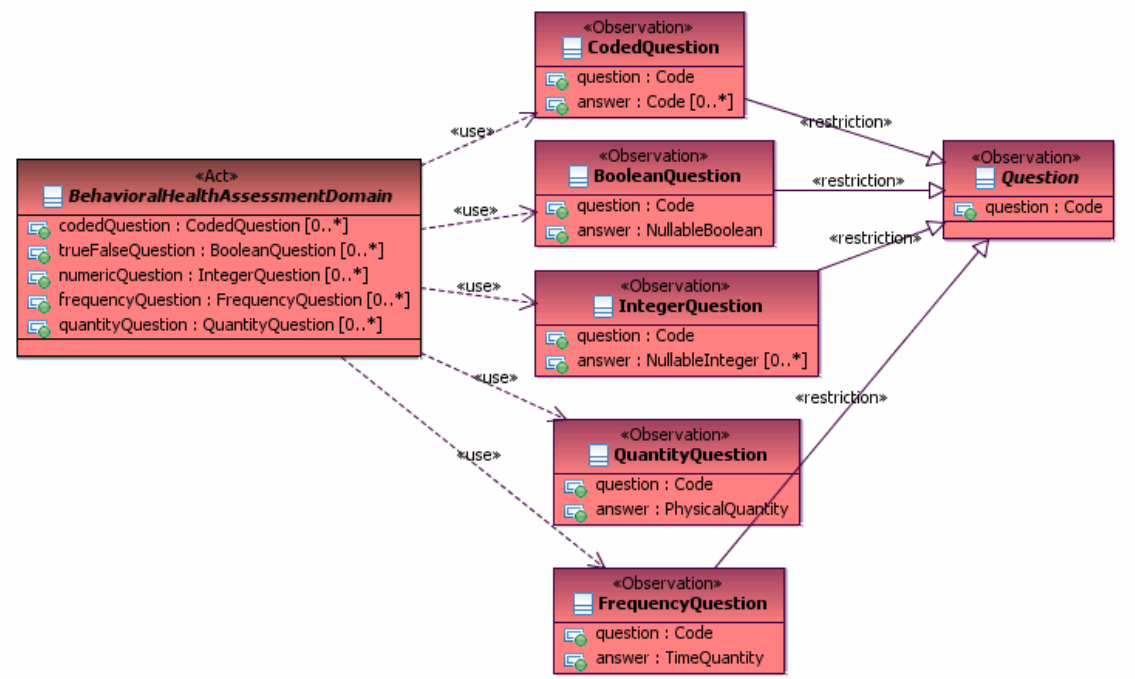

Figure 2.2.b: Assessment Question and Answer Types

«Observation» Class: Assessment

This class describes any type of assessment (e.g. behavioral health issues) that is administered to a patient. Standardized assessment tools create scores and subscores used to determine the optimal placement and treatment plans for a patient. Standardized assessment tools facilitate the collection of accurate information in a reliable and consistent manner provide clinicians and treatment agencies with increased accountability and to identify patient progress over time and help adjust treatment plans.

Attribute 'Assessment.applicability' of type ' Code' with cardinality of [1]

This attribute is intended to specify the whether the assessment is used for clinical, research, or program evaluation.

Association 'Assessment.assessmentPlacementTools' of type ' BehavioralHealthAssessment/PlacementTool' with cardinality of [0..1]

Assessments are created using specific tools. While the assessment may identify the type of tools used, the tool used and its characteristics are out of scope.

Attribute 'Assessment.code' of type ' Code' with cardinality of [1]

This attribute specifies the code identifying the main concept associated with the assessment. The code includes a text description of the concept along with the standard-based code.

Attribute 'Assessment.overallScore' of type ' NullableInteger' with cardinality of [0..1]

This attribute represents the overall score computed by the assessment tool based on the patient's answers to assessment questions. The value of the score is used to create a care/treatment plan to meet the needs of the client/patient.

Association 'Assessment.subscore' of type ' Subscore' with cardinality of [*]

This attribute represents the subscore score computed by the assessment tool based on the patient's answers to assessment questions. A subscore may be associated with a specific domain or concept that is evaluated through the assessment (e.g. depression may receive a subscore in an overall mental health assessment).

«Act» Class: BehavioralHealthAssessment

This is class describes a Behavioral Health Assessment containing both mental health and substance abuse related questions.

Association 'BehavioralHealthAssessment.patient' of type ' PatientBehavioralHealth' with cardinality of [1]

This directed association describes the relationship between a client/patient and their behavioral health assessments.

Association 'BehavioralHealthAssessment.problemArea' of type ' BehavioralHealthAssessmentDomain' with cardinality of [*]

This association is used to identify the logical problem areas (e.g., FamilySocialHistoryArea, DrugUseHistoryArea, MedicationsArea, etc.) contained in the assessment.

«Act» Class: BehavioralHealthAssessmentDomain (Abstract)

This class is container for a set of questions and answers needed to evaluate behavioral health issues. This class description is consistent with the 'HL7 Implementation Guide for CDA Release 2: CDA Framework for Questionnaire Assessments, Release 1 '.

Attribute 'BehavioralHealthAssessmentDomain.codedQuestion' of type ' CodedQuestion' with cardinality of [*]

This attribute corresponds to the set of questions that require a coded response.

Attribute 'BehavioralHealthAssessmentDomain.frequencyQuestion' of type ' FrequencyQuestion' with cardinality of [*]

This attribute corresponds to the set of questions that require a frequency response.

Attribute 'BehavioralHealthAssessmentDomain.numericQuestion' of type ' IntegerQuestion' with cardinality of [*]

This attribute corresponds to the set of questions that require a numeric (integer) response.

Association 'BehavioralHealthAssessmentDomain.outcome' of type ' Outcome' with cardinality of [*]

This is a directed association describing the relationship between an assessment and the outcome measurements related to that assessment.

Attribute 'BehavioralHealthAssessmentDomain.quantityQuestion' of type ' QuantityQuestion' with cardinality of [*]

This attribute corresponds to the set of questions that require a quantity response.

Attribute 'BehavioralHealthAssessmentDomain.trueFalseQuestion' of type ' BooleanQuestion' with cardinality of [*]

This attribute corresponds to the set of questions that require a true or false (boolean) response.

«Observation» Class: BooleanQuestion

This class represents a question that requires a true of false answer. Both the question and the answer are identified. Ideally, the question code would identify the issue or assertion confirmed or denied by the answer.

Attribute 'BooleanQuestion.answer' of type ' NullableBoolean' with cardinality of [1]

This attribute represents a response as a boolean (true/false) response to a specific assessment question. If a response is not provided, the null value may be qualified by an ASKU (asked but unknown) null flavor.

Attribute 'BooleanQuestion.question' of type ' Code' with cardinality of [1]

This attribute is used to define the code associated with the Behavioral Health assessment question that requires a yes/no response.

«Observation» Class: CodedQuestion

This class represents a question that requires an answer based on a predefined terminology/value set.

Attribute 'CodedQuestion.answer' of type ' Code' with cardinality of [*]

This attribute represents response as a coded value to a specific assessment question. If a response is not provided, then the null value may be qualified by a ASKU (asked but unknown) null flavor.

Attribute 'CodedQuestion.question' of type ' Code' with cardinality of [1]

This attribute is used to define the code associated with the Behavioral Health assessment

question that requires a coded response.

«Act» Class: DiagnosticSummary

This area of the assessment is used to record answers related to the client/patient's diagnoses that may be pertinent to their behavioral health problems.

«Act» Class: DrugUseHistory

This class is intended to specify the information exchanged to describe drug use history.

«Act» Class: Education

This class is used to record the answers related to the education situation of the patient (e.g. education level as well as enrollment status for those who should be enrolled in school).

Attribute 'Education.level' of type ' Code' with cardinality of [1]

This attribute is used to specify the highest education level achieved by the patient.

Attribute 'Education.statusCode' of type ' Code' with cardinality of [1]

Vocabulary Binding:

Code System: ActStatus , Code System Id: 2.16.840.1.113883.5.14 () May 2010

Concept Domain: ActStatus

This coded attribute is used to specify whether patients are enrolled, not enrolled, or has completed their education.

«Act» Class: FamilySocialHistory

This area of the assessment is used to record answers related to family and social history that may predispose the patient to a specific type of problem. This includes living arrangement.

Attribute 'FamilySocialHistory.traumaHistory' of type ' ' with cardinality of [1]

This coded attribute specifies whether the patient may have a history of physical or mental trauma even though it has not yet manifested as a diagnosis.

«Observation» Class: FrequencyQuestion

This class represents a question that requires an answer specifying the number a times (repetitions) an event occurred during a unit of time (e.g. number of drinks per week).

Attribute 'FrequencyQuestion.answer' of type ' TimeQuantity' with cardinality of [1]

This coded attribute is used to specify the number of occurrences within a given period of time. If a response is not provided, the null value may be qualified by an ASKU (asked but unknown) null flavor.

Attribute 'FrequencyQuestion.question' of type ' Code' with cardinality of [1]

This attribute is used to define the code associated with the Behavioral Health assessment question that requires a frequency response.

«Observation» Class: HouseholdComposition

This section identifies specific household traits of the patient. This section may help identify whether substance abuse is present in the household since it often a pre-condition to staying sober. Other household traits (e.g. primary source of income) are derived from this assessment section.

Attribute 'HouseholdComposition.presenceofSubstanceAbuse' of type ' Boolean' with cardinality of [1]

This boolean attribute specifies the presence of substance abuse in the household shared by the patient.

Attribute 'HouseholdComposition.sourceOfIncome' of type ' Code' with cardinality of [1]

This coded attribute specifies the type of income (e.g. supplemental social security insurance -SSI, food stamps, employment).

«Observation» Class: IntegerQuestion

This class represents a question that requires a numeric answer.

Attribute 'IntegerQuestion.answer' of type ' NullableInteger' with cardinality of [*]

This attribute represents a numeric response as a numeric to a specific assessment question. If a response is not provided, the null value may be qualified by an ASKU (asked but unknown) null flavor.

Attribute 'IntegerQuestion.question' of type ' Code' with cardinality of [1]

This attribute is used to define the code associated with the Behavioral Health assessment question that requires a numeric (integer) response.

«Act» Class: LegalProblem

This class is used to record answers related to any criminal justice issues (e.g. criminal record, parole status).

«Observation» Class: LivingArrangement

This section identifies the living arrangements for a client/patient. This class may have overlaps with FamilySocialHistoryArea so this may go away.

Attribute 'LivingArrangement.code' of type ' Code' with cardinality of [1]

Vocabulary Binding:

Code System: LivingArrangement , Code System Id: 2.16.840.1.113883.5.63 ()

The value sets for this attribute are based on the HL7 Living Arrangements coding system (2.16.840.1.113883.5.63) used to specify whether the patient is homeless, transient, living in a community shelter, or institutionalized.

«Act» Class: Medication

This problem area/section of the assessment is used to identify the medications administered to the patient.

Attribute 'Medication.medicationAdministered' of type ' MedicationPromise' with cardinality of [*]

This directed association describes the relationship between the Medications that the client/patient is taking as defined in the Medications Area of the assessment.

«Act» Class: MentalHealthAssessment

This type of assessment is intended to evaluate the mental health problems affecting the patient. This class is a specialization/restriction of the BehavioralHealthAssessment class.

«Act» Class: Outcome

This class is used specify the outcome of Behavioral Health treatment as described by changes to the patient's state reflected in the that patient's responses to assessment questions.

«Act» Class: PhysicalHealth

This class is used to specify the non-mental health problems or diagnoses of the patient.

«Act» Class: PsychiatricProblem

This section of the assessment is used to identify the psychiatric problems of a patient.

«Observation» Class: QuantityQuestion

This class is used to specify the response to questions that are expressed by a quantity (e.g., years of use).

Attribute 'QuantityQuestion.answer' of type ' PhysicalQuantity' with cardinality of [1]

If a response requires a quantity (e.g. years), this attribute specifies its coded value. If a response is not provided, the null value may be qualified by an ASKU (asked but unknown) null flavor.

Attribute 'QuantityQuestion.question' of type ' Code' with cardinality of [1]

The coded value of the question that requires the quantity amount specification.

«Observation» Class: Question (Abstract)

This class represents the abstract base class for all the questions contained in the assessment

questionnaire.

Attribute 'Question.question' of type ' Code' with cardinality of [1]

The question in a questionnaire (e.g. Assessment instrument) may be based on a common value set. Therefore, the question may be a coded attribute.

«Act» Class: ServiceHistory

The type of services to determine if frequent inpatient detox vs. on-going treatment is more prevalent. This section is used to determine the effectiveness of the various services.

Attribute 'ServiceHistory.serviceCode' of type ' Code' with cardinality of [1]

This is a coded attribute describing the type of service that has been rendered to the client/patient that appears in this area of the behavioral health assessment,

«Observation» Class: SocialNetwork

This class identifies whether a person is in environment where others are abusing alcohol or other substances. The National Outcomes Measures (NOMs) set performance targets for State and Federally funded initiatives and programs for substance abuse prevention and mental health promotion, early intervention, and treatment services. Social network risk factors are one component of these measures.

«Observation» Class: Subscore

This class is used to describe the context of an assessment subscore. A subscore may be associated with a specific domain or concept that is evaluated through the assessment (e.g. depression may receive a subscore in an overall mental health assessment).

Attribute 'Subscore.value' of type ' NullableInteger' with cardinality of [*]

This attribute holds the numeric value of the subscore. The type of this attribute is 'NullableInteger' because the value may be null.

«Material» Class: Substance

This class is used to specify the type of substance (e.g. alcohol, controlled substances) that is abused by a patient.

Attribute 'Substance.code' of type ' Code' with cardinality of [1]

Vocabulary Binding:

Code System: RxNorm

This coded attribute is used to specify the specific substance abused by patient (e.g. cocaine, oxycodone, etc.,) rather than a code for the type of substance (e.g. narcotics, alcohol, pharmaceutical drugs).

«Act» Class: SubstanceAbuseAssessment

This class represents any type of assessment used to identify the substance abuse problems of a patient. This class is a specialization/restriction of the BehavioralHealthAssessment class.

«Role» Class: SubstanceOfChoice

This role class is used to identify the properties of a substance that is identified as a substance of choice based on the answers provided by the patient to the questions in Drug Use History section of a Behavioral Health or Substance Abuse assessment.

Attribute 'SubstanceOfChoice.code' of type ' ' with cardinality of [1]

This coded attribute is used to specify the type of substance used by patient (e.g. alcohol, narcotics, pharmaceutical drugs) rather than a code for the specific substance.

TargetSubstance

This association class is used to describe the priority of the SubstanceOfChoice abused by the client/patient defined by the sequence attribute and is used to distinguish primary from secondary and tertiary substances.

Attribute 'TargetSubstance.sequence' of type ' NullableInteger' with cardinality of [1]

This attribute defines whether the abused Substance is the primary SubstanceOfChoice or secondary, tertiary, etc. This is captured to determine whether different treatments are effective depending on whether the substance is the primary one being abused or incidental to the primary substance.

2.3 Behavioral Health Record Exchange Classes

This section describes the structure and information objects needed to exchange Behavioral Health records between various stakeholders. The information detailed in this section is intended to address the information requirements of the 'Report Behavioral Health Records to Public Health' use case - see Section 3.

2.3: Suicide and Violence Details

Figure 2.3 focuses on the information that may be required for public health as well as a part of the behavioral health record. This diagram identifies the types of the information needed to convey a patient's suicidal ideation and their history of abuse or neglect. The information is associated with a Patient (referenced using the Patient_BehavioralHealth class specialization introduced in this domain).

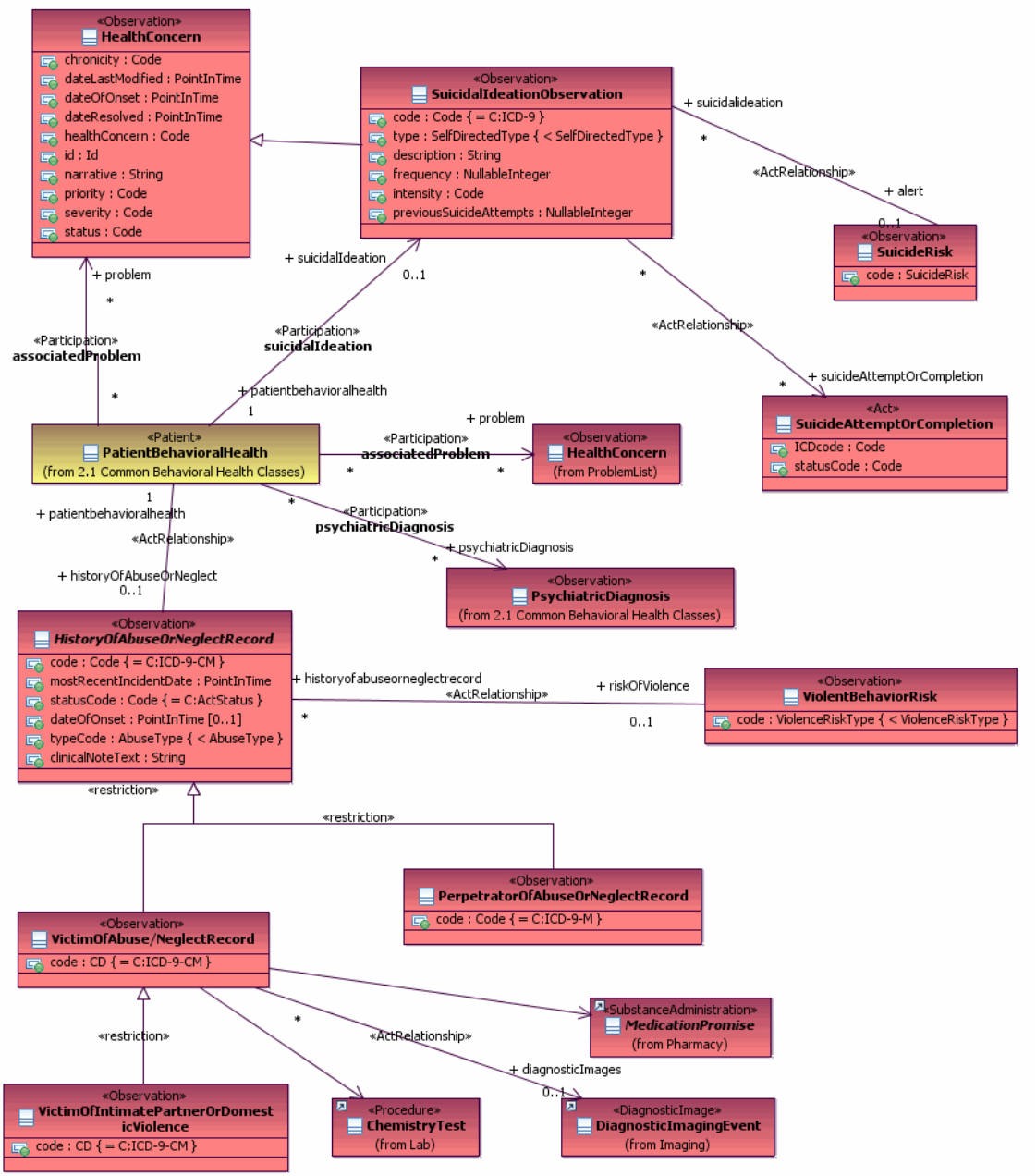

Figure 2.3: Suicide and Violence Details

«Observation» Class: HistoryOfAbuseOrNeglectRecord (Abstract)

This class is intended to capture details related to any past abuse/violence and/or neglect. Violence is a significant problem in the United States (U.S.). From infants to the elderly, it affects people in all stages of life. In 2006, 18,573 people died as a result of homicide and 33,300 took their own life. The number of violent deaths tells only part of the story. Many more survive violence and are left with permanent physical and emotional scars. Violence also erodes communities by reducing productivity,

decreasing property values, and disrupting social services. In 1979, violent behavior was identified by the U.S. Surgeon General as a key public health priority. Shortly thereafter, in 1980, CDC began studying patterns of violence. These early activities grew into a national program to reduce the death and disability associated with injuries outside the workplace. In 1992, CDC established the National Center for Injury Prevention and Control (NCIPC) as the lead federal organization for violence prevention. The Division of Violence Prevention (DVP) is one of three divisions within NCIPC.

Attribute 'HistoryOfAbuseOrNeglectRecord.code' of type ' Code' with cardinality of [1]

Vocabulary Binding:

Code System: ICD-9-CM

Concept Domain: History of Abuse

This is the coded attribute describing the type of abuse or neglect. It is not currently associated with any particular value set, but this may be captured using ICD-9-CM diagnostic codes.

Attribute 'HistoryOfAbuseOrNeglectRecord.dateOfOnset' of type ' PointInTime' with cardinality of [0..1]

This attribute is the date when the neglect or abuse started (e.g. first incident). (An imprecise date would be appropriate).

Association 'HistoryOfAbuseOrNeglectRecord.historyOfAbuse/Neglect' of type ' HistoryOfAbuseOrNeglectRecord' with cardinality of [0..1]

This is an association between a client/patient and their History of Abuse and Neglect records.

Attribute 'HistoryOfAbuseOrNeglectRecord.mostRecentIncidentDate' of type ' PointInTime' with cardinality of [1]

This attribute is the date of the most recent incident of neglect or abuse that has been identified by the assessment.

Association 'HistoryOfAbuseOrNeglectRecord.patientbehavioralhealth' of type ' PatientBehavioralHealth' with cardinality of [1]

This is an association between a client/patient and their History of Abuse and Neglect records.

Attribute 'HistoryOfAbuseOrNeglectRecord.statusCode' of type ' Code' with cardinality of [1]

Vocabulary Binding:

Code System: ActStatus , Code System Id: 2.16.840.1.113883.5.14 ()

Concept Domain: ActStatus

This attributes whether the abuse or neglect is still in progress ('active') or was in the past ('completed').

Attribute 'HistoryOfAbuseOrNeglectRecord.typeCode' of type ' AbuseType' with cardinality of [1]

Vocabulary Binding:

Concept Domain: AbuseType

This attribute specifies whether the history of abuse refers to neglect, physical, or sexual abuse.

«Observation» Class: PerpetratorOfAbuseOrNeglectRecord

This class is intended to record any additional attributes required to describe a history of abuse from the perspective of the perpetrator. This is not typical but it is an optional content of a behavioral health record.

Attribute 'PerpetratorOfAbuseOrNeglectRecord.code' of type ' Code' with cardinality of [1]

Vocabulary Binding:

Code System: ICD-9-M

Concept Domain: Perpetrator of Abuse or Neglect Type

This coded attribute may be used to indicate that the patient is a registered sex offender, convicted of arson, etc.

«Observation» Class: SuicidalIdeationObservation

This class is used to record 'thoughts of harming or killing oneself' (IOM 2002) and is a specialization of HealthConcern. The severity of suicidal ideation can be determined by assessing the frequency, intensity, and duration of these thoughts. The CDC is in the process of developing Suicide Surveillance: Uniform Definitions and Recommended Data Elements. The severity of suicidal ideation can be determined by assessing the frequency, intensity, and duration of these thoughts (IOM 2002). CDC is in the process of developing Suicide Surveillance: Uniform Definitions and Recommended Data Elements. This publication is expected to be available starting in 2009. Reference: Goldsmith SK, Pellmar TC, Kleinman AM, Bunney WE, eds. Reducing suicide: a national imperative.

Attribute 'SuicidalIdeationObservation.code' of type ' Code' with cardinality of [1]

Vocabulary Binding:

Code System: ICD-9 , Code System Id: E950-E959 ()

Concept Domain: Suicide and Self-Inflicted Injury

The business stakeholders may specify what code is associated with SuicidalIdeationObservation. There is an ICDcode attribute in the class SuicideAttemptOrCompletion. Are there two different codes for these classes? If so, what is the definition for this code and as the name implies is an ICD-9 code always used to specify this information.

Attribute 'SuicidalIdeationObservation.intensity' of type ' Code' with cardinality of [1]

The intensity may be specified using a value set or a scale of integer values.

Attribute 'SuicidalIdeationObservation.previousSuicideAttempts' of type ' NullableInteger' with cardinality of [1]

'A non-fatal, self-inflicted destructive act with explicit or inferred intent to die' (IOM 2002).

«Act» Class: SuicideAttemptOrCompletion

This class is used to specify past incidents of suicide attempt.

Attribute 'SuicideAttemptOrCompletion.ICDcode' of type ' Code' with cardinality of [1]

This coded attribute is used to specify the means by which suicide was attempted. The attribute name implies that an ICD-9 code is used to specify this information. Is this the case?

Attribute 'SuicideAttemptOrCompletion.statusCode' of type ' Code' with cardinality of [1]

This coded attribute is used to specify if the suicide attempt was successful/completed, aborted, or otherwise unsuccessful.

«Observation» Class: SuicideRisk

This class is used to convey a risk of suicide. This class contains an association to the full details of a patient's suicidal ideation and past history of suicide attempts.

«Observation» Class: VictimOfAbuse/NeglectRecord

This class is used to record the details of a history of abuse perpetrated by others. The client/patient, as victim of abuse or neglect, may have additional forensic tests (e.g. imaging, lab) and medications. Therefore this specialization class has associations to medication, diagnostic imaging, and laboratory results.

Attribute 'VictimOfAbuse/NeglectRecord.code' of type ' CD' with cardinality of [1]

Vocabulary Binding:

Code System: ICD-9-CM

Concept Domain: Victim of Abuse Type

This attribute specifies the type of victim or abuse or neglect using a standard coding system.

Attribute 'VictimOfAbuse/NeglectRecord.diagnosticImages' of type ' DiagnosticImagingEvent' with cardinality of [0..1]

If the record contains references to specific diagnostic images that document the abuse, this association will provide supporting information.

Attribute 'VictimOfAbuse/NeglectRecord.laboratoryResults' of type ' ChemistryTest' with cardinality of [0..1]

If the record contains references to specific laboratory that document the abuse, this association will provide the supporting information.

Attribute 'VictimOfAbuse/NeglectRecord.medication' of type ' MedicationPromise' with cardinality of [0..1]

If the record contains references to specific medication associated with the abuse, this association will provide the supporting information.

«Observation» Class: VictimOfIntimatePartnerOrDomesticViolence

This specialization class is used to specify the codes and details related to a history of violence perpetrated by a domestic partner.

Attribute 'VictimOfIntimatePartnerOrDomesticViolence.code' of type ' CD' with cardinality of [1]

Vocabulary Binding:

Code System: ICD-9-CM

Concept Domain: Victim of Intimate of Intimate of Domestic Violence

This attribute specifies the type of victim or abuse or neglect using a standard coding system.

«Observation» Class: ViolentBehaviorRisk

This class is used to alert providers of any risk of violent behavior posed by the patient. This class is used convey information about the violent tendencies of a client/patient in the context of protecting healthcare providers.

2.4 Summary Information Exchange Classes

This section describes the structure and information objects required to communicate Behavioral Health records to other specialties and care environments (e.g. acute care). The information detailed in this section is intended to address the information requirements of the 'Provide Behavioral Health Summary to Emergency Provide' use case - see Section 3.

Requirement 1:

The information exchange must be completed using a secure information exchange.

Requirement 2:

The Behavioral Health information may only be disclosed in accordance to prevailing privacy policies and patient consent, if needed.

2.4: Behavioral Health Summary

Figure 2.4 describes the information exchanged when behavioral health information is communicated across specialties(e.g. to emergency providers). Some of the classes of objects described here are based on problem areas defined through assessments. This summary information is relevant for exchanges between providers, across departments and even among organizations.

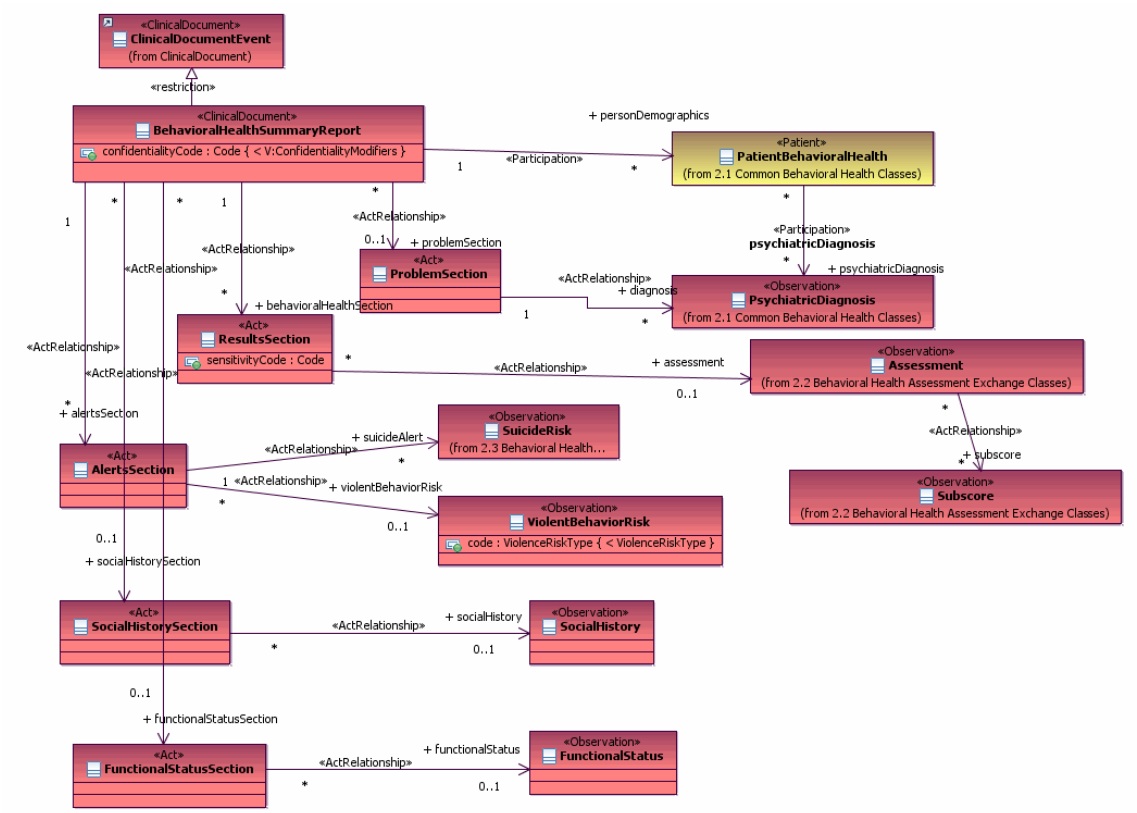

Figure 2.4: Behavioral Health Summary

«Act» Class: AlertsSection

This class corresponds to a document section intended to contain the alerts, allergies, and adverse reactions. This class provides context required for behavioral health interoperability.

«ClinicalDocument» Class: BehavioralHealthSummaryReport

This class specifies the summary report intended to exchange selected information relevant across specialties. It may not include the details of an assessment but it will contain many data elements that are based on the information collected through the assessment and generated from its processing.

Attribute 'BehavioralHealthSummaryReport.confidentialityCode' of type ' Code' with cardinality of [1]

Vocabulary Binding:

Code System: Confidentiality , Code System Id: 2.16.840.1.113883.5.25 (HL7 Confidentiality)

Value Set: ConfidentialityModifiers , Value Set Id: 2.16.840.1.113883.1.11.10236

This attribute is used to specify that the content of this clinical document is sensitive because it contains Behavioral Health information. This attribute corresponds to the Act.confidentialityCode in the HL7 Version 3 RIM but is constrained to specify sensitivity and for the purpose of data segmentation.

«Act» Class: ResultsSection

This is a results document section intended to hold the values of behavioral health assessment scores and subscores. This is part of a summary report that may be exchanged across specialties to support continuity of care. Other related results may be included in this section.

Attribute 'ResultsSection.sensitivityCode' of type ' Code' with cardinality of [1]

This attribute is used to specify that the content of this clinical document is sensitive because it contains Behavioral Health information.

2.5 Terminology Analysis

The following section specifies the terminology analysis for this document. This section will be further elaborated to include ICD-9-CM codes for Self-Directed Violence concepts.

2.5: Terminology Analysis

The following diagram shows the value sets and coded concepts specific to behavioral health as enumerations. This is a high-level inventory of the types of value sets identified so far.

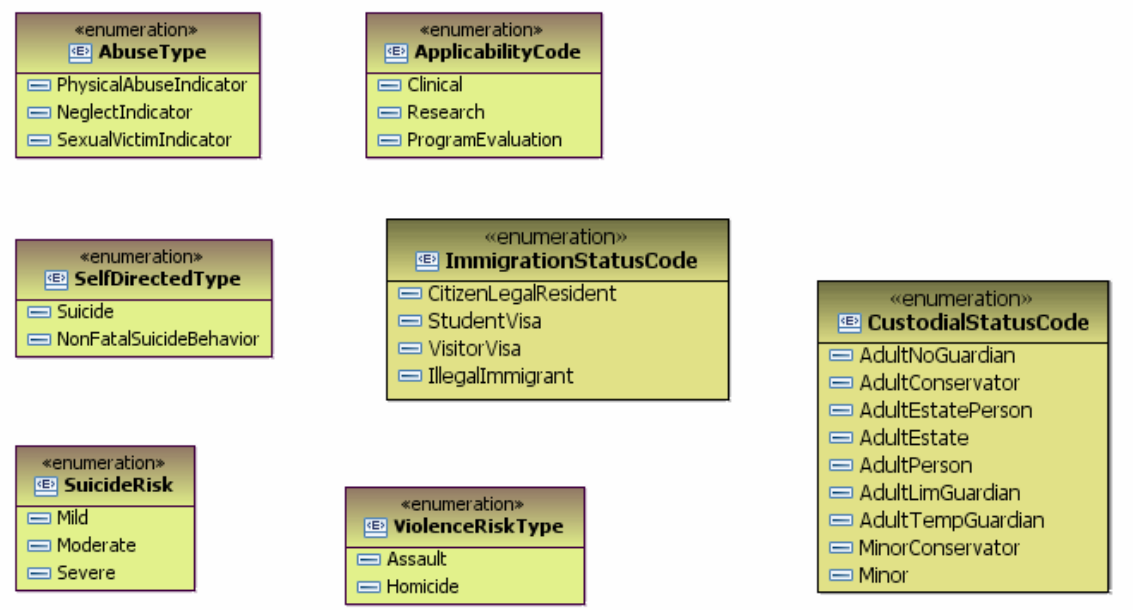

Figure 2.5: Terminology Analysis

AbuseType

This enumeration illustrates the types of values that may be used to populate the 'typeCode' attribute of a 'HistoryOfAbuse/Neglect' class.

AbuseType: values

- NeglectIndicator (This is an example code used to indicate that the abuse is neglect.)
- PhysicalAbuseIndicator (This is an example code used to specify that the type of abuse is...)
- SexualVictimIndicator (This is an example code intended to specify sexual abuse.)

ApplicabilityCode

This value set specifies the how the content of assessment being exchanged is used.

ApplicabilityCode: values

- Clinical

This code specifies that the assessment is applicable to clinical evaluation of the patient.

- ProgramEvaluation

The value ProgramEvaluation identifies types of patients and problems presenting for treatment, quantifies level of problems, measures patients' response to treatment, identifies agencies'/workers' strengths and areas for improvement with particular populations and problems, enables management by outcome, reports to funding sources, etc.

- Research

This code specifies that the assessment is applicable for research.

CustodialStatusCode

This enumeration illustrates the types of values that may be used to populate the custodialStatus code of the Patient_BehavioralHealth class.

CustodialStatusCode: values

- AdultConservator (Adult with Conservator)
- AdultEstate (Adult with Guardian of Estate)
- AdultEstatePerson (Adult with Guardian of Estate and Person)
- AdultLimGuardian (Adult with Limited Guardian)
- AdultNoGuardian (Adult, not under custodial supervision)
- AdultPerson (Adult with Guardian of Person)
- AdultTempGuardian (Adult with Temporary Guardian)
- Minor (Minor)
- MinorConservator (Minor with Conservator)

ImmigrationStatusCode

This enumeration illustrates the types of values that may be used to populate the immigrationStatus code of the Patient_BehavioralHealth class.

ImmigrationStatusCode: values

- CitizenLegalResident (Citizen/Permanent Resident/Legal Immigrant)
- IllegalImmigrant (Illegal Immigrant)
- StudentVisa (Student Visa)
- VisitorVisa (Visitor Visa)

SelfDirectedType

This enumeration illustrates the values that may be used to populate the type attribute of a SuicidialIdeationObservation class.

SelfDirectedType: values

- NonFatalSuicideBehavior
- Suicide

SuicideRisk

This enumeration illustrates the values that may be used to populate the attribute code of the

SuicideRisk class. These values may be associated with a LOINC Answer ID associated with the LOINC code 42823-5 Suicide risk).

SuicideRisk: values

- Mild
  LOINC Answer ID LA6752-5
- Moderate
  LOINC Answer ID LA6751-7
- Severe
  LOINC Answer ID: LA6750-9

ViolenceRiskType

This enumeration illustrates the values that may be used to populate the attribute code of the ViolentBehaviorRisk class.

ViolenceRiskType: values

- Assault
- Homicide

3. Use Cases

This section documents the use cases included to clarify the scope of the analysis and to enable stakeholders with differing view-points to communicate their Behavioral Health information exchange needs. These use cases are intended to support the need to exchange information required for continuity of care, quality measurements, and public health needs and are intended to be a representative but not an exhaustive set of use cases.

3: Behavioral Health Exchange Use Cases

The following summarizes the use cases that specify the scope of the information analysis. These use cases were identified primarily as means for communication, to disambiguate stakeholder requirements and to identify the type of users and systems expected to participate in the information exchange.

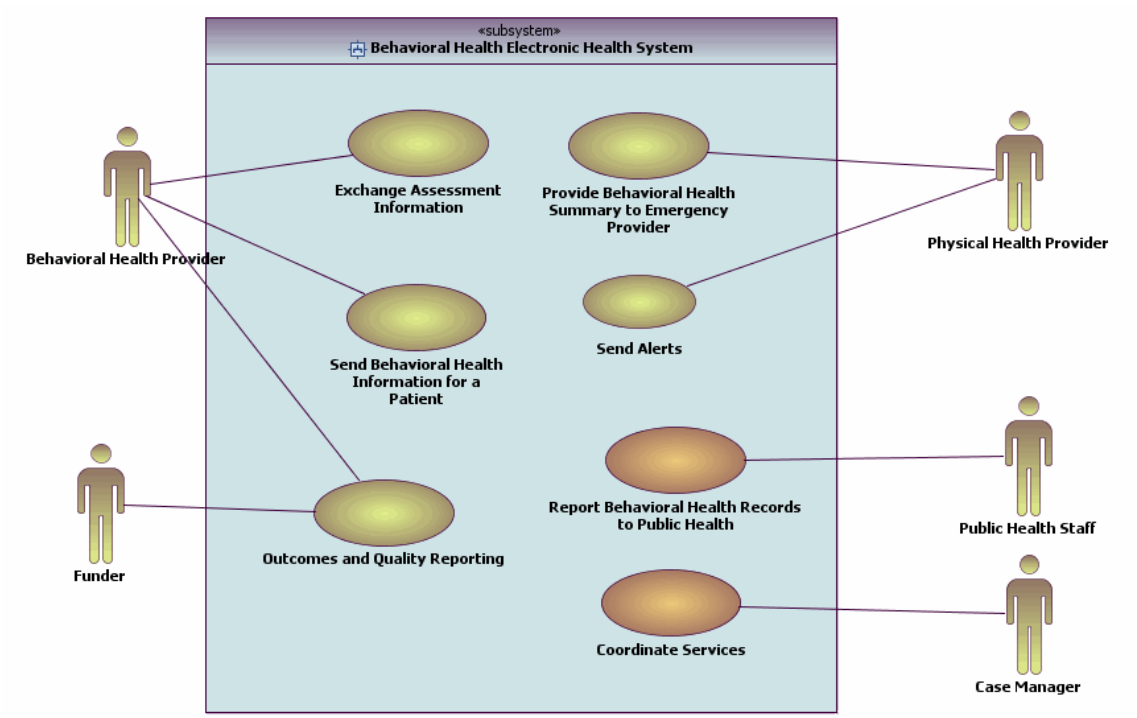

Figure 3: Behavioral Health Exchange Use Cases

«subsystem»Behavioral Health Electronic Health System

This system is conceptually equivalent to any information system (open-source or commercial-off-the-shelf - COTS) used by behavioral health providers. This system is expected to conform to the HL7 Behavioral Health Functional Profile.

Exchange Assessment Information

This use case requires that the details of an assessment be shared between healthcare providers. Not only score but the details provided by the patient through the assessment questions are relevant. The receiving provider has the expertise to use that information in addition to the scores to determine a course of treatment for the patient.

Provide Behavioral Health Summary to Emergency Provider

This use case requires that a subset of behavioral health information be made available to providers in case of emergency. This information may be a high-level summary, only relevant to address the immediate needs of a patient.

Behavioral Health Electronic Health System: implemented use cases

Coordinate Services : uml:UseCase

This use specifies the actions required to coordinate Behavioral Health services for a client with a complex medical, substance abuse, and psychiatric history.

Outcomes and Quality Reporting : uml:UseCase

This use case refers to the activities required to evaluate the efficacy of a treatment program. For example Government Performance and Results Act (GPRA) may be used to evaluate the outcome of a Behavioral Health encounter (e.g. before treatment, after treatment, 3-month follow-up, etc.).

Report Behavioral Health Records to Public Health : uml:UseCase

This use case supports Public health reporting which requires information about suicide, a history a violence, abuse, neglect, etc. These are high-priorities for evaluating a population's overall morbidity.

Send Alerts : uml:UseCase

This use case addresses the need to provide alerts regarding the risk of self-directed or violence on others.

Send Behavioral Health Information for a Patient : uml:UseCase

This use case deals with those situations where behavioral health records are exchanged when a patient is referred to another provider. This use case assumes that the Behavioral Health information is sufficient for a receiving system to create its own records based on the information provided by the referring Behavioral Health provider.

Behavioral Health Provider

This actor corresponds to a behavioral health provider using an information system.

Case Manager

This actor represents a system user who requires a diverse set of information - including Behavioral Health - in order to manage the care for clients/patients.

Funder

This actor represents funding agency users who evaluate the efficacy of a treatment facility as reflected by its outcomes.

Physical Health Provider

This actors refers to non-behavioral health clinical users (physical medicine) who require summary Behavioral Health information to determine a care plan for a client with a complex medical history including behavioral health information.

Public Health Staff

This actor refers to the public health staff that require Behavioral Health information in order to conduct studies across a large Behavioral Health population.

4. Future Use

The following section identifies classes that are out-of-scope for now but which have been identified during the analysis for this domain.

Class: BehavioralHealthAssessment/PlacementTool

This class identifies the tool used to create Behavioral Health Assessments rather than the assessment data that results from applying the tool. Assessment/Placement Tools are used initiate treatment planning and guide the continuum of care (e.g. ASI, ASAM, PPCII, and GAIN).

Class: ScreeningTool

Screening tools are used establish the presence, absence or the severity of a behavioral health problem and indicates the need for more comprehensive evaluation (e.g. CAGE /T-ACE, MAST / DAST, and AUDIT). The output of these tools is not in scope for this analysis model but may relevant for future modeling activities.

Enrollment, Eligibility, Coordination of Benefits

Subscriber, PolicyHolder, Contract Holder, Card Holder, and Enrollee, are synonymous

Insured-Or-Member is synonymous for Member, Beneficiary, Recipient, and Covered Person. In other words, this person is the patient. But, not all Insured-Or-Members are necessarily ever patients, only those that have actually been treated are. Note that the Insured-Or-Member may be a 'dependent', or may be the subscriber (i.e., 'self')

XOR

XOR

i.e., 'self'

Enrollment, Eligibility, and Coordination of BenefitsDomain

_EECOB All Classes

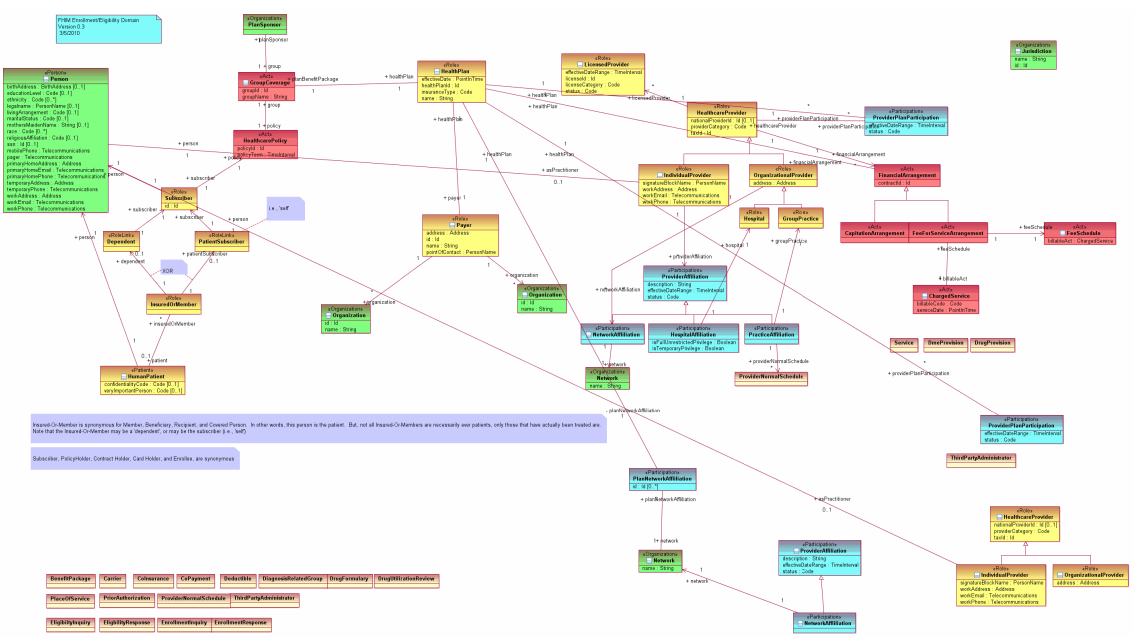

Figure _EECOB All Classes

_EECOB Member

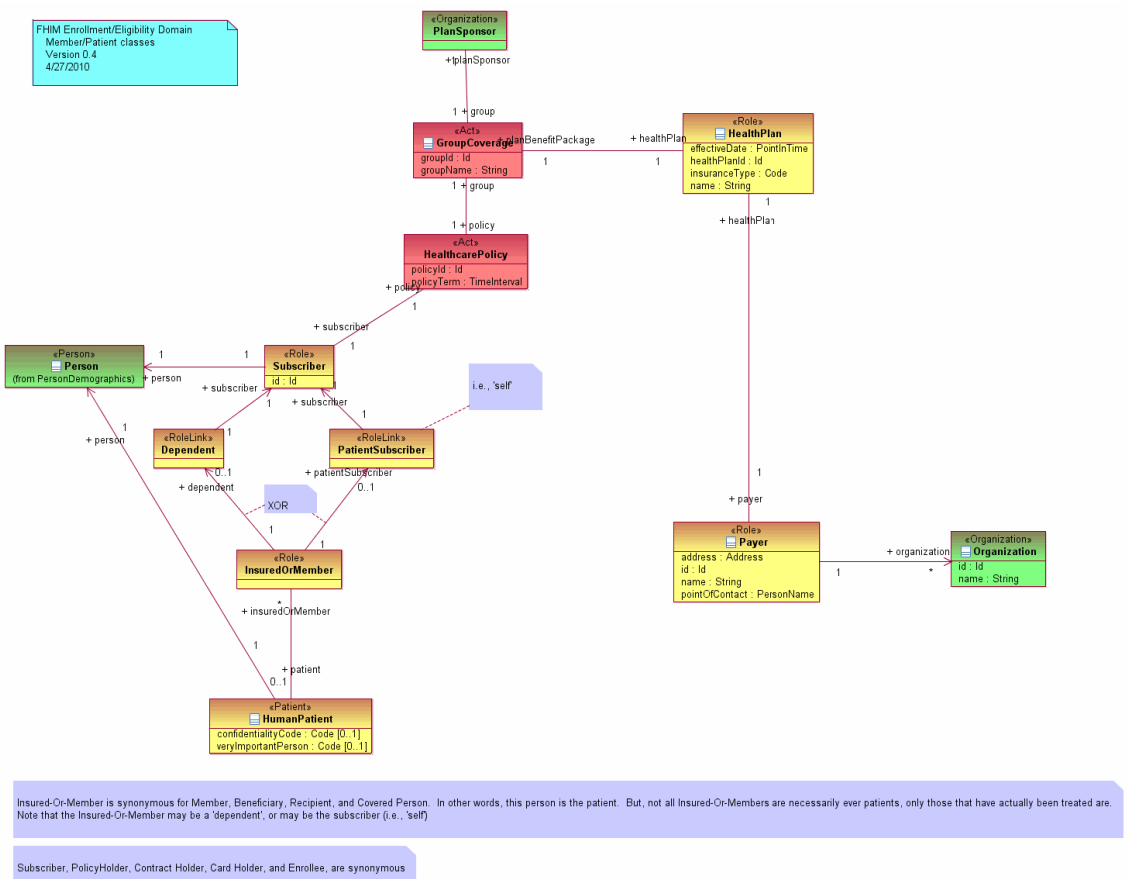

Figure _EECOB Member

_EECOB Provider

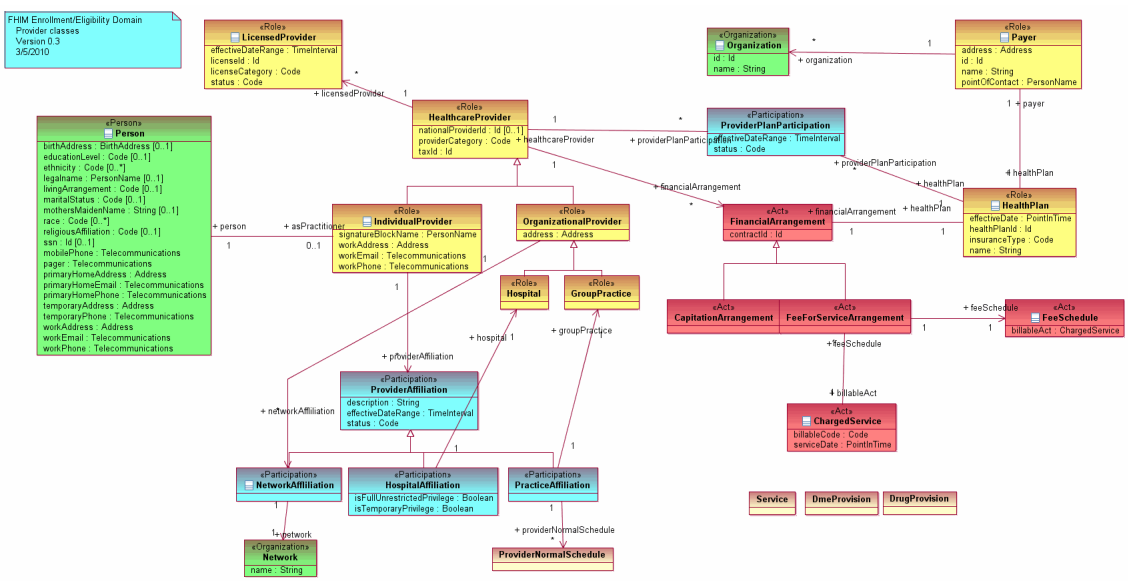

Figure _EECOB Provider

_EnrollEligCOB

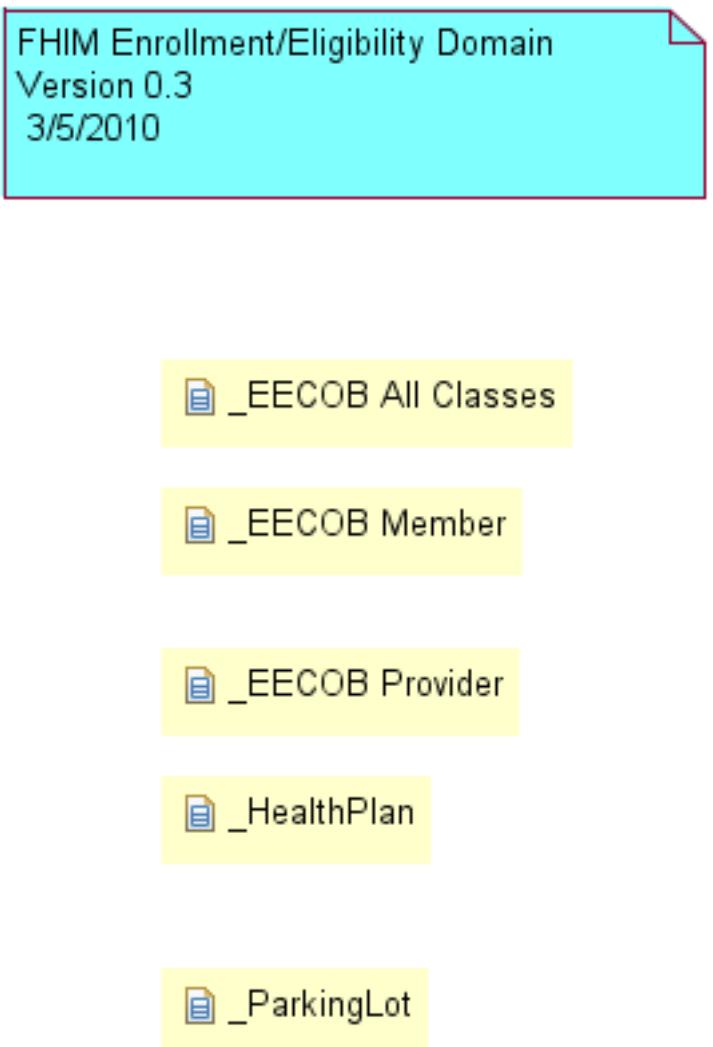

Figure _EnrollEligCOB

_HealthPlan

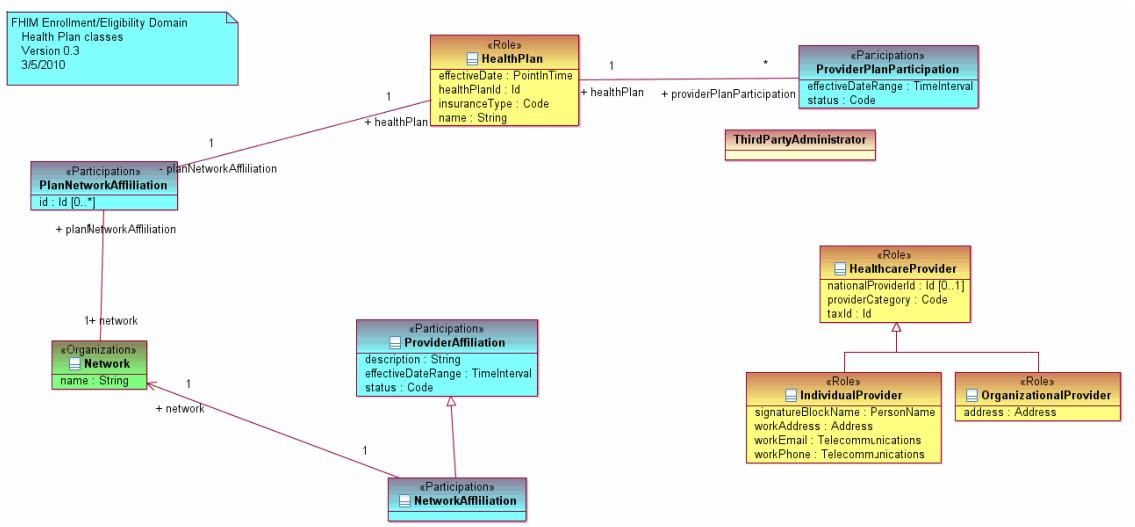

Figure _HealthPlan

_ParkingLot

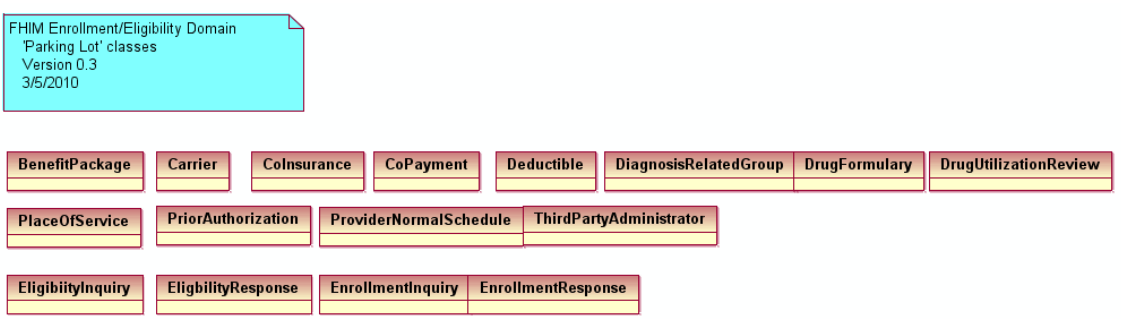

Figure _ParkingLot

Class: BenefitPackage

'A description of what services the insurer or health plan offers to those covered under the terms of a health insurance contract.' -eHealthInsurance.org

«Act» Class: CapitationArrangement

'A method of paying for medical services on a per-person rather than a per-procedure basis. Under capitation, an HMO pays a doctor a fixed amount each month to take care of HMO members, regardless of how much or how little care each member needs. ' -eHealthInsurance.org

Class: Carrier

'Usually a commercial insurer contracted by the Department of Health and Human Services to process Part B claims payments. ' -eHealthInsurance.org

Class: CoInsurance

The co-insurance percentage is typically found in a fee for service environment and is based on a percentage of the total amount the provider would be paid for the service(s). This amount is the patient's responsibility. - derived from X12 270/271 IG

Class: CoPayment

Co-Payment represents the patient's portion of responsibility for a benefit. The co-payment amount is typically a fixed amount and is customarily collected upon receipt of service (however the requirements may vary from plan to plan). - derived from X12 270/271 IG

Class: Deductible

'The amount of money you must pay each year to cover your medical care expenses before your insurance policy starts paying.' -eHealthInsurance.org

Class: DiagnosisRelatedGroup

'A method of classifying inpatient hospital services. It is used as a method of determining financing to reimburse various providers for services performed.' -eHealthInsurance.org

Class: DrugFormulary

'List of preferred pharmaceutical products to be used by a managed care plan's network physicians. Formularies are based on evaluations of the efficacy, safety, and cost-effectiveness of drugs.' -eHealthInsurance.org

Class: DrugUtilizationReview

'A method for evaluating or reviewing the use of drugs in order to determine the appropriateness of the drug therapy.' -eHealthInsurance.org

«Act» Class: FeeForServiceArrangement

Fee Schedule: 'A list of maximum fees for providers who are on a fee-for-service basis.' -eHealthInsurance.org Fee-for-Service: 'A payment system for health care where the provider is paid for each service rendered rather than a pre-negotiated amount for each patient.' -eHealthInsurance.org

«Act» Class: FeeSchedule

'A list of maximum fees for providers who are on a fee-for-service basis.' -eHealthInsurance.org

«Act» Class: FinancialArrangement

Describes the nature of the financial arrangement or contract between a healthcare provider and a health plan. Financial Arrangements are commonly based on Fee Schedules, Capitation arrangements, or some kind of combination of the two.

«Act» Class: GroupCoverage

'Coverage of a number of individuals under one contract. The most common 'group' is employees of the same employer.' eHealthInsurance.org

Attribute 'GroupCoverage.groupId' of type ' Id' with cardinality of [1]

A unique identifier that the payer or information source uses to identify a specific Group OR an Identifier assigned by the health plan to be used as a key to the group's contractual benefits.

«Role» Class: HealthPlan

'This refers to any kind of plan that covers health care services such as HMOs, insured plans, preferred provider organizations, etc.' eHealthInsurance.org This class represents a product offering that may be very closely associated with the organization that offers it, nonetheless, the organization is a separate concept (herein called Payer). The term Health Plan includes not only Private Insurance Plans, but also Public Health Plans, Military Health Programs, and State Health Insurance Programs. These capitalized terms were modeled as subclasses, but were removed on 5/25.

Attribute 'HealthPlan.effectiveDate' of type ' PointInTime' with cardinality of [1]

The date the plan is activated for providing services to the patient.

Attribute 'HealthPlan.healthPlanId' of type ' Id' with cardinality of [1]

A unique identifier that the payer or information source uses to identify the Plan.

Attribute 'HealthPlan.insuranceType' of type ' Code' with cardinality of [1]

Such as HMO, PPO, Medicare, etc.

Attribute 'HealthPlan.name' of type ' String' with cardinality of [1]

The name of the Plan as assigned by the Payer. Should this be 'description' instead of 'name'?

«Role» Class: InsuredOrMember

An insured individual or member is a subscriber or dependent who has been enrolled for coverage under an insurance plan. Dependents of a Subscriber who have not been individually enrolled for coverage are not included in Insured or Member DOD: The person who receives care either because of their status as the person enrolled directly to a benefits program or because of their relationship to such a person. Known as an 'enrollee'.

«Role» Class: Payer

The public or private organization that is responsible for payment for health care expenses. Payers may be insurance companies or self-insured employers.

Attribute 'Payer.address' of type ' Address' with cardinality of [1]

The full address of the organization (e.g. 112 Main St, Suite 23, Cambridge, MA, 02140-3314, USA) it is broken down into its constituent parts (street address line 1, street address line 2, city name, state or province code, postal code, country code)

Attribute 'Payer.id' of type ' Id' with cardinality of [1]

A unique identifier that is used to identify the payer. For example Medicare assigns an identifier to a payer, Blue Cross/Blue Shield assigns an identifier to a payer. 270/271 p 343, 358 example

Attribute 'Payer.name' of type ' String' with cardinality of [1]

The name of the organization (e.g. Harvard Pilgrim Health Care)

Class: PlaceOfService

'This designates where the actual health services are being performed, whether it be home, hospital, office, clinic, etc. ' -eHealthInsurance.org

«Organization» Class: PlanSponsor

The company or organization that assumes financial responsibility for an insured group 'An entity that sponsors a health plan. Employer, Union' - Medicare

«Participation» Class: ProviderAffiliation

Represents information about the association between an Individual Healthcare Provider and an Organizational Healthcare Provider.

Attribute 'ProviderAffiliation.effectiveDateRange' of type ' TimeInterval' with cardinality of [1]

The date range during which the license is valid.

«Role» Class: Subscriber

A person who is named as a beneficiary of a plan, such as an insurance plan. Enrollee: 'An eligible individual who is enrolled in a health plan - does not include an eligible dependent.' -eHealthInsurance.org Subscriber: 'This term has two meanings _ first, it refers to a person or organization who pays the premiums, and second, the person whose employment makes him or her eligible for membership in the plan.' -eHealthInsurance.org DOD: if the person is active duty, he is automatically enrolled into the 'direct care' program as a subscriber. If he is a retiree, he is eligible to enroll in several programs such as Tricare for life. If he does, he's still considered a subscriber. 'sponsor' and 'subscriber' are sometimes used interchangeably.

Attribute 'Subscriber.id' of type ' Id' with cardinality of [1]

A unique identifier that the payer or information source can use to identify the person as a Policy Holder.

Class: ThirdPartyAdministrator

'A firm which provides administrative services for employers and other associations having group insurance policies.' -eHealthInsurance.org

«Role» Class: xxx

Covered Person: 'A person who pays premiums into the contract for the benefits provided and who also meets eligibility requirements.' -eHealthInsurance.org Member: 'Anyone covered under a health plan (enrollee or eligible dependent).' -eHealthInsurance.org The FHIM CoveredPerson is synonymous with 'member', 'Beneficiary', and 'Recipient'. Note that the covered person may be a policy holder or a dependent of the policy holder. Note that the CoveredPerson may or may not be a 'cardholder', as some insurers issue cards to dependents and some do not.

Attribute 'xxx.id' of type ' Id' with cardinality of [*]

A unique identifier that the payer or information source can use to identify the person as a Policy Holder.

PersonDemographics

PatientDemographicsDomain

_PersonDemographics

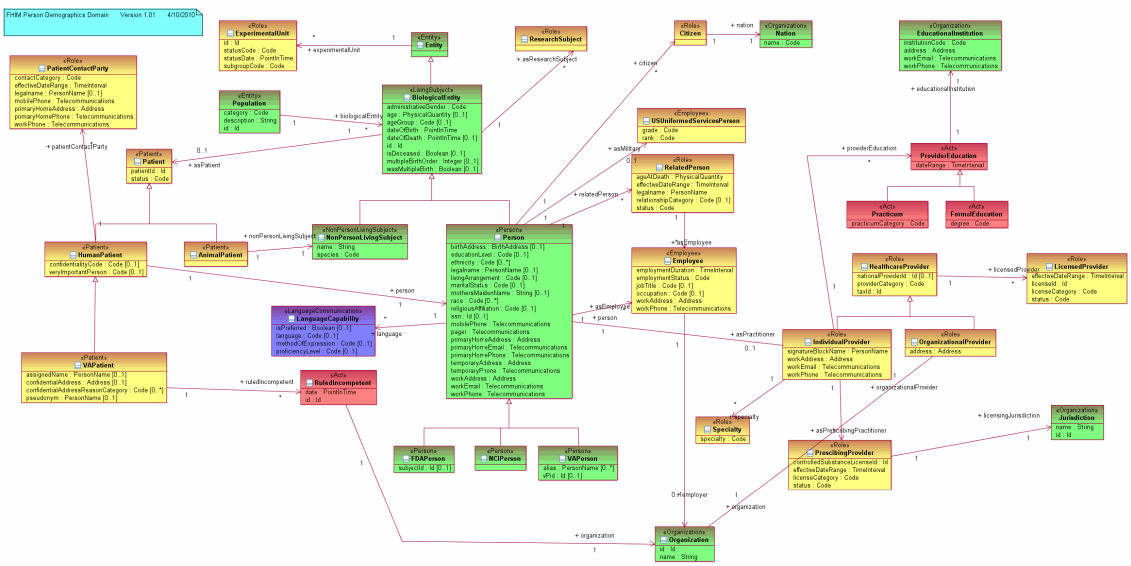

Figure _PersonDemographics

«Patient» Class: AnimalPatient

A specialization of the Patient role containing information specific to non-human patients.

Association 'AnimalPatient.nonPersonLivingSubject' of type ' NonPersonLivingSubject' with cardinality of [1]

Identifies the animal who is playing the role of patient (AnimalPatient).

«LivingSubject» Class: BiologicalEntity

This class represents an organism, whether it is currently alive or not. This class is equivalent to the HL7 V3 Living Subject class.

Attribute 'BiologicalEntity.administrativeGender' of type ' Code' with cardinality of [1]

'The gender (i.e., the behavioral, cultural, or psychological traits typically associated with one sex) of a living subject as defined for administrative purposes. 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. The purpose of this attribute is to provide a

high-level classification that can also be used for the appropriate allocation of inpatient bed assignment.' HL7 RIM.

Attribute 'BiologicalEntity.age' of type ' PhysicalQuantity' with cardinality of [0..1]

The length of time that an organism has lived. Note that this property will typically be derived or calculated as needed, and as such may not always be present as a separate concept. Added 7/8/10 for vMR.

Attribute 'BiologicalEntity.ageGroup' of type ' Code' with cardinality of [0..1]

A categorization of the length of time that an organism has lived, used in order to group subjects together, or in order to for clinical decision support purposes (e.g., adults take x pills, children under 12 take y pills, not recommended for children under 2). Note that this property will typically be derived or calculated as needed, and as such may not always be present as a separate concept. Added 7/8/10 for vMR.

Association 'BiologicalEntity.asPatient' of type ' Patient' with cardinality of [0..1]

A role of a person or animal as a recipient of health care services from a healthcare provider. Note that if the person or animal is a research subject, a different association (asResearchSubject) is used.

Association 'BiologicalEntity.asResearchSubject' of type ' ResearchSubject' with cardinality of [*]

A physical entity which is the primary unit of operational and/or administrative interest in a study. For example, a person who is registered in a study as a recipient of an investigational product or as a control. May also include individuals who are being screened for studies, or individuals participating in observational or other studies. Other examples may include a pacemaker, a fuse that can be used in medical devices, a cow, a farm, a pen of pigs, a tissue sample from a tissue bank, etc. NOTE: StudySubjects within a study are all of the same type. An entity registered in a study is not part of another entity registered in the same study.

Attribute 'BiologicalEntity.dateOfBirth' of type ' PointInTime' with cardinality of [1]

The date and time of the birth or hatching of the living subject.

Attribute 'BiologicalEntity.dateOfDeath' of type ' PointInTime' with cardinality of [0..1]

The date and time that a living subject's death occurred.

Attribute 'BiologicalEntity.id' of type ' Id' with cardinality of [1]

An identifier that uniquely identifies the individual.

Attribute 'BiologicalEntity.isDeceased' of type ' Boolean' with cardinality of [0..1]

Indicates whether the living subject is no longer alive.

Attribute 'BiologicalEntity.multipleBirthOrder' of type ' Integer' with cardinality of [0..1]

If the biological entity was born along with other siblings, this property indicates the order the entity was born. For example, for a set of twins, this property indicates which twin was born first, and which

was born second.

Attribute 'BiologicalEntity.wasMultipleBirth' of type ' Boolean' with cardinality of [0..1]

If the biological entity was born along with other siblings, this property indicates the order the entity was born. For example, for a set of twins, this property indicates which twin was born first, and which was born second. An indication as to whether the person was born along with other siblings as part of a single pregnancy. This property is primarily used to distinguish records for newborn infants who have not yet have been given names. This property may also be used in research situations to distinguish individuals who were part of a multi-child pregnancy.

«Role» Class: Citizen

'A native or naturalized member of a state or nation who owes allegiance to its government and is entitled to its protection' - Dictionary.com

Association 'Citizen.nation' of type ' Nation' with cardinality of [1]

'A relatively large group of people organized under a single, usually independent government; a country.' - American Heritage Dictionary. An organization created to govern a country, which has the power to grant citizenship to its people.

«Organization» Class: EducationalInstitution

An organization created to provide educational instruction. Specifically, a school or institution of higher learning.

Attribute 'EducationalInstitution.address' of type ' Address' with cardinality of [1]

The person's office address. First choice for business related contacts during business hours.

Attribute 'EducationalInstitution.institutionCode' of type ' Code' with cardinality of [1]

Identifies the educational institution. This would ordinarily be an string or an Id, but because there are a finite number of medical schools, they are normally represented as codes.

Attribute 'EducationalInstitution.workEmail' of type ' Telecommunications' with cardinality of [1]

The email address that a person uses while at their place of business. First choice for business related contacts during business hours.

Attribute 'EducationalInstitution.workPhone' of type ' Telecommunications' with cardinality of [1]

The phone number for a person at their office location. First choice for business related contacts during business hours.

«Employee» Class: Employee

This class represents information about a person while in the role of an employee of some organization.

Attribute 'Employee.employer' of type ' Organization' with cardinality of [0..1]

The employer end of an association link between an employee and an organization by which they are employed.

Attribute 'Employee.employmentDuration' of type ' TimeInterval' with cardinality of [1]

The date range during which a person is an employee in a given employment relationship.

Attribute 'Employee.employmentStatus' of type ' Code' with cardinality of [1]

The status of the employment relationship; e.g., Temporary, Permanent, Etc.

Attribute 'Employee.jobTitle' of type ' Code' with cardinality of [0..1]

'The title of the job held, for example, Vice President, Senior Technical Analyst. This is a local name for the employee's occupation that doesn't necessarily correspond to any scheme for categorizing occupation.' (HL7 v3)

Attribute 'Employee.occupation' of type ' Code' with cardinality of [0..1]

'A value that qualifies the classification of 'kind-of-work' based upon a recognized industry or jurisdictional standard.' HL7 RIM

Attribute 'Employee.workAddress' of type ' Address' with cardinality of [1]

The person's office address. First choice for business related contacts during business hours.

Attribute 'Employee.workPhone' of type ' Telecommunications' with cardinality of [1]

The person's office telephone number. First choice for business related contacts during business hours.

«Entity» Class: Entity

'A physical thing, group of physical things or an organization capable of participating in Acts while in a role. An entity is a physical object that has, had or will have existence. The only exception to this is Organization, which while not having a physical presence, fulfills the other characteristics of an Entity. Entity stipulates the thing itself, not the Roles it may play: the Role of Patient, e.g., is played by the Person Entity.' HL7 RIM.

Association 'Entity.experimentalUnit' of type ' ExperimentalUnit' with cardinality of [*]

A role played by a physical entity in which it is acting as the primary unit of interest in a specific research objective.

«Role» Class: ExperimentalUnit

A physical entity which is the primary unit of interest in a specific research objective. In an interventional study, the experimental unit is assigned to an intervention. The experimental unit is also the unit of primary statistical analysis. Commonly the individual StudySubject (animal, person or product) is the experimental unit. Different experimental units must be capable of receiving different experimental interventions. For example, if all pigs in a pen receive the same intervention in their feed, and the primary observations and analyses of interest are associated with the entire pen (e.g. total feed consumed, total weight of all pigs combined), then the pen of pigs rather than the individual animal is the experimental unit. [CDISC/HL7 Study Participation RMIM, PORT_RM100001UV] For example, a human StudySubject may have 10 patches of skin each considered an ExperimentalUnit, or a Product StudySubject may have 10 bearings in it, each considered an ExperimentalUnit. Alternatively, each StudySubject may be an ExperimentalUnit. NOTE: Depending on the research objectives, a single study may have multiple levels of experimental units, such as whole people and patches of skin.

Attribute 'ExperimentalUnit.id' of type ' Id' with cardinality of [1]

A unique symbol that establishes identity of the experimental unit. For example, patient number 7 on a study.

Attribute 'ExperimentalUnit.statusCode' of type ' Code' with cardinality of [1]

A coded value specifying the state of the experimental unit. For example, active, cancelled, pending, suspended, terminated, nullified.

Attribute 'ExperimentalUnit.statusDate' of type ' PointInTime' with cardinality of [1]

The date (and time) on which the status is assigned to the experimental unit.

Attribute 'ExperimentalUnit.subgroupCode' of type ' Code' with cardinality of [1]

A coded value specifying the identification of uniform groups of subjects for separate analysis or treatment. For example, in National Cancer Institute (NCI) this is the Clinical Data Update System (CDUS) Reporting.

«Person» Class: FDAPerson

A specialization of Person that adds properties specifically needed by FDA

Attribute 'FDAPerson.subjectId' of type ' Id' with cardinality of [0..1]

A local identifier for a person. The stereotype set indicates there may be more than one distinct local ID for a given person, identified in no particular order. There is only one distinct local ID for each facility issuing the ID and local IDs are only assigned to a person where there was some reason for the person to be assigned a distinct ID specific to a facility.

«Act» Class: FormalEducation

Represents information about the formal educational experience of an Individual Healthcare Provider.

Attribute 'FormalEducation.degree' of type ' Code' with cardinality of [1]

Indicates the degree or certificate earned by the provider. Examples include Bachelor of Science, Doctorate in Medicine.

«Role» Class: HealthcareProvider

A person or organization which is authorized to perform healthcare-related services.

Association 'HealthcareProvider.licensedProvider' of type ' LicensedProvider' with cardinality of [*]

A practitioner who has been authorized to perform certain activities that fall under the jurisdiction of the issuer of the license.

Attribute 'HealthcareProvider.nationalProviderId' of type ' Id' with cardinality of [0..1]

An identifier that uniquely identifies all persons and organizations who perform medical services within the United States. This identifier is mandated by HIPAA and is maintained by CMS.

Attribute 'HealthcareProvider.providerCategory' of type ' Code' with cardinality of [1]

Contains a categorization for the practitioner.

Attribute 'HealthcareProvider.taxId' of type ' Id' with cardinality of [1]

This contains the tax ID for the practitioner, used for billing purposes.

«Patient» Class: HumanPatient

A specialization of the Patient role containing information specific to only human patients (such as confidentiality code).

Attribute 'HumanPatient.confidentialityCode' of type ' Code' with cardinality of [0..1]

'Codes that identify how sensitive a piece of information is and/or that indicate how the information may be made available or disclosed.' HL7 RIM.

Association 'HumanPatient.patientContactParty' of type ' PatientContactParty' with cardinality of [*]

The person who should be contacted on the patients behalf under specified situations.

Association 'HumanPatient.person' of type ' Person' with cardinality of [1]

Identifies the person who is playing the role of patient (HumanPatient).

Attribute 'HumanPatient.veryImportantPerson' of type ' Code' with cardinality of [0..1]

The person who should be contacted on the patients behalf under specified situations. Note that because all we need is the person's name and contact information (address, phone numbers), this class does not have an association to the Person class (although logically it should). This is because the other properties of 'A code specifying the patient's special status granted by the organization at which they are a patient, often resulting in preferred treatment and special considerations. For example, board member, diplomat, etc.'

«Role» Class: IndividualProvider

A person who is authorized to provide health care services in the role of practitioner for a health care provider organization. The role of practitioner includes all functions performed for a health care provider organization in order to provide patient care and treatment.

Association 'IndividualProvider.asPrescribingPractitioner' of type ' PrescibingProvider' with cardinality of [*]

Represents information about the practitioner who has been licensed to prescribe medications under the jurisdiction of the issuer of the license.

Association 'IndividualProvider.person' of type ' Person' with cardinality of [1]

Links to information about the Person who is playing the role of Practitioner.

Association 'IndividualProvider.providerEducation' of type ' ProviderEducation' with cardinality of [*]

Represents information about the educational experience of an Individual Healthcare Provider. This includes both formal training resulting in some sort of degree or certification, as well as practical experience such as an internship.

Attribute 'IndividualProvider.signatureBlockName' of type ' PersonName' with cardinality of [1]

Contains the name and title of the Practitioner as they wish it to be displayed with the notation that they signed the document electronically. For example, a practitioner who routinely uses a nickname for most correspondence would likely want their legal name on the signature block. In addition, this property would contain the title that they would use when electronically signing a document. For example, a practitioner may hold multiple titles, but would choose one to be used for signing. Examples of titles are Chief of Surgery, Dietician, Clinical Pharmacist, etc.

Association 'IndividualProvider.specialty' of type ' Specialty' with cardinality of [*]

A specialty in medicine is a branch of medical science. After completing medical school, physicians or surgeons usually further their medical education in a specific specialty of medicine by completing a multiple year residency. Medical practitioners who engage in a medical specialty are known as medical specialists. Specialists may be Board Eligible or Board Certified. Board certified in medicine means a physician has taken and passed a medical specialty examination. Board eligible, by contrast, means that a physician has completed the requirements for admission to a medical specialty board examination but has not taken and passed the examination. For example, a physician must perform 3

years of training in an approved pediatric residency to be board eligible and then successfully complete a comprehensive written examination to be certified by the American Board of Pediatrics.

Attribute 'IndividualProvider.workAddress' of type ' Address' with cardinality of [1]

The person's office address. First choice for business related contacts during business hours.

Attribute 'IndividualProvider.workEmail' of type ' Telecommunications' with cardinality of [1]

The email address that a person uses while at their place of business. First choice for business related contacts during business hours.

Attribute 'IndividualProvider.workPhone' of type ' Telecommunications' with cardinality of [1]

The phone number for a person at their office location. First choice for business related contacts during business hours.

«Organization» Class: Jurisdiction

'The territory over which authority is exercised.' - dictionary.com. This class represents the organization that has authority over a given territory or area of endeavor. In other words, this class represents a government or governmental agency. The government may be a national (e.g., Canada) or territorial (e.g., Virginia).

Attribute 'Jurisdiction.id' of type ' Id' with cardinality of [1]

An unique string or token used to identify the jurisdiction

Attribute 'Jurisdiction.name' of type ' String' with cardinality of [1]

The name of the jurisdiction

«LanguageCommunication» Class: LanguageCapability

The language communication capabilities for a Person.

Attribute 'LanguageCapability.isPreferred' of type ' Boolean' with cardinality of [0..1]

An indicator specifying whether or not the language is preferred by the person for the associated method of expression.

Attribute 'LanguageCapability.language' of type ' Code' with cardinality of [0..1]

A value representing a language for which the Person has some level of proficiency for written or spoken communication.

Attribute 'LanguageCapability.methodOfExpression' of type ' Code' with cardinality of [0..1]

The means by which the person is capable of communicating in the language. Examples of method of expression would be written and spoken.

Attribute 'LanguageCapability.proficiencyLevel' of type ' Code' with cardinality of [0..1]

'A value representing the level of proficiency in a language.' (HL7 v3).

«Role» Class: LicensedProvider

A practitioner who has been authorized to perform certain activities that fall under the jurisdiction of the issuer of the license.

Attribute 'LicensedProvider.effectiveDateRange' of type ' TimeInterval' with cardinality of [1]

The date range during which the license is valid.

Attribute 'LicensedProvider.licenseCategory' of type ' Code' with cardinality of [1]

A classification of the provider's license.

Attribute 'LicensedProvider.licenseId' of type ' Id' with cardinality of [1]

Identifies a certification of a practitioner to perform certain activities that fall under the jurisdiction of the issuer of the license.

Attribute 'LicensedProvider.status' of type ' Code' with cardinality of [1]

Indicates the current state of the provider's license. Potential values include: Pending, Active, Terminated.

«Organization» Class: Nation

'A relatively large group of people organized under a single, usually independent government; a country.' - American Heritage Dictionary. An organization created to govern a country, which has the power to grant citizenship to its people.

Attribute 'Nation.name' of type ' Code' with cardinality of [1]

Identifies the nation. This would ordinarily be an Id, but because there are a finite number of countries, countries are normally represented as codes.

«Person» Class: NCIPerson

A specialization of Person that adds properties specifically needed by NCI

«NonPersonLivingSubject» Class: NonPersonLivingSubject

A subtype of LivingSubject that includes all living things except the species homo sapiens.

Attribute 'NonPersonLivingSubject.name' of type ' String' with cardinality of [1]

A name used to identify the non-human individual. Typically used only when the individual is a pet or a beast of burden. Examples include 'Spot', 'Fido', 'Seattle Slew'. Note that this property is typically not used when the subject is a lower order organism.

Attribute 'NonPersonLivingSubject.species' of type ' Code' with cardinality of [1]

A categorization of non-human biological entities. Possible values include 'canine', 'feline', 'staphylococcus aureus', etc.

«Role» Class: OrganizationalProvider

An organization which is authorized to provide health care services.

Attribute 'OrganizationalProvider.address' of type ' Address' with cardinality of [1]

The person's office address. First choice for business related contacts during business hours.

«Patient» Class: Patient

A role of a person or animal as a recipient of health care services from a healthcare provider.

Attribute 'Patient.patientId' of type ' Id' with cardinality of [1]

An identification of the person or animal while in the role of Patient. This id is basically an 'account number'. A single person will have multiple patient ids at various healthcare providers. Indeed it is not uncommon for a person to have multiple patient ids or 'account numbers' at a single institution - often a new account number is created for each episode of care. This is also the case in long-term care situations, where a new account number may be created each month in order to facilitate monthly billing.

Attribute 'Patient.status' of type ' Code' with cardinality of [1]

Indicates the state of the Patient's record, as defined in the state-transition model in the HL7 RIM. Examples include Active, Pending, Terminated, etc. Additional states might be defined such as 'Temporary' or 'Permanent'.

«Role» Class: PatientContactParty

Person, such as sex and date of birth, are irrelevant to the usage. The HL7 Role class allows for names and addresses on the Role, which technically should be only those names or addresses as the relate to the role (i.e., as they differ from those in Person class), but since these are available for use, we are utilizing them in this manner, even though it is somewhat irregular.

Attribute 'PatientContactParty.contactCategory' of type ' Code' with cardinality of [1]

Indicates the circumstances under which this person is the contact party for the person identified

in the owning Person class.

Attribute 'PatientContactParty.effectiveDateRange' of type ' TimeInterval' with cardinality of [1]

The date range during which this person is a contact party for the patient.

Attribute 'PatientContactParty.legalname' of type ' PersonName' with cardinality of [0..1]

The name by which a person is known or legally identified such as the name on a driver's license or passport. Note that the datatype for this property is a PersonName, which includes the various parts that make up a person's name such as family name, prefixes, suffixes, etc.

Attribute 'PatientContactParty.mobilePhone' of type ' Telecommunications' with cardinality of [1]

A telecommunication device that moves and stays with its owner. Suitable for urgent matters, the mobile phone is not the first choice for routine business.

Attribute 'PatientContactParty.primaryHomeAddress' of type ' Address' with cardinality of [1]

A communications address for the person's primary place of residence.

Attribute 'PatientContactParty.primaryHomePhone' of type ' Telecommunications' with cardinality of [1]

The phone number of a person at their primary home, to reach a person after business hours.

Attribute 'PatientContactParty.workPhone' of type ' Telecommunications' with cardinality of [1]

The phone number for a person at their office location. First choice for business related contacts during business hours.

«Person» Class: Person

This class represents a human being of interest to the enterprise. The person may potentially play many different roles, including those of a patient, a provider, or an employee. It is noted that the same person may play different roles at different times. For example, an employee may also be a licensed healthcare provider and may also at times be a patient.

Association 'Person.asEmployee' of type ' Employee' with cardinality of [*]

Represents information about a person while in the role of an employee of some organization.

Association 'Person.asMilitary' of type ' USUniformedServicesPerson' with cardinality of [0..1]

Represents information about a person while in the role of a member of the armed forces.

Association 'Person.asPractitioner' of type ' IndividualProvider' with cardinality of [0..1]

Represents information about a person who is authorized to provide health care services in the role of practitioner for a health care provider organization. The role of practitioner includes all functions performed for a health care provider organization in order to provide patient care and treatment.

Attribute 'Person.birthAddress' of type ' BirthAddress' with cardinality of [0..1]

The city, state (or other designation such as province or region) and country where a person was born. Used for both identification and statistical purposes.

Association 'Person.citizen' of type ' Citizen' with cardinality of [*]

'A native or naturalized member of a state or nation who owes allegiance to its government and is entitled to its protection' - Dictionary.com

Attribute 'Person.educationLevel' of type ' Code' with cardinality of [0..1]

'The highest level of education a person achieved.' HL7 RIM. This property is a code, examples of which include: Elementary school; high school or secondary school degree complete; college or baccalaureate degree complete.

Attribute 'Person.ethnicity' of type ' Code' with cardinality of [*]

The self-reported cultural group(s) with which the person identifies him/herself. This property may contain more than one distinct ethnicity for a given person, identified in no particular order.

Association 'Person.language' of type ' LanguageCapability' with cardinality of [*]

Represents the language communication capabilities for a Person.

Attribute 'Person.legalname' of type ' PersonName' with cardinality of [0..1]

The name by which a person is known or legally identified such as the name on a driver's license or passport. Note that the datatype for this property is a PersonName, which includes the various parts that make up a person's name such as family name, prefixes, suffixes, etc.

Attribute 'Person.livingArrangement' of type ' Code' with cardinality of [0..1]

'The housing situation of a person. This attribute is used for discharge planning, social service assessment, and psychosocial evaluation.' HL7 RIM.

Attribute 'Person.maritalStatus' of type ' Code' with cardinality of [0..1]

'The domestic partnership status of a person.' HL7 V3 RIM. This property is a code, examples of which include 'Married', 'Divorced', and 'Single'.

Attribute 'Person.mobilePhone' of type ' Telecommunications' with cardinality of [1]

A telecommunication device that moves and stays with its owner. Suitable for urgent matters, the mobile phone is not the first choice for routine business.

Attribute 'Person.mothersMaidenName' of type ' String' with cardinality of [0..1]

This is the birth family name of the person's mother, also known as her 'maiden name'. This property is typically used to distinguish two persons who may have similar or identical names, or to verify a person's identity.

Attribute 'Person.pager' of type ' Telecommunications' with cardinality of [1]

A paging device suitable to solicit a callback or to leave a very short message.

Attribute 'Person.primaryHomeAddress' of type ' Address' with cardinality of [1]

A communications address for the person's primary place of residence.

Attribute 'Person.primaryHomeEmail' of type ' Telecommunications' with cardinality of [1]

The email address that a person uses while at their primary home, to reach a person after business hours.

Attribute 'Person.primaryHomePhone' of type ' Telecommunications' with cardinality of [1]

The phone number of a person at their primary home, to reach a person after business hours.

Attribute 'Person.race' of type ' Code' with cardinality of [*]

'A group of people united or classified together on the basis of common history, nationality, or geographic distribution.' American Heritage Dictionary. 'A value representing the race of a person.' HL7 V3 RIM. This property may contain more than one race for a given person, identified in no particular order.

Association 'Person.relatedPerson' of type ' RelatedPerson' with cardinality of [*]

Represents a person playing role of related person as identified by the person who is of primary interest to the enterprise. This role is only created if a person is related to another person by blood or by legal contract. For example, could be spouse, son, aunt, mother, etc. However, a friend is not a related person.

Attribute 'Person.religiousAffiliation' of type ' Code' with cardinality of [0..1]

'The primary religious preference of a person (e.g. Hinduism, Islam, Roman Catholic).' HL7 V3 RIM. This property is used primarily to accommodate the person's religious preferences in clinical settings.

Attribute 'Person.ssn' of type ' Id' with cardinality of [0..1]

A nine digit identification number assigned to a person by the US Social Security Administration. Used primarily for identification purposes. Note that HIPAA forbids the use of SSN as a primary identifier.

Attribute 'Person.temporaryAddress' of type ' Address' with cardinality of [1]

An address at which a person may be contacted while away from their primary home residence. For example, the person may be staying at a hotel to be nearer to a treatment facility, or while on vacation.

Attribute 'Person.temporaryPhone' of type ' Telecommunications' with cardinality of [1]

An address at which a person may be contacted while away from their primary home residence. For example, the person may be staying at a hotel to be nearer to a treatment facility, or while on vacation.

Attribute 'Person.workAddress' of type ' Address' with cardinality of [1]

The person's office address. First choice for business related contacts during business hours.

Attribute 'Person.workEmail' of type ' Telecommunications' with cardinality of [1]

The email address that a person uses while at their place of business. First choice for business related contacts during business hours.

Attribute 'Person.workPhone' of type ' Telecommunications' with cardinality of [1]

The phone number for a person at their office location. First choice for business related contacts during business hours.

«Entity» Class: Population

'2.a) a body of persons or individuals having a quality or characteristic in common. 3) a group of individual persons, objects, or items from which samples are taken for statistical measurement' - Merriam-Webster's Medical Dictionary

Attribute 'Population.category' of type ' Code' with cardinality of [1]

A categorization of the population

Attribute 'Population.description' of type ' String' with cardinality of [1]

A textual description of the population

Attribute 'Population.id' of type ' Id' with cardinality of [1]

Uniquely identifies the population.

«Act» Class: Practicum

'A school or college course, especially one in a specialized field of study, that is designed to give students supervised practical application of previously studied theory' - American Heritage Dictionary. This class represents information about the practical educational experience of an Individual Healthcare Provider, such as an internship.

Attribute 'Practicum.practicumCategory' of type ' Code' with cardinality of [1]

Categorizes the type of practical experience the Individual Healthcare Provider has undergone. Example values include Internship, Residency, etc.

«Role» Class: PrescibingProvider

Contains information specific to practitioners who are licensed to prescribe medications, especially controlled substances.

Attribute 'PrescibingProvider.controlledSubstanceLicenseId' of type ' Id' with cardinality of [1]

Identifies the license under which the practitioner is authorized to prescribe controlled medications.

Attribute 'PrescibingProvider.effectiveDateRange' of type ' TimeInterval' with cardinality of [1]

The date range during which this practitioner is authorized to prescribe medications under the associated deaId.

Attribute 'PrescibingProvider.licenseCategory' of type ' Code' with cardinality of [1]

A classification of the provider's license.

Association 'PrescibingProvider.licensingJurisdiction' of type ' Jurisdiction' with cardinality of [1]

Identifies the state or jurisdiction which authorized the Healthcare Provider to prescribe medications Note that a state or jurisdiction is an Organization.

Attribute 'PrescibingProvider.status' of type ' Code' with cardinality of [1]

Indicates the current state of the provider's license. Potential values include: Pending, Active, Terminated.

«Act» Class: ProviderEducation

Represents information about the educational experience of an Individual Healthcare Provider. This includes both formal training resulting in some sort of degree or certification, as well as practical experience such as an internship.

Attribute 'ProviderEducation.dateRange' of type ' TimeInterval' with cardinality of [1]

Contains the dates (start and end) during which the provider's education took place.

Association 'ProviderEducation.educationalInstitution' of type ' EducationalInstitution' with cardinality of [1]

An organization created to provide educational instruction. Specifically, a school or institution of higher learning.

«Role» Class: RelatedPerson

This class contains information on persons who are playing the role of a related person to the person identified in the associated (or 'owning') Person class. This role is only created if a person is related to another person by blood or by legal contract. For example, could be spouse, child, parent, aunt, etc. However, a friend is not a related person. Note that because all we need is the person's name and contact information (address, phone numbers), this class does not have an association to the Person class (although logically it should). This is because the other properties of Person, such as sex and date of birth, are irrelevant to the usage. The HL7 Role class allows for names and addresses on the Role, which technically should be only those names or addresses as they relate to the role (i.e., as they differ from those in Person class), but since these are available for use, we are utilizing them in this manner, even though it is somewhat irregular. Note that employment status and occupation are included for certain financial eligibility determinations.

Association 'RelatedPerson.asEmployee' of type ' Employee' with cardinality of [*]

Represents information about a person while in the role of an employee of some organization.

Attribute 'RelatedPerson.effectiveDateRange' of type ' TimeInterval' with cardinality of [1]

The date range during which this person is a contact party for the patient.

Attribute 'RelatedPerson.legalname' of type ' PersonName' with cardinality of [1]

The name by which a person is known or legally identified such as the name on a driver's license or passport. Note that the datatype for this property is a PersonName, which includes the various parts that make up a person's name such as family name, prefixes, suffixes, etc.

Attribute 'RelatedPerson.relationshipCategory' of type ' Code' with cardinality of [0..1]

Indicates how the person is related to the person identified in the owning Person class. Examples include Spouse, Child, Parent, Legal Guardian, etc.

Attribute 'RelatedPerson.status' of type ' Code' with cardinality of [1]

The status of the record of the relationship with the person identified in the Person class. Example values include Active, Deprecated, etc. Paired with the effectiveDateRange which indicates the valid range of dates for which this person is a relation.

«Role» Class: ResearchSubject

A physical entity which is the primary unit of operational and/or administrative interest in a study. For example, a person who is registered in a study as a recipient of an investigational product or as a control. May also include individuals who are being screened for studies, or individuals participating in observational or other studies. Other examples may include a pacemaker, a fuse that can be used in medical devices, a cow, a farm, a pen of pigs, a tissue sample from a tissue bank, etc. NOTE: StudySubjects within a study are all of the same type. An entity registered in a study is not part of another entity registered in the same study.

«Act» Class: RuledIncompetent

In cases where the patient has been ruled to be incompetent to make decisions about their own care, this class identifies the organization which made such ruling, and the date upon which it occurred.

Attribute 'RuledIncompetent.date' of type ' PointInTime' with cardinality of [1]

Contains the actually date and time stamp that the patient was ruled incompetent.

Attribute 'RuledIncompetent.id' of type ' Id' with cardinality of [1]

An identification for the record of the event in which a patient has been ruled to be incompetent to make decisions regarding their own care.

Attribute 'RuledIncompetent.organization' of type ' Organization' with cardinality of [1]

Identifies the organization which ruled the patient to be incompetent to make decisions about their own care.

«Role» Class: Specialty

A specialty in medicine is a branch of medical science. After completing medical school, physicians or surgeons usually further their medical education in a specific specialty of medicine by completing a multiple year residency. Medical practitioners who engage in a medical specialty are known as medical specialists. Specialists may be Board Eligible or Board Certified. Board certified in medicine means a physician has taken and passed a medical specialty examination. Board eligible, by contrast, means that a physician has completed the requirements for admission to a medical specialty board examination but has not taken and passed the examination. For example, a physician must perform 3 years of training in an approved pediatric residency to be board eligible and then successfully complete a comprehensive written examination to be certified by the American Board of Pediatrics.

Attribute 'Specialty.specialty' of type ' Code' with cardinality of [1]

A code identifying the branch of medical science in which the provider has chosen to specialize.

«Employee» Class: USUniformedServicesPerson

This class represents information about a person while in the role of a member of the United States Uniformed Services, which includes military and Public Health Service members.

Attribute 'USUniformedServicesPerson.grade' of type ' Code' with cardinality of [1]

A military, naval, or civil service rank

Attribute 'USUniformedServicesPerson.rank' of type ' Code' with cardinality of [1]

An official position or grade; e.g., the rank of sergeant.

«Patient» Class: VAPatient

A subtype of HumanPatient that contains additional properties unique to the needs of the Department of Veterans Affairs.

Attribute 'VAPatient.assignedName' of type ' PersonName' with cardinality of [0..1]

The name assigned to a person where the person's actual legal or pseudonym is to remain anonymous or is unknown. If this property is not empty, its contents are used for publication and for searches - even if there are other names present. This property is cleared to null values when it is no longer to be used. When this property is empty, the pseudonym or legal name is to be used.

Attribute 'VAPatient.confidentialAddress' of type ' Address' with cardinality of [0..1]

A confidential address for the Patient that is used for correspondence. When producing correspondence, the Confidential Address is used first; if it is empty, then the Temporary address is used; if it is empty, then the Permanent address is used. This property contains the actual address - not the

circumstances under which the temporary address is to be used. The one or more uses of this address are indicated in the confidentialAddressReasonCategory property.

Attribute 'VAPatient.confidentialAddressReasonCategory' of type ' Code' with cardinality of [*]

Indicates the circumstances under which correspondence should be addressed to the Patient's confidential address. Examples include: Eligibility/enrollment, Appointment scheduling, Copayments/billing, or Medical records.

Attribute 'VAPatient.pseudonym' of type ' PersonName' with cardinality of [0..1]

An alternate name by which the person is known.

Association 'VAPatient.ruledIncompetent' of type ' RuledIncompetent' with cardinality of [*]

In cases where the patient has been ruled to be incompetent to make decisions about their own care, this identifies the organization which made such ruling, and the date upon which it occurred.

«Person» Class: VAPerson

A subtype of Person that contains additional properties unique to the needs of the Department of Veterans Affairs.

Attribute 'VAPerson.alias' of type ' PersonName' with cardinality of [*]

A name assigned to a person either because their real name is not known (e.g.,, an unconscious person brought into an emergency room), or because the person is a highly visible person (e.g., a celebrity or a prominent politician) whose real name should be obscured. It is noted that in the latter use case, a rigorous security capability should obviate the need for an alias field.

Attribute 'VAPerson.vPid' of type ' Id' with cardinality of [0..1]

A identifier assigned by the Department of Veterans Affairs to uniquely identify a Person. VPID stands for VA Person Identifier

SecurityAndPrivacy

The HL7 DAM contains two subclasses to illustrate the type of security/privacy policies that are inherent from the healthcare payment source. Those two subclasses are examples of many potential kinds of policies, and would be 'fleshed out' in the terminology referenced by the code.

This class may need to be replaced by existing EHR concepts such as 'Problem' or 'Diagnosis'

The HL7 DAM several subtypes, including Access, Collection, Disclosure, and Use. These subclasses may be handled in the taxonomy referenced by the Code

SecurityandPrivacyDomain

_SecurityAndPrivacy

Noted differences between this model and the HL7 Security and Privacy DAM: a) The DAM has SecurityRole as a subtype of CompositePolicy. We made it an association instead. Then, because both BasicPolicy and CompositePolicy have associations to SecurityRole, we moved the association to Policy, which is the common supertype of both BasicPolicy and CompositePolicy. b) The DAM models JurisdictionalOrganization and ProviderOrganization as subtypes of Authority. Indeed, ProviderOrganization is also a subtype of Grantee (multiple-inheritance). In the FHIM, ProviderOrganization and JurisidictionalOrganization are existing stand-alone concepts. So we changed the inheritance relationship to association relationships. c) The DAM models Patient and Population as subtypes of SubjectOfRecord. In the FHIM, Patient and Population are existing stand-alone concepts. So we changed the inheritance relationship to association relationships. Need to better understand the PrivateInsurance and PublicServices classes. These appear to mimic E/E/COB classes, but the purpose for these is unclear. HL7 already has an exhaustive list of coverage types. Should OrganizationalProvider be an Entity rather than a Role?

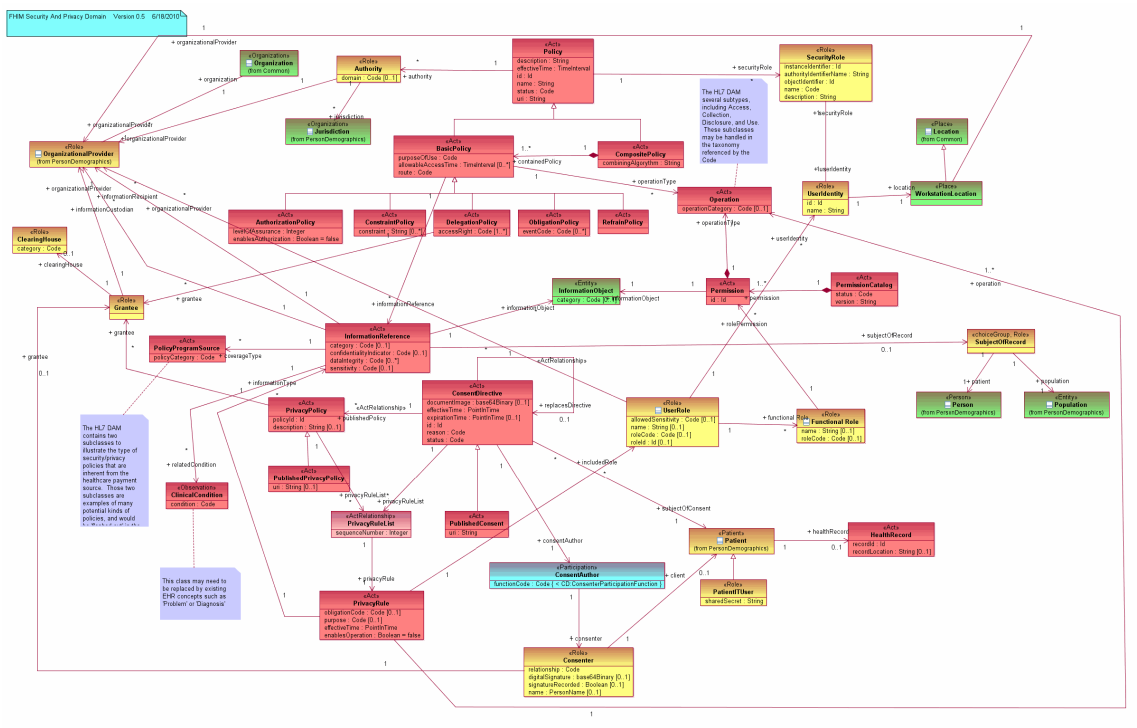

Figure _SecurityAndPrivacy

«Role» Class: Authority

This abstract class is used to designate the authority that issues the policy. Authority is an organization (either Jurisdictional or Provider) that is responsible for the Privacy Policy. This is the authority that grants authorization described in the privacy policy. This class is consistent with the 'Security Authority' specified by the ISO/IEC 15816 standard as 'The entity accountable for the administration of a security policy within a security domain.

Attribute 'Authority.domain' of type ' Code' with cardinality of [0..1]

The registered domain name of the healthcare organization that issues a specific privacy policy, used to uniquely identify the Authority.

Attribute 'Authority.jurisdiction' of type ' Jurisdiction' with cardinality of [*]

Represents a territorial authority organization that may be issuing privacy policies for a territory.

Attribute 'Authority.organizationalProvider' of type ' OrganizationalProvider' with cardinality of [*]

Specifies a healthcare organization that which will promulgate privacy policies for use within its organization.

«Act» Class: AuthorizationPolicy

This class is used to describe an authorization policy that may be exchanged across domains. An AuthorizationPolicy instance specifies 'permitted actions' according to ISO 22600-2. A positive/negative authorization policy defines the actions ('OperationType ') that a subject is permitted/forbidden to perform on a target. Actions encoded using the 'OperationType ' class represent the operations defined in the interface of a target object contrary to obligations/refrain policies, which are interpreted by the subject while the object might be open in this perspective." The following are the attributes of an AuthorizationPolicy:

Attribute 'AuthorizationPolicy.enablesAuthorization' of type ' Boolean' with cardinality of [1]

This attribute is used to specify if the policy enables or declines an authorization. If this attribute is set to 'true' the policy authorizes the actions and conditions pertaining to the resources referenced by the policy. Otherwise the authorization is declined.

Attribute 'AuthorizationPolicy.levelOfAssurance' of type ' Integer' with cardinality of [1]

Level of Assurance (LoA) refers to the degree of certainty that (1) a resource owner has that a person's physical self has been adequately verified before credentials are issued by a registration authority, and (2) a user indeed owns the credentials they are subsequently presenting to access the resource. The requirements for the level of certainty at both ends of that set of transactions should be driven by a risk assessment based on the value of the resources being protected. LoA is relevant to authentication, authorization, and access control in an SOA environment. Relevant references: 'InCommon Credential Assessment Profile r0.3', 'NIST 800-63: Electronic Authentication Guideline', and 'NIST 800-53: Recommended Security Controls for Federal Information Systems'. Access may only be granted when authentication mechanisms of at least a given strength are used. That is indicated using the Level of Assurance.

«Act» Class: BasicPolicy

This is the base class for a variety of policy types. It extends the abstract Policy class and provides additional attributes. This class may be used to instantiate specific policies. ISO-22600 specifies a security policy as 'plan or course of action adopted for providing computer security'. BasicPolicy a specialization of the abstract Policy class and thus inherits all its attributes. It also defines additional attributes and associations:

Attribute 'BasicPolicy.allowableAccessTime' of type ' TimeInterval' with cardinality of [*]

An access may be allowed only during specific time periods of the day (e.g., 9 am to 5 pm).

Association 'BasicPolicy.informationReference' of type ' InformationReference' with cardinality of [*]

This association references the attributes of the information referenced in the policy.

Association 'BasicPolicy.operationType' of type ' Operation' with cardinality of [*]

This association refers to the operation associated with the policy.

Attribute 'BasicPolicy.purposeOfUse' of type ' Code' with cardinality of [1]

This attribute is used to specify the purpose to permit a specific type of action/operation according to the policy. The vocabulary analysis section provides additional illustrative values for the concept embodied by this attribute.

Attribute 'BasicPolicy.route' of type ' Code' with cardinality of [1]

This attribute specifies whether access to protected information may only be granted for a specified route of access. For example, access may be restricted to remote users using a Virtual Private Network (VPN). The route is a context qualifier as specified by ISO/IEC 10164-9.

«Role» Class: ClearingHouse

An organization that consolidates medical claims from various providers for electronic submission to and payment from various payers.

Attribute 'ClearingHouse.category' of type ' Code' with cardinality of [1]

Identifies the type of clearinghouse

«Observation» Class: ClinicalCondition

The health condition(s) associated with the policy. Conditions when specified, are coded concepts expressed in a standard vocabulary (e.g., LOINC, SNOMED CT, etc.). These may include indications of 'substance abuse' or 'HIV-related' illnesses, etc. An obligationCode may be implemented as a 'condition'.

Attribute 'ClinicalCondition.condition' of type ' Code' with cardinality of [1]

Categorizes the health condition associated with the policy. Conditions when specified, are coded concepts expressed in a standard vocabulary (e.g., LOINC, SNOMED CT, etc.). These may include indications of 'substance abuse' or 'HIV-related' illnesses, etc.

«Act» Class: CompositePolicy

This class is the main/focal class for electronic privacy policies. It contains a set of basic policies that work together to enforce a privacy policy, organizational standard operating procedure, or a consent directive. Its basic characteristic is that it contains other policies. An instance of a CompositePolicy may include several Authorization, Delegation, Refrain, or Obligation policies. A CompositePolicy is specialization of Policy and inherits all its attributes and associations. In addition to the attributes it inherits from its base class ('Policy') this type of class contains the following association and attribute:

Attribute 'CompositePolicy.combiningAlgorythm' of type ' String' with cardinality of [1]

This attribute is used to specify the policy combining algorithm that is used to process the contained policies.

Association 'CompositePolicy.containedPolicy' of type ' BasicPolicy' with cardinality of [1..*]

This association specifies the policies contained in a CompositionPolicy.

«Participation» Class: ConsentAuthor

A participation by which a person in the role of 'Consenter' creates or 'authors' a Consent Directive.

Association 'ConsentAuthor.consenter' of type ' Consenter' with cardinality of [1]

Identifies the person who created or 'authored' the consent directive

Attribute 'ConsentAuthor.functionCode' of type ' Code' with cardinality of [1]

Vocabulary Binding:

Concept Domain: ConsenterParticipationFunction

Further defines the kind of participation by which a person in the role of 'Consenter' creates or 'authors' a Consent Directive.

«Act» Class: ConsentDirective

This class is the focal class representing a set of consent directives issued by a consenter on behalf of self or someone else. This class is the root class or the entry class into the Consent Directive structure.

Association 'ConsentDirective.consentAuthor' of type ' ConsentAuthor' with cardinality of [1]

Identifies the person who created or 'authored' the consent directive

Attribute 'ConsentDirective.documentImage' of type ' base64Binary' with cardinality of [0..1]

This optional attribute references a signed paper document containing the client's consent directive.

Attribute 'ConsentDirective.effectiveTime' of type ' PointInTime' with cardinality of [1]

This attribute specifies the date when the policy/consent is in effect.

Attribute 'ConsentDirective.expirationTime' of type ' PointInTime' with cardinality of [0..1]

This attribute specifies when the consent directive automatically expires. A consent directive may be revoked prior to its expiration date.

Attribute 'ConsentDirective.id' of type ' Id' with cardinality of [1]

Unique identifier that refers to a specific Consent Directive instance. This id or the published URI may be used to lookup the client's consent directives in order to apply them to the collection, access, use, or disclosure of health records.

Association 'ConsentDirective.privacyRuleList' of type ' PrivacyRuleList' with cardinality of [*]

A list of zero or more consent rules applicable to this consent directive. A consent rule specifies the permission allowed to a user type by the consenter for a specific type of information. The person consenting may be either the subject of the record or a designated Substitute Decision Maker. One or more consent rules comprise a consent directive or privacy policy.

Association 'ConsentDirective.publishedPolicy' of type ' PrivacyPolicy' with cardinality of [*]

A set of rules that are intended to be enforced by security systems and are used as the basis for client consent directives.

Attribute 'ConsentDirective.reason' of type ' Code' with cardinality of [1]

This attribute is used to specify the reason for revoking a Consent Directive, e.g., requested vs. correction/error. An error would be a discrepancy between the intent of Consent Directive (as communicated by the Consenter) and that which was entered into the Consent Directive Management System (CDMS).

Association 'ConsentDirective.replacesDirective' of type ' ConsentDirective' with cardinality of [0..1]

Points to a previous Consent Directive superseded by the current instance.

Attribute 'ConsentDirective.status' of type ' Code' with cardinality of [1]

This attribute indicates whether the consent directive is active or not.

Attribute 'ConsentDirective.subjectOfConsent' of type ' Patient' with cardinality of [1]

Identifies the person to whom the consent directive applies. This person may or may not be the same person as the consent author, as in the case where the patient is a minor child or an incapacitated person.

«Role» Class: Consenter

This class is intended to capture the properties of a Consenter/Substitute Decision Maker - see 'Actors'.

Attribute 'Consenter.client' of type ' Patient' with cardinality of [0..1]

Identifies the person to whom the consent directive applies. This person may or may not be the same person as the consent author, as in the case where the patient is a minor child or an incapacitated person.

Attribute 'Consenter.digitalSignature' of type ' base64Binary' with cardinality of [0..1]

This attribute is used to store the consenter's signature.

Association 'Consenter.grantee' of type ' Grantee' with cardinality of [0..1]

Designates who/what has been delegated a specific right.

Attribute 'Consenter.name' of type ' PersonName' with cardinality of [0..1]

Contains the name of the person who granted consent.

Attribute 'Consenter.relationship' of type ' Code' with cardinality of [1]

This coded attribute is intended to specify the relationship between the consenter and the client. This may be a Substitute Decisions Maker, a legal guardian, etc.

Attribute 'Consenter.signatureRecorded' of type ' Boolean' with cardinality of [0..1]

If a digital signature is not allowed by policy, this attribute indicates whether a signature was captured.

«Act» Class: ConstraintPolicy

A constraint policy is intended to constrain an existing policy. For example a ConstraintPolicy instance may be used to represent a consent directive that sets specific 'constraints' on a default organizational policy regarding substance abuse data (e.g., 42CFR Part2). A policy (BasicPolicy or CompositePolicy) can be constrained in the sense of profiles for tailoring a policy instance. Complex constraints (e.g., an OCL expression) may be applied and managed separately. For this definition and management purpose it is possible to separate externally-defined constraints and specify a 'ConstraintPolicy' with clearly defined associations to the constrained policy according to component model principles. Effectively, the result of applying constraints is just another CompositePolicy.

Attribute 'ConstraintPolicy.constraint' of type ' String' with cardinality of [*]

Constraint expression.

DataIntegrity

Data integrity is an implied privacy concept but it is explicit in security policy specifications.

«Act» Class: DelegationPolicy

A delegation policy is intended to delegate access rights to a specific individual or organization (a grantee). ISO 22600-2 defines delegation as 'conveyance of privilege from one entity that holds such privilege, to another entity' and a DelegationPolicy as 'defines what authorizations can be delegated to whom'.

Association 'DelegationPolicy.grantee' of type ' Grantee' with cardinality of [*]

Designates who/what has been delegated a specific right.

«Role» Class: Functional Role

Functional Roles can be grouped according to their authorization to access IIHI and perform

various operations on health care information. E.g., A health care provider in Organization A is authorized to access protected information (including IIHI) from Organization B (when Organization A & B have entered into a trusted relationship) if that provider is associated with the Functional Group whose permissions grant access per that FunctionalRole. In summary, the functional role defines the access control decision. A functional role is bound to a policy.

Attribute 'Functional Role.name' of type ' String' with cardinality of [0..1]

This attribute is used to represent the user role name, if specified.

Attribute 'Functional Role.roleCode' of type ' Code' with cardinality of [0..1]

The functional role may specify that the user is part of the healthcare team that is directly involved in the client's care. This attribute refers to a functional role assigned by an organization to computer users.

Association 'Functional Role.rolePermission' of type ' Permission' with cardinality of [*]

This association identifies the permissions that are associated with a functional role.

«Role» Class: Grantee

This class is used to designate who/what has been delegated a specific right. For example, in the case of substance abuse related information, under certain conditions the authority to grant, withhold, or withdraw consent to the disclosure of the information, is granted to the client. In another example, a Clearinghouse may act an agent/proxy for a provider organization as an intermediary and therefore can be a grantee as well.

Association 'Grantee.clearingHouse' of type ' ClearingHouse' with cardinality of [0..1]

Additional information about the grantee when the grantee is a clearinghouse.

Attribute 'Grantee.organizationalProvider' of type ' OrganizationalProvider' with cardinality of [1]

Additional information about the grantee when the grantee is an organizational provider.

«Act» Class: HealthRecord

This class is used to store a reference to the health record that is the subject of the consent rules in the Consent Directive.

Attribute 'HealthRecord.recordId' of type ' Id' with cardinality of [1]

The id of the record that is the target of a consent directive.

Attribute 'HealthRecord.recordLocation' of type ' String' with cardinality of [0..1]

The location of the record that is the target of a consent directive.

«Entity» Class: InformationObject

This class represents a reference to specific type of information object that may be referenced by a policy or consent directive (e.g., document, order, etc.). This information object refers to the types of objects that may be used in a permission.

Attribute 'InformationObject.category' of type ' Code' with cardinality of [0..1]

Coded attribute that identifies the type of object referenced in the policy.

«Act» Class: InformationReference

This class and it associations specify the attributes of the protected information referenced by a policy (e.g., IIHI).

Attribute 'InformationReference.category' of type ' Code' with cardinality of [0..1]

Information category (e.g. medication, allergies, laboratory).

Attribute 'InformationReference.confidentialityIndicator' of type ' Code' with cardinality of [0..1]

The confidentiality indicator is a coded attribute that assigns access controls on client health records based on the information or type of access.

Attribute 'InformationReference.dataIntegrity' of type ' Code' with cardinality of [*]

This attribute was renamed from the DAM, wherein it was named 'integrityCode'. That attribute had no definition.

Attribute 'InformationReference.informationCustodian' of type ' OrganizationalProvider' with cardinality of [*]

Identifies the organizational provider that is the custodian of the record in question.

Association 'InformationReference.informationObject' of type ' InformationObject' with cardinality of [*]

A reference to specific type of information object that may be referenced by a policy or consent directive (e.g., document, order, etc.).

Attribute 'InformationReference.informationRecipient' of type ' OrganizationalProvider' with cardinality of [*]

Identifies the organizational provider that is the intended recipient of the record in question.

Association 'InformationReference.relatedCondition' of type ' ClinicalCondition' with cardinality of [*]

The health condition(s) associated with the policy. Conditions when specified, are coded concepts expressed in a standard vocabulary (e.g., LOINC, SNOMED CT, etc.). These may include indications of 'substance abuse' or 'HIV-related' illnesses, etc. An obligationCode may be implemented as a 'condition'.

Attribute 'InformationReference.sensitivity' of type ' Code' with cardinality of [0..1]

Coded attribute that describes the sensitivity of a user or information artifact. Sensitivity is a characteristic of a resource which implies its value or importance, and may include its vulnerability [ISO 7498-2:1989]. Sensitivity may be associated with a user or information artifact.

Association 'InformationReference.subjectOfRecord' of type ' SubjectOfRecord' with cardinality of [0..1]

This class represents the patient or population that is the subject of the record in question.

«Act» Class: ObligationPolicy

An obligation policy may be used to specify additional privacy preferences specified by a client/patient. An obligation policy may be specified in addition to a ConstraintPolicy to fully describe a patient's access control preferences. In some cases an obligation policy may be used to indicate that the receiver of an information object may not be allowed to re-disclose it or persist that information object indefinitely. According to ISO 22600-2, ObligationPolicy instances 'are event-triggered and define actions to be performed by manager agent'.

Attribute 'ObligationPolicy.eventCode' of type ' Code' with cardinality of [*]

This attribute identifies the action required before completing the step in the workflow. We assume it is coded concept but in today's implementations it's primarily an ad-hoc rule reference (e.g., the name of a data base stored procedure). An obligation may be associated with the release of an object. For example, it may require a signature. This information is passed as rule for an application to enforce. In other cases it may require that an audit record be created.

«Act» Class: Operation

This abstract class specifies the permission that is assigned by the consenter to specific users of client health record information. The permission may control collection, access, use, or disclosure of a specific type of protected information (including IIHI). Note that this class was named 'OperationType' in the original DAM.

Attribute 'Operation.operationCategory' of type ' Code' with cardinality of [0..1]

This attribute identifies the operation that is either allowed or prohibited by the permission. Note that this property was named 'OperationCode' in the original DAM.

«Role» Class: PatientITUser

This class represents additional properties of the Patient when communicating with them electronically. This class was called simply 'Patient' in the HL7 Security and Privacy DAM, the definition of which is: 'This class is intended to capture the properties of a Consenter/Client or 'Patient'. See 'Actors' specified in the Use Case Analysis for additional detail. A consenter may be the person whose preferences

it represents or their designated Substitute Decision Maker (SDM).'

Attribute 'PatientITUser.sharedSecret' of type ' String' with cardinality of [1]

This keyword/shared secret may be used by a patient to provide temporary access to their electronic health records. This attribute is required to support use case P.12 originated in Canada.

«Act» Class: Permission

This class corresponds to a Role-Based Access Control (RBAC) permission. It specifies an information object and action/operation allowed on that object. A permission contains one operation and precisely one information reference.

Attribute 'Permission.id' of type ' Id' with cardinality of [1]

This attribute is used to specify the unique identifier of the permission.

Association 'Permission.informationObject' of type ' InformationObject' with cardinality of [1]

This association identifies the information resources specified by a permission.

Association 'Permission.operationType' of type ' Operation' with cardinality of [1]

This association identifies the action or operation that is specified by a permission.

«Act» Class: PermissionCatalog

The permission catalog specifies a set of standard permissions. The permission catalog is the subject of separate HL7 standards. This reference is intended to show it relates to the rest of the information classes required to support the use cases.

Association 'PermissionCatalog.permission' of type ' Permission' with cardinality of [1..*]

A Role-Based Access Control (RBAC) permission. It specifies an information object and action/operation allowed on that object. A permission contains one operation and precisely one information reference.

Attribute 'PermissionCatalog.status' of type ' Code' with cardinality of [1]

Identifies the current state of the Permission. The state should correspond to the HL7 Act State machine.

«Act» Class: Policy

This is the abstract class from which all concrete policy classes in this model are derived and instantiated. Because this class is abstract, it cannot be instantiated as a security policy for healthcare, however, it specifies the properties reused by all policies. ISO 22600-2 specifies a policy as 'set of legal, political, organizational, functional and technical obligations for communication and cooperation'.

Association 'Policy.authority' of type ' Authority' with cardinality of [*]

This is an association to the Authority that issued the policy.

Attribute 'Policy.description' of type ' String' with cardinality of [1]

This attribute specifies the narrative description of the policy.

Attribute 'Policy.effectiveTime' of type ' TimeInterval' with cardinality of [1]

This attribute specifies the period of time (e.g., start date, end date) during which the privacy policy described by ePolicy is in effect.

Attribute 'Policy.id' of type ' Id' with cardinality of [1]

Uniquely identifies the policy

Attribute 'Policy.name' of type ' String' with cardinality of [1]

A human discernible name for the policy

Association 'Policy.securityRole' of type ' SecurityRole' with cardinality of [*]

ISO-22600 specifies a role as 'set of competences and/or performances which is associated with a task'. A role is a specialization of CompositePolicy that define a group of policies (authorization, obligation, delegation and refrain policies).

Attribute 'Policy.status' of type ' Code' with cardinality of [1]

This attribute indicates whether the policy is active or not

Attribute 'Policy.uri' of type ' String' with cardinality of [1]

The location of published policy.

«Act» Class: PolicyProgramSource

Specifies the source of payment for the healthcare services documented by electronic health records. In order to meet specific privacy policy needs, it is necessary to specify if the information protected by the rule was produced through public healthcare or other type of insurance.

Attribute 'PolicyProgramSource.policyCategory' of type ' Code' with cardinality of [1]

The HL7 DAM contains two subclasses to illustrate the type of security/privacy policies that are inherent from the healthcare payment source. Those two subclasses are examples of many potential kinds of policies, and would be 'fleshed out' in the terminology referenced by this code.

«Act» Class: PrivacyPolicy

This is the main/focal class for electronic privacy policies. It contains a set of rules that are intended to be enforced by security systems and are used as the basis for client consent directives.

Association 'PrivacyPolicy.authority' of type ' Authority' with cardinality of [*]

This is an association to the Authority that issued the policy.

Attribute 'PrivacyPolicy.description' of type ' String' with cardinality of [0..1]

This attribute is a narrative description of the privacy policy.

Association 'PrivacyPolicy.grantee' of type ' Grantee' with cardinality of [*]

Designates who/what has been delegated a specific right.

Attribute 'PrivacyPolicy.policyId' of type ' Id' with cardinality of [1]

This attribute specifies the unique identifier of for a privacy policy.

Association 'PrivacyPolicy.privacyRuleList' of type ' PrivacyRuleList' with cardinality of [*]

A list of zero or more privacy rules applicable to this consent directive. A privacy rule specifies the permission allowed to a user type by the consenter for a specific type of information. The person consenting may be either the subject of the record or a designated Substitute Decision Maker. One or more consent rules comprise a consent directive or privacy policy.

«Act» Class: PrivacyRule

A privacy or consent rule specifies the permission allowed to a user type by the consenter for a specific type of information. The person consenting may be either the subject of the record or a designated Substitute Decision Maker. One or more consent rules comprise a consent directive or privacy policy.

Attribute 'PrivacyRule.effectiveTime' of type ' PointInTime' with cardinality of [1]

This attribute specifies the date/time when the Privacy Policy comes into effect.

Attribute 'PrivacyRule.enablesOperation' of type ' Boolean' with cardinality of [1]

Enables the operation (e.g., disclosure) or disables it depending on its value.

Association 'PrivacyRule.includedRole' of type ' UserRole' with cardinality of [*]

Identifies a particular the role of a user of a computer system that is referenced by the Privacy Rule.

Association 'PrivacyRule.informationType' of type ' InformationReference' with cardinality of [*]

Identifies the type of protected information referenced by the Privacy Rule.

Attribute 'PrivacyRule.obligationCode' of type ' Code' with cardinality of [0..1]

This coded attribute specifies a pre-defined obligation associated with a policy or consent. The Obligation Code is an Act.Code

Association 'PrivacyRule.operation' of type ' Operation' with cardinality of [1..*]

Identifies the type of operation (i.e., collection, access, use, or disclosure) of a specific type of

protected information referenced by the Privacy Rule.

Attribute 'PrivacyRule.purpose' of type ' Code' with cardinality of [0..1]

This attribute is used to specify the purpose to permit a specific type of action/operation according to the policy. Example: TREATMENT The PurposeCode is an Act.ReasonCode

«ActRelationship» Class: PrivacyRuleList

An Act Relationship which describes the sequence in which Privacy Rules are to be processed as part of a Privacy Policy or a Consent Directive.

Association 'PrivacyRuleList.privacyRule' of type ' PrivacyRule' with cardinality of [1]

A privacy or consent rule specifies the permission allowed to a user type by the consenter for a specific type of information. The person consenting may be either the subject of the record or a designated Substitute Decision Maker. One or more consent rules comprise a consent directive or privacy policy.

Attribute 'PrivacyRuleList.sequenceNumber' of type ' Integer' with cardinality of [1]

This attribute specifies the sequence of a specific consent directive in the Consent Directive set.

«Act» Class: PublishedConsent

This specialization of the ConsentDirective class is used to describe a consent directive published to a registry. If a client's consent directive is published, a URL/URI is made available for reference. The client may use this URI to allow providers access to the consent directive created by the consenter.

Attribute 'PublishedConsent.uri' of type ' String' with cardinality of [1]

If a specific consent directive (for a client) is published, this attribute provides the means to locate and download the consent directive from a registry.

«Act» Class: PublishedPrivacyPolicy

This class encapsulates the location of a human-readable version of the Electronic Privacy Policy. The human-readable version is accessible to any authorized system and user via the supplied URI.

Attribute 'PublishedPrivacyPolicy.uri' of type ' String' with cardinality of [0..1]

The location of published policy.

«Act» Class: RefrainPolicy

A refrain policy is used to indicate that a specific action is prohibited based on specific access control attributes (e.g., purpose, information type, user role, etc.). It is a specialization of "BasicPolicy"

class. It does not have any additional attributes but implies a different behavior. ISO 22600-2 species that a RefrainPolicy 'defines actions the subjects must refrain from performing'.

«Role» Class: SecurityRole

ISO-22600 specifies a role as 'set of competences and/or performances which is associated with a task'. A role is a specialization of CompositePolicy that define a group of policies (authorization, obligation, delegation and refrain policies).

Attribute 'SecurityRole.authorityIdentifierName' of type ' String' with cardinality of [1]

This attribute is defined by ISO 22600-2 as 'String'.

Attribute 'SecurityRole.description' of type ' String' with cardinality of [1]

This attribute is defined by ISO 22600-2 as 'CodedSimpleValue'.

Attribute 'SecurityRole.instanceIdentifier' of type ' Id' with cardinality of [1]

This is the role_identifier property in the security DAM. The definition of that property is 'This attribute is defined by ISO 22600-2 as 'Set of InstanceIndentifier'.' WE RENAMED THIS. WAS THIS OK TO DO????

Attribute 'SecurityRole.name' of type ' Code' with cardinality of [1]

This attribute is defined by ISO 22600-2 as 'CodedSimpleValue'.

Attribute 'SecurityRole.objectIdentifier' of type ' Id' with cardinality of [1]

This is the role_identifier_ID property in the Security DAM. The definition of that property is 'This attribute is defined by ISO 22600-2 as 'ISO ObjectIdentifier'.' WE RENAMED THIS. WAS THIS OK TO DO????

Association 'SecurityRole.userIdentity' of type ' UserIdentity' with cardinality of [1]

Specifies the user identification attributes.

«choiceGroup, Role» Class: SubjectOfRecord

This class represents the type of subject of record: patient or population.

Attribute 'SubjectOfRecord.patient' of type ' Person' with cardinality of [1]

Captures the properties of a Consenter/Client or 'Patient'. See 'Actors' specified in the Use Case Analysis for additional detail. A consenter may be the person whose preferences it represents or their designated Substitute Decision Maker (SDM).

Attribute 'SubjectOfRecord.population' of type ' Population' with cardinality of [1]

Specifies that the target of a policy may be an entire population. This class may be used to specify

a privacy policy that applies to a specific group or population.

«Role» Class: UserIdentity

This class is used to specify the user identification attributes. Note that the user here is typically a provider.

Attribute 'UserIdentity.id' of type ' Id' with cardinality of [1]

This attribute is used to represent the user's identifier. Note that the user here is typically a provider.

Association 'UserIdentity.location' of type ' WorkstationLocation' with cardinality of [1]

This association is used to specify the provider's location when using or requesting IIHI.

Attribute 'UserIdentity.name' of type ' String' with cardinality of [1]

This attribute specifies the user's name. Note that the user here is typically a provider.

Association 'UserIdentity.securityRole' of type ' SecurityRole' with cardinality of [1]

ISO-22600 specifies a role as 'set of competences and/or performances which is associated with a task'. A role is a specialization of CompositePolicy that define a group of policies (authorization, obligation, delegation and refrain policies).

«Role» Class: UserRole

This class is used to specify the role of a user of a computer system. The role is typically associated with the Information Requester and specifies what capabilities are available to a specific type of computer user (i.e., in the Windows operating system, a user may have the role of Administrator which enables the capability to add new users).

Attribute 'UserRole.allowedSensitivity' of type ' Code' with cardinality of [0..1]

Coded attribute that describes the level sensitivity of the protected information (including IIHI) that the user may access or use. Sensitivity is a characteristic of a resource which implies its value or importance.

Association 'UserRole.functional Role' of type ' Functional Role' with cardinality of [*]

This attribute refers to a coded structural role specified by an external coding system.

Attribute 'UserRole.name' of type ' String' with cardinality of [0..1]

This attribute is used to specify the role name, if available.

Attribute 'UserRole.organizationalProvider' of type ' OrganizationalProvider' with cardinality of [*]

The organizational provider with which the user is associated.

Attribute 'UserRole.roleCode' of type ' Code' with cardinality of [0..1]

This coded descriptor is used to specify a user role. It is an identifier of a hierarchical group in which membership is asserted, for example, organizational position. Structural roles provide authorizations on objects at a global level without regard to internal details (ASTM E2595). Examples include authorization to participate in a session, connect authorization to a database, authorization to participate in an order workflow, or connection to a protected uniform resource locator (URL). A structural role applies to the business process task as a group. This attribute refers to a coded structural role specified by an external coding system.

Attribute 'UserRole.roleId' of type ' Id' with cardinality of [0..1]

This attribute is used to represent a unique role identifier.

Association 'UserRole.userIdentity' of type ' UserIdentity' with cardinality of [*]

A unique identifier for the role.

«Place» Class: WorkstationLocation

Access may be granted only to initiators on specific end-systems, workstations or terminals, or only to initiators in a specific physical location. This class is required to support user authorization as specified by the business requirements (use case S.1).

Attribute 'WorkstationLocation.organizationalProvider' of type ' OrganizationalProvider' with cardinality of [1]

The organizational provider with which the workstation is associated.

Common Domains

The following models are reused by the main business domains:

Common

These factors are veteran characteristics that are primarily used to identify veteran's eligibility for co-payment exemption. Eligible veterans will be exempt from co-payments for extended care services, hospital, outpatient, and medications for the treatment of conditions associated with Agent Orange Exposure, Ionizing Radiation Exposure, Persian Gulf Exposure, Head and/or Neck Cancer, Military Sexual Trauma, Combat Veterans, and Shipboard Hazard & Defense. For example if a veteran served in Vietnam and is treated for Diabetes, the clinician should indicate (Using the information provided thru Registration) that care was related to Agent Orange exposure (since Diabetes is presumed to be caused to AO exposure).

deprecate

_Common

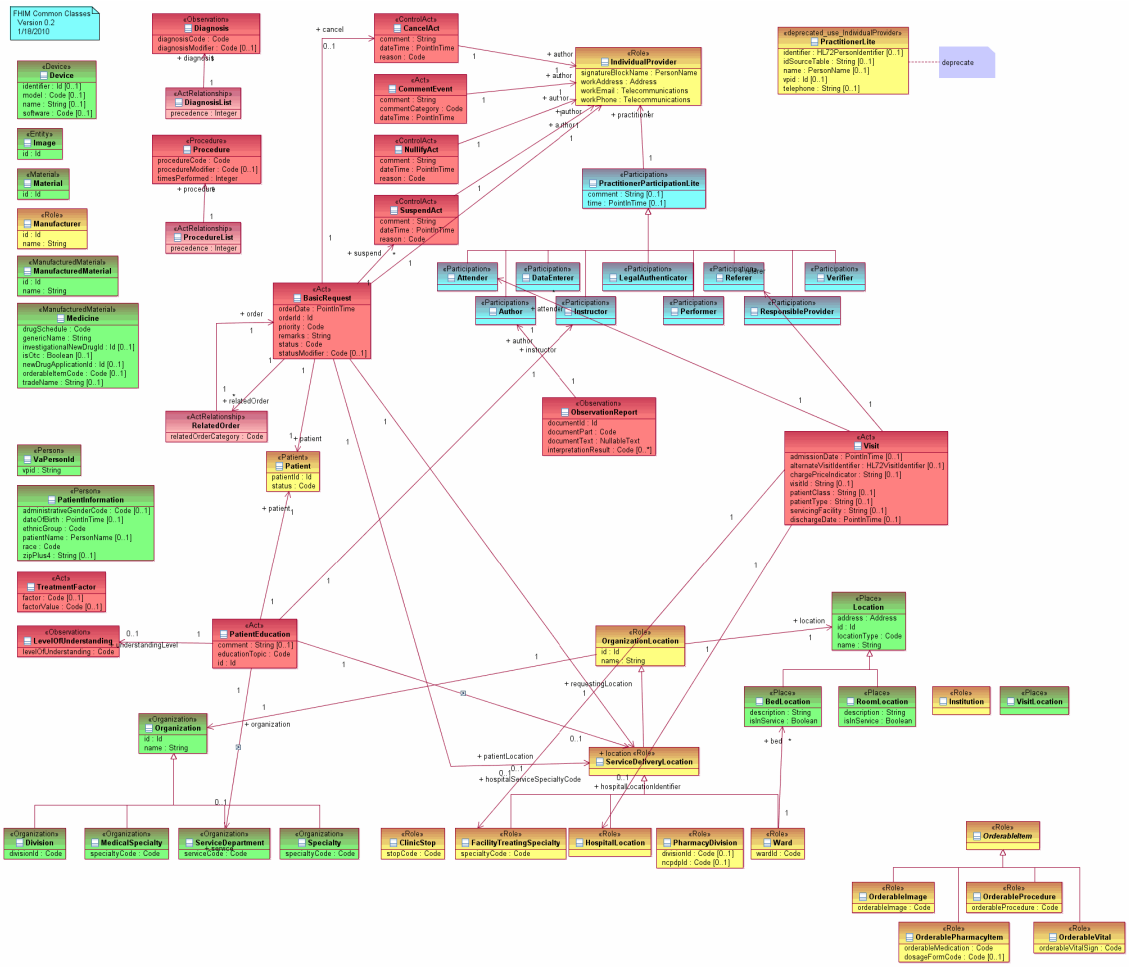

Figure _Common

_OrganizationLocation

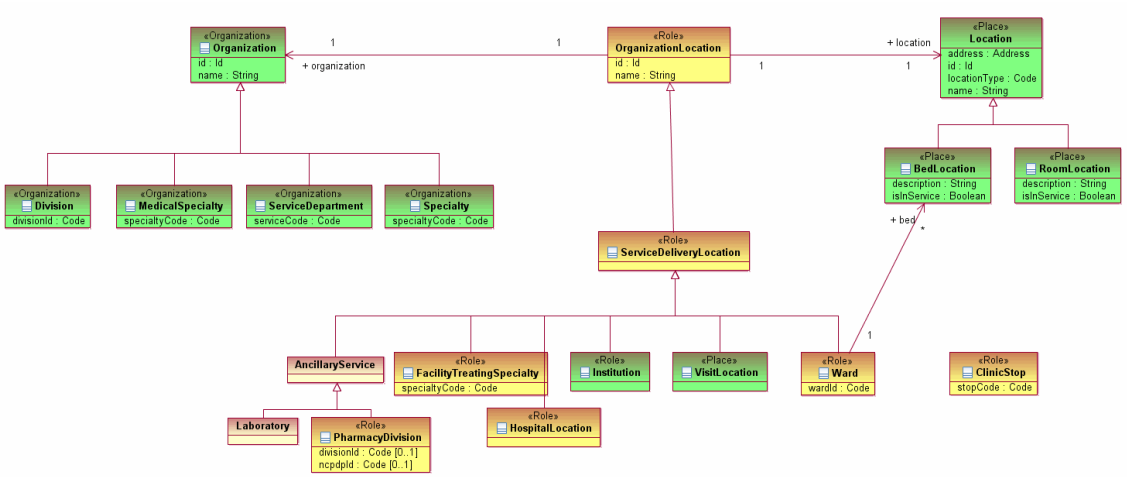

Figure _OrganizationLocation

«Act» Class: BasicRequest

This class represents that properties which are common to all orders. This class is "owned" by the Common package so as to avoid package interdependencies. Information that is specific to given order types (e.g., Lab, Pharmacy) are contained in subtypes to this class. These subtype classes are in the the respective domain packages (e.g., the LabRequest class is in the Lab package).

Attribute 'BasicRequest.author' of type ' IndividualProvider' with cardinality of [1]

Identifies the practitioner who created the order

Attribute 'BasicRequest.orderDate' of type ' PointInTime' with cardinality of [1]

The date/time that the order was created by the ordering provider.

Attribute 'BasicRequest.orderId' of type ' Id' with cardinality of [1]

Uniquely identifies the order within the ordering provider's system.

Attribute 'BasicRequest.patient' of type ' Patient' with cardinality of [1]

Identifies the patient which is the subject of the Order.

Association 'BasicRequest.patientLocation' of type ' ServiceDeliveryLocation' with cardinality of [0..1]

The physical location where the order was or will be fulfilled.

Attribute 'BasicRequest.priority' of type ' Code' with cardinality of [1]

A code (e.g., routine, emergency), specifying the urgency under which the order is requested to happen.

Attribute 'BasicRequest.status' of type ' Code' with cardinality of [1]

A code specifying the status of the order. Valid status codes should reflect the HL7 state machine, e.g., Active, Held, Canceled, Aborted, New, Nullified, Obsolete).

«Place» Class: BedLocation

Identifies a bed at which services may be provided to a patient. This is equivalent to file 405.4 in VistA.

«ControlAct» Class: CancelAct

Contains information about the cancelation of the pharmacy order.

Attribute 'CancelAct.comment' of type ' String' with cardinality of [1]

Any comments or remarks regarding the cancelation of the Activity or Order.

Attribute 'CancelAct.dateTime' of type ' PointInTime' with cardinality of [1]

The date/time the Order was cancelled.

Attribute 'CancelAct.reason' of type ' Code' with cardinality of [1]

The reason the order was cancelled.

«Role» Class: ClinicStop

Identifies various nodes within a workflow process that is typically performed by a Medical Service. Used to facilitate collection of workload and financial information. This is equivalent to File 40.7 in Vista.

Attribute 'ClinicStop.stopCode' of type ' Code' with cardinality of [1]

Identifies various nodes within a workflow process that is typically performed by the Service. Used to facilitate collection of workload and financial information.

«Act» Class: CommentEvent

Contains all general comments reqarding the Surgial event that were not captured in the Clinical Document process.

Attribute 'CommentEvent.comment' of type ' String' with cardinality of [1]

Contains the textual description for the comment. Changes made June 2 2009 per CDS\Hdr order set issue. VHIM disagrees with approach needs be re-reviewed in the future. Changes are set attribute comments multipilicity to '*'.

Attribute 'CommentEvent.commentCategory' of type ' Code' with cardinality of [1]

Contains the code set thatIdentifies all the types of General comments.

Attribute 'CommentEvent.dateTime' of type ' PointInTime' with cardinality of [1]

The Date and time the comment was entered.

«Device» Class: Device

"A contrivance or an invention serving a particular purpose, especially a machine used to perform one or more relatively simple tasks." (The American Heritage® Stedman's Medical Dictionary)

Attribute 'Device.identifier' of type ' Id' with cardinality of [0..1]

Uniquely identifies the device.

Attribute 'Device.name' of type ' String' with cardinality of [0..1]

The name of the device.

Attribute 'Device.software' of type ' Code' with cardinality of [0..1]

The moniker, version and release of the software that operates the device as assigned by the software manufacturer or developer.

«Observation» Class: Diagnosis

"a.The act or process of identifying or determining the nature and cause of a disease or injury through evaluation of patient history, examination, and/or review of laboratory data. b.The opinion derived from such an evaluation" American Heritage Dictionary

Attribute 'Diagnosis.diagnosisCode' of type ' Code' with cardinality of [1]

Provides the code from the Structured Nomenclature of Medicine(SNOMED) that most closely identifies the condition of the diagnosis.

Attribute 'Diagnosis.diagnosisModifier' of type ' Code' with cardinality of [0..1]

Provides code from the International Classifications of Diseases ICD9 that most closely identifies the condition of the diagnosis.

«Organization» Class: Division

This is equivalent to File 40.8 in Vista.

Attribute 'Division.divisionId' of type ' Code' with cardinality of [1]

Contains the Code Set that identifies the Divisions in the VA.

«Role» Class: FacilityTreatingSpecialty

Provides an indication of the medical specialty of the organization-location. Examples include Medicine, Surgery, Psychiatry, etc. This is equivalent to File 45.7 in Vista.

«Role» Class: HospitalLocation

"A facility, often associated with a hospital or medical school, that is devoted to the diagnosis and care of outpatients." The American Heritage Stedman's Medical Dictionary. This is equivalent to File 44 (Hospital Location) in Vista.

«Role» Class: Institution

"An established or organised society or corporation; an establishment, especially of a public character, or affecting a community; ... also, a building or the buildings occupied or used by such organization" This is equivalent to File 4 in Vista.

«Observation» Class: LevelOfUnderstanding

This class captures information about patient's level of understanding after education is given to the patient.

Attribute 'LevelOfUnderstanding.levelOfUnderstanding' of type ' Code' with cardinality of [1]

Impression of how well the patient understood the education received. Example values include: Poor, Fair, Good, Group - no assessment, Refused, etc.

«Place» Class: Location

"A bounded physical place or site, including any contained structures. A 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). Examples include a field, lake, city, county, state, country, lot (land), building, pipeline, power line, playground, ship, truck." HL7 V3.

«ManufacturedMaterial» Class: ManufacturedMaterial

"A subtype of Material representing an Entity or combination of Entities transformed for a particular purpose by a non-natural or manufacturing process." (HL7)

Attribute 'ManufacturedMaterial.id' of type ' Id' with cardinality of [1]

Uniquely identifies the device.

Attribute 'ManufacturedMaterial.name' of type ' String' with cardinality of [1]

The name of the device.

«Role» Class: Manufacturer

The organization that produced an item of interest.

Attribute 'Manufacturer.name' of type ' String' with cardinality of [1]

The name of the manufacturer.

«Material» Class: Material

"A subtype of Entity that is inanimate and locationally independent. Materials are entities that are neither LivingSubjects nor places. 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) whilestill retaining their physical composition and material characteristics." HL7 RIM.

«Organization» Class: MedicalSpecialty

"A branch of medicine or surgery in which a physician specializes; the field or practice of a specialist." - The American Heritage Stedman's Medical Dictionary This is equivalent to File 723 in Vista.

«ManufacturedMaterial» Class: Medicine

An entity, either in its real or actual form, that can be used in the prevention, diagnosis or treatment of symptoms or disease. This is equivalent to File 50 in the current VistA system.

Attribute 'Medicine.drugSchedule' of type ' Code' with cardinality of [1]

A code that represents the special regulations of a drug based upon its degree of potential abuse and level of federal control as specified by the Drug Enforcement Administration (DEA) in accordance with the Controlled Substance Act. This attribute should contain a number between 1 and 5, with 1 representing the most controlled drugs (illegal drugs) and 5 representing the least controlled drugs. In addition a value of 0 is valid for drugs having no schedule.

Attribute 'Medicine.genericName' of type ' String' with cardinality of [1]

Generic name for the medication (e.g., "Acetaminophen 300 / Codeine 30" vice "Tylenol with Codeine").

Attribute 'Medicine.investigationalNewDrugId' of type ' Id' with cardinality of [0..1]

The unique identifier for the manufacturer's investigational new drug.

Attribute 'Medicine.isOtc' of type ' Boolean' with cardinality of [0..1]

Indicates whether this medication is sold over the counter.

Attribute 'Medicine.newDrugApplicationId' of type ' Id' with cardinality of [0..1]

The unique identifier for the manufacturer's new drug application for this medicine.

Attribute 'Medicine.orderableItemCode' of type ' Code' with cardinality of [0..1]

Identifies the medication. From a codeset of medications created and maintained by VHA.

Attribute 'Medicine.tradeName' of type ' String' with cardinality of [0..1]

Either a proprietary name that is registered to protect the name for the sole use of the manufacturer holding the trademark (e.g., Claritin) or a name that distinguishes a given vendor of a generic drug. For example, CVS Aspirin versus Safeway Aspirin.

«ControlAct» Class: NullifyAct

Records the nullification of an Act. Typically used when an erroneous record is "deleted". Because medical records should never be deleted, the record is instead "nullified", and is rendered not visible to typical users, but still exists in the system for the purpose of audit trails, etc.

Attribute 'NullifyAct.comment' of type ' String' with cardinality of [1]

Any comments or remarks regarding the nullification of the Activity record or Order.

Attribute 'NullifyAct.dateTime' of type ' PointInTime' with cardinality of [1]

The date/time the Activity record or Order was nullified.

Attribute 'NullifyAct.reason' of type ' Code' with cardinality of [1]

The reason why the Order or Activity record was nullified.

«Observation» Class: ObservationReport

This class represents the written report prepared by the practitioner. Each type of report will typically contain multiple pre-defined sections, which are represented by the ReportSection association. The section may also contain the entire report as fullText. The report contains the observation result as text and optionally as a coded value.

Attribute 'ObservationReport.documentId' of type ' Id' with cardinality of [1]

An identifier identifying each observation report; typically unique to the Observation Report.

Attribute 'ObservationReport.documentPart' of type ' Code' with cardinality of [1]

"Indicates the type of report section that is represented by a given instance of this class." Possible values are: Clinical Diagnosis, Cytologic Diagnosis, Frozen Diagnosis, Gross Diagnosis, Microscopic Diagnosis, Pathologic Diagnosis, Pre-operative Diagnosis, Post-operative Diagnosis, Previous Cytologic Diagnosis, Clinical History, Findings, and Recommentations. Also clinicalHistory, findings, and recommendations have been added as ReportSections.

Attribute 'ObservationReport.documentText' of type ' NullableText' with cardinality of [1]

The text of the report in it's entirety, as signed by the practitioner. Can also mean the text that comprises the report section.

Attribute 'ObservationReport.interpretationResult' of type ' Code' with cardinality of [*]

Captures the interpretation of an observation result. This is a set to allow for special interest coded values. Special Interest Coded Values - "This field is a multiple that contains the site-definablecodes that could be associated with a report. Special interest codes may be used to flag reports that do not fit the predefined descriptions under ACR (Teaching Codes). You may assign as many special interest codes to an exam as you desire. Examples might be '200 = ASBESTOSIS' or '300 = DR.

«Role» Class: OrderableImage

An image that is requested as part of an order. Definition of Role: "A competency of the Entity playing the Role as identified, defined, guaranteed, or acknowledged by the Entity that scopes the Role." (HL7 3.0)

Attribute 'OrderableImage.orderableImage' of type ' Code' with cardinality of [1]

The actual image that is requested as part of an order.

«Role» Class: OrderableItem (Abstract)

Contains information about an item that may be requested as part of an order.

«Role» Class: OrderablePharmacyItem

A medication that is requested as part of an order. Definition of Role: "A competency of the Entity playing the Role as identified, defined, guaranteed, or acknowledged by the Entity that scopes the Role." (HL7 3.0)

Attribute 'OrderablePharmacyItem.dosageFormCode' of type ' Code' with cardinality of [0..1]

Form: "The shape and structure of something as distinguished from its material" (Webster's Medical Dictionary). Indicates the form of the material making up a single dose (as opposed to how the dose is packaged). Possible values include Tablet, Drop, Lozenge, Cream, etc.

Attribute 'OrderablePharmacyItem.orderableMedication' of type ' Code' with cardinality of [1]

The actual medication that is requested as part of an order.

«Role» Class: OrderableProcedure

A procedure that is requested as part of an order. Definition of Role: "A competency of the Entity playing the Role as identified, defined, guaranteed, or acknowledged by the Entity that scopes the Role." (HL7 3.0)

Attribute 'OrderableProcedure.orderableProcedure' of type ' Code' with cardinality of [1]

A procedure that is requested as part of an order.

«Role» Class: OrderableVital

A vital sign that is requested as part of an order. Definition of Role: "A competency of the Entity playing the Role as identified, defined, guaranteed, or acknowledged by the Entity that scopes the Role." (HL7 3.0)

Attribute 'OrderableVital.orderableVitalSign' of type ' Code' with cardinality of [1]

The actual vital sign that is requested as part of an order.

«Organization» Class: Organization

"An Entity representing a formalized group of entities with a common purpose (e.g. administrative, legal, political) and the infrastructure to carry out that purpose." (HL7)

Attribute 'Organization.id' of type ' Id' with cardinality of [1]

An unique string or token used to identify the organization

«Act» Class: PatientEducation

This class captures information about the education given to the patient or his responsible care giver.

Attribute 'PatientEducation.comment' of type ' String' with cardinality of [0..1]

Comment related to the patient's education.

Attribute 'PatientEducation.educationTopic' of type ' Code' with cardinality of [1]

Represents the education given to the patient.

Attribute 'PatientEducation.id' of type ' Id' with cardinality of [1]

Unique id, for the instance of the patient education.

Association 'PatientEducation.location' of type ' ServiceDeliveryLocation' with cardinality of [0..1]

The location at which the patient education occured.

Association 'PatientEducation.service' of type ' ServiceDepartment' with cardinality of [0..1]

The service department at which the patient education occured.

Association 'PatientEducation.understandingLevel' of type ' LevelOfUnderstanding' with cardinality of [0..1]

Impression of how well the patient understood the education received.

«Person» Class: PatientInformation

Captures the detailed information about the patient. Note, this is a private attribute, per Galen it should be public attribute.

Attribute 'PatientInformation.administrativeGenderCode' of type ' Code' with cardinality of [0..1]

COntains the Code Set that identifies the patient's gender

Attribute 'PatientInformation.dateOfBirth' of type ' PointInTime' with cardinality of [0..1]

Contains the Patient Date of Birth.

Attribute 'PatientInformation.ethnicGroup' of type ' Code' with cardinality of [1]

Contains the Code Set that identifies the patient's ethnic background.

Attribute 'PatientInformation.patientName' of type ' PersonName' with cardinality of [0..1]

Contains the Patient name

Attribute 'PatientInformation.race' of type ' Code' with cardinality of [1]

Contains the Code Set that identifues the race of the Patient

Attribute 'PatientInformation.zipPlus4' of type ' String' with cardinality of [0..1]

Extension of the five-digit ZIP code providing the US Postal Service ZIP code (ZIP+4)

«deprecated_use_Patient_instead» Class: PatientLite

A role in which a person acts as a patient within an Act.

Attribute 'PatientLite.identifier' of type ' HL72PersonIdentifier' with cardinality of [1]

Uniquely identifies the person who is acting in the role of patient.

«Role» Class: PharmacyDivision

Identifies a pharmacy location for the purposes of maintaining the NCPDP Id, which is needed for filing pharmacy claims. This is equivalent to File 59 in Vista.

«deprecated_use_IndividualProvider» Class: PractitionerLite

A role in which a person acts as a practitioner within an Act.

Attribute 'PractitionerLite.identifier' of type ' HL72PersonIdentifier' with cardinality of [0..1]

Uniquely identifies the person who is acting in the role of patient.

Attribute 'PractitionerLite.vpid' of type ' Id' with cardinality of [0..1]

Uniquely identifies the person who is acting in the role of patient.

«Participation» Class: PractitionerParticipationLite

"An association between an Act and a Role with an Entity playing that Role. Each Entity (in a Role) involved in an Act in a certain way is linked to the act by one Participation-instance." (HL7). This class represents those participations that involve an entity playing the role of Practitioner.

Attribute 'PractitionerParticipationLite.comment' of type ' String' with cardinality of [0..1]

"Contains any comments or notes made by the practitioner in reference to the action in which they participated." (HL7 3.0)

Attribute 'PractitionerParticipationLite.time' of type ' PointInTime' with cardinality of [0..1]

"An interval of time specifying the time during which the participant is involved in the act through this Participation." (HL7 3.0)

«Procedure» Class: Procedure

"An Act whose immediate and primary outcome (post-condition) is the alteration of the physical condition of the subject." - HL7 v3

Attribute 'Procedure.procedureCode' of type ' Code' with cardinality of [1]

Contains a code indicating a procedure or non-procedure event involving the patient. Code may either be Event Capture code or CPT code. (Event Capture code may have 1-1 correspondence to CPT or may have *-1 or no correspondence)

«Place» Class: RoomLocation

Identifies a room in which services may be provided to a patient. This is equivalent to file 405.4 in VistA.

«Role» Class: Sample

The part of a specimen that is used in an actual lab test procedure.

Attribute 'Sample.id' of type ' Id' with cardinality of [1]

A unique identifier for each sample of a specimen, typically unique to the laboratory preparing the sample(s) from the specimen. The identifier is associated with the test procedures and observations performed on the sample.

Attribute 'Sample.sampleCategory' of type ' Code' with cardinality of [1]

The clinically relevant nature of the material used in a procedure. Some examples are: mucus, tissue, blood, stool.

«Role» Class: ServiceDeliveryLocation

"The location to which the patient is assigned. It is a role played by a place at which services may be provided. Note that a single physical place can play multiple service delivery location roles each with its own attributes. For example, a Podiatry clinic and Research clinic may meet on alternate days in the same physical location; each clinic uses its own mailing address and telephone number." (HL7)

«Organization» Class: ServiceDepartment

An organizational unit defined by the type of service that it provides to patients. Examples include Surgery, Dentistry, Mental Health. This is equivalent to File 49 in Vista.

Attribute 'ServiceDepartment.serviceCode' of type ' Code' with cardinality of [1]

Contains the code set that identifies Service Department

«Organization» Class: Specialty

Provides an indication of the medical specialty of the organization-location. Examples include Allergy, Neurology, Cardiology, etc. This is equivalent to File 42.4 in Vista.

«Role» Class: Specimen

Material obtained from a patient which is the subject of a lab test procedure - such as: tissue, blood, or urine, used for analysis and medical diagnosis.

Attribute 'Specimen.description' of type ' String' with cardinality of [1]

Indicates the specimen description. Added to accomodate imaging requirement. Currently only used by Micro and Imaging.

Attribute 'Specimen.id' of type ' Id' with cardinality of [1]

Contains a unique identifier for the specimen.

Association 'Specimen.sample' of type ' Sample' with cardinality of [*]

The association to the sample linking the sample to the specimen from which sample obtained.

Attribute 'Specimen.snomedCode' of type ' Code' with cardinality of [1]

Describes the snomed codes. Added the attribute based on the vdef-vhim message mapping.

Attribute 'Specimen.specimenCategory' of type ' Code' with cardinality of [1]

The type of material obtained from the patient. Some examples are:mucus, tissue, blood, stool.

Attribute 'Specimen.specimenSource' of type ' Code' with cardinality of [1]

The source or site from where the specimen is obtained, should be obtained or where the service should be performed.

«ControlAct» Class: SuspendAct

Contains information about the placement of an order "on hold".

Attribute 'SuspendAct.comment' of type ' String' with cardinality of [1]

Any comments or remarks regarding the suspension of the Activity or Order.

Attribute 'SuspendAct.dateTime' of type ' PointInTime' with cardinality of [1]

The date/time the Order was suspended.

Attribute 'SuspendAct.reason' of type ' Code' with cardinality of [1]

The reason why the Order was suspended.

«Act» Class: TreatmentFactor

These factors are veteran characteristics that are primarily used to identify veteran's eligibility for co-payment exemption. Eligible veterans will be exempt from co-payments for extended care services, hospital, outpatient, and medications for the treatment of conditions associated with Agent Orange Exposure, Ionizing Radiation Exposure, Persian Gulf Exposure, Head and/or Neck Cancer, Military Sexual Trauma, Combat Veterans, and Shipboard Hazard & Defense. For example if a veteran served in Vietnam and is treated for Diabetes, the clinician should indicate (Using the information provided thru Registration) that care was related to Agent Orange exposure (since Diabetes is presumed to be caused to AO exposure).

Attribute 'TreatmentFactor.factor' of type ' Code' with cardinality of [0..1]

(the question) Categorizes benefit(s) cited for an action. Examples include Agent Orange Exposure, Ionizing Radiation Exposure, etc.

Attribute 'TreatmentFactor.factorValue' of type ' Code' with cardinality of [0..1]

(the answer)

«Person» Class: VaPersonId

The identification concept for describing the unique VA-wide identifier for a person with some connection to the VA. The identifier is commonly called the VPID. This is a place holder for the attributes that will be added in a later release.

Attribute 'VaPersonId.vpid' of type ' String' with cardinality of [1]

Person related applications and services must be capable of accepting/processing/storing both the short version of a VPID/ICN - 17 character (10-digit sequence + 'V' delimiter + 6-digit checksum) and the long version - 29 characters (16-digit sequence + 'V' delimiter + 6-digit checksum + 6-digit encryption). Currently the MPI/Person Service uses the short version but applications/services must also be capable of accepting/processing/storing the long version to allow Person Service/MPI to transition to the long format without impact.

«Act» Class: Visit

Contains patient information for the current visit.

Attribute 'Visit.admissionDate' of type ' PointInTime' with cardinality of [0..1]

This attribute contains the date the Patient was admitted for the encounter.

Attribute 'Visit.chargePriceIndicator' of type ' String' with cardinality of [0..1]

Contains the textual description for the Charge Price indication for the patient for this visit.

Attribute 'Visit.dischargeDate' of type ' PointInTime' with cardinality of [0..1]

Contains the date the Patient was discharged for this visit.

Attribute 'Visit.patientClass' of type ' String' with cardinality of [0..1]

Contains the textual description that identifies the class for the patient for this visit.

Attribute 'Visit.patientType' of type ' String' with cardinality of [0..1]

Identifies the type of patient for this patient for this visit.

Attribute 'Visit.servicingFacility' of type ' String' with cardinality of [0..1]

Contains the textual description of the servicing facility for the patient for this visit,

Attribute 'Visit.visitId' of type ' String' with cardinality of [0..1]

Uniques identifier for this visit for the patient

«Place» Class: VisitLocation

The location at which an outpatient visit can take place. This is equivalent to File 9999999.06 in Vista.

«Role» Class: Ward

"1. A room in a hospital usually holding six or more patients. 2. A division in a hospital for the care of a particular group of patients" The American Heritage Stedman's Medical Dictionary. This is equivalent to File 42 in Vista.

Datatypes

Common Datatypes

_Datatypes

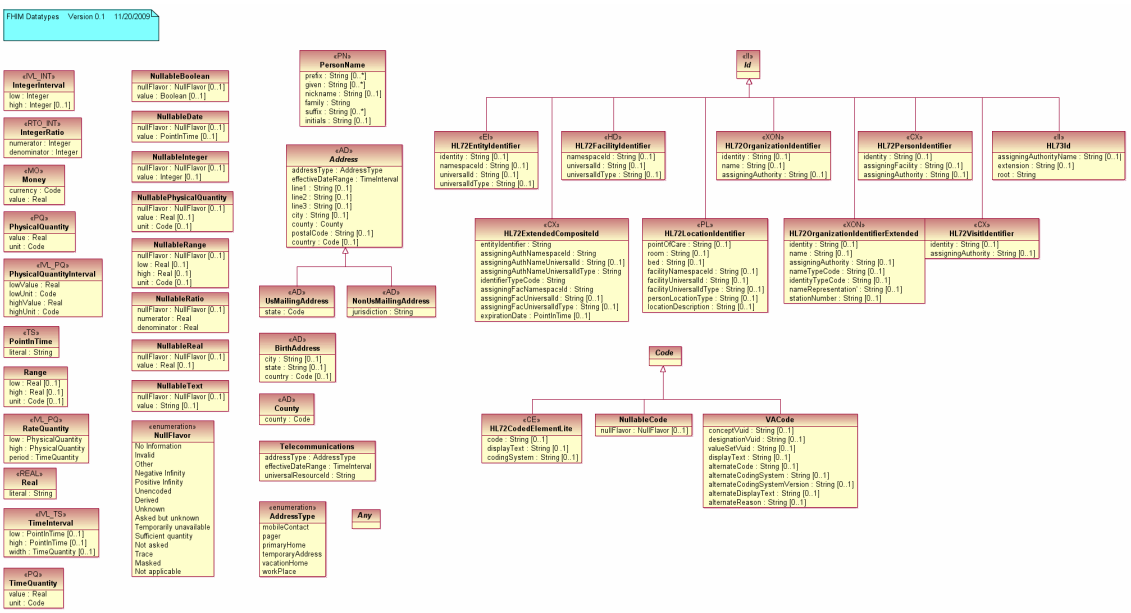

Figure _Datatypes

«AD» Class: Address (Abstract)

A physical address at which the person resides or may be contacted. 7/8/10: Renamed from MailingAddress to Address. Moved county from Person to here.

Attribute 'Address.addressType' of type ' AddressType' with cardinality of [1]

Indicates the kind of address that is contained within this class. Examples include primaryHome, Work, etc. Note that in HL7 V3, this concept is part of the Address datatype (the 'use code'). This concept is made explicit in this Address class, because this is a platform-independent model - non V3 implementations will need other mechanisms to deal with the type.

Attribute 'Address.city' of type ' String' with cardinality of [0..1]

An Address Part (ADXP) that contains the name of the city, town, village, or other community or delivery center.

Attribute 'Address.country' of type ' Code' with cardinality of [0..1]

An Address Part (ADXP) that contains the Country of the address.

Attribute 'Address.county' of type ' County' with cardinality of [1]

A region created by territorial division for the purpose of local government. In the United States, a county (or parish in Louisiana) is the largest administrative district within a state. This property is used primarily for statistical and pricing information (i.e., the same service may be more expensive in an affluent section of the country than in a less-affluent portion).

Attribute 'Address.effectiveDateRange' of type ' TimeInterval' with cardinality of [1]

The time period for which the address is a valid location for the person or organization. The datatype is a TimeInterval, which includes both a start date and end date, either of which may be empty.

Attribute 'Address.line1' of type ' String' with cardinality of [0..1]

The first line of a mailing address. Unlike HL7, we have chosen not to break up the parts of each line.

Attribute 'Address.line2' of type ' String' with cardinality of [0..1]

The second line of a mailing address. Unlike HL7, we have chosen not to break up the parts of each line.

Attribute 'Address.line3' of type ' String' with cardinality of [0..1]

The third line of a mailing address. Unlike HL7, we have chosen not to break up the parts of each line.

Attribute 'Address.postalCode' of type ' String' with cardinality of [0..1]

An Address Part (ADXP) that contains a postal code designating a region defined by the postal service.

AddressType

This enumeration describes types of Addresses at which a person or organization exists or can be reached.

AddressType: values

- mobileContact

  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.

- pager

  A paging device suitable to solicit a callback or to leave a very short message.

- primaryHome

  The primary home, to reach a person after business hours.

- temporaryAddress

  The temporary address where a person resides. An address that is different from the permanent

address, but at which the person is residing for a limited, defined period of time. Note that for military personnel, this address may represent a location at which the person is temporarily assigned or deployed.

- vacationHome
  A vacation home, to reach a person while on vacation

- workPlace
  An office address. First choice for business related contacts during business hours.

Class: Any (Abstract)

This abstract class is used to represent a datatype that is not known at the logical model level, but rather will be substituted with a (set of) real data type(s) when transformed to a given platform.

«AD» Class: BirthAddress

A refinement of AD that contains only a city, state, and country, all of which are optional.

Attribute 'BirthAddress.city' of type ' String' with cardinality of [0..1]

An Address Part (ADXP) that contains the name of the city, town, village, or other community or delivery center.

Attribute 'BirthAddress.country' of type ' Code' with cardinality of [0..1]

An Address Part (ADXP) that contains the Country of the address.

Attribute 'BirthAddress.state' of type ' String' with cardinality of [0..1]

An Address Part (ADXP) that contains a sub-unit of a state or province. A sub-unit of a country with limited sovereignty in a federally organized country.

Class: Code (Abstract)

Code class was created to support the VUID outside of VA

«AD» Class: County

Indicates a county or parish within a State of the United States of America. This class is not to be used for non-US locations.

Attribute 'County.county' of type ' Code' with cardinality of [1]

Indicates a county or parish within a State of the United States of America.

«IVL_INT» Class: IntegerInterval

An interval of integer numbers stating the minimal and maximal number of repetitions of the Act.

Attribute 'IntegerInterval.high' of type ' Integer' with cardinality of [0..1]

The maximal number of repetitions of the Act.

Attribute 'IntegerInterval.low' of type ' Integer' with cardinality of [1]

The minimal number of repetitions of the Act.

«RTO_INT» Class: IntegerRatio

A ratio (numerator : denominator) specifying the relative quantities of the Entity playing the Role in the Entity scoping the Role, used for Roles that represent composition relationships between the scoping and playing Entities.

Attribute 'IntegerRatio.denominator' of type ' Integer' with cardinality of [1]

The quantity that divides the numerator in the ratio. The default is the integer number 1 (one.) The denominator must not be zero.

Attribute 'IntegerRatio.numerator' of type ' Integer' with cardinality of [1]

The quantity that is being divided in the ratio. The default is the integer number 1

«MO» Class: Money

Indicates the monetary amount to be transferred from the debit to the credit account.

Attribute 'Money.currency' of type ' Code' with cardinality of [1]

Currencies are the units in which monetary amounts are denominated in different economic regions.

Attribute 'Money.value' of type ' Real' with cardinality of [1]

The amount of money in some currency.

«PN» Class: PersonName

The name of the person. Uses the VHIM-constrained Person Name data type.

Attribute 'PersonName.family' of type ' String' with cardinality of [1]

'Family name, this is the name that links to the genealogy' (HL7)

The portion of a person's name that reflects the genealogy of the person. In western cultures, this is the 'last' name. In eastern cultures, the family name appears before the person's given name(s). In some cultures (e.g. Eritrea) the family name of a son is the first name of his father.

Attribute 'PersonName.given' of type ' String' with cardinality of [*]

'Given name (don't call it 'first name' since this given names do not always come first)' (HL7)

A set of names given to a person at birth, but not including the family name. In western cultures, this property would contain the 'first' and 'middle' names. Note that in some cultures, the given name is placed after the family name. Note also that this property contains multiple elements, so it can handle those situations where a person has more than one 'middle' name.

Attribute 'PersonName.nickname' of type ' String' with cardinality of [0..1]

'A callme name is (usually a given name) that is preferred when a person is directly addressed.' (HL7)

Attribute 'PersonName.prefix' of type ' String' with cardinality of [*]

'A prefix has a strong association to the immediately following name part. A prefix has no implicit trailing white space (it has implicit leading white space though). Note that prefixes can be inverted' (HL7) A Person Name Prefix is usually an academic or nobility title. An Academic title includes a prefix like 'Dr.' There are still people with nobility titles (aristocrats). German 'von' is generally a nobility title, not a mere voorvoegsel. Others are 'Earl of' or 'His Majesty King of...' etc. Rarely used nowadays, but some systems do keep track of this.

Contains a set of honorific terms that typically appear before a person's name, for example Mr., Mrs., Dr., etc. Prefixes have a strong association to the immediately following name part.

Attribute 'PersonName.suffix' of type ' String' with cardinality of [*]

'A suffix has a strong association to the immediately preceding name part. A prefix has no implicit leading white space (it has implicit trailing white space though). Suffices can not be inverted' (HL7)

Contains a list of honorific terms that typically appear after a person's name, for example Jr., Sr., MD, RN, etc. Prefixes have a strong association to the immediately following name part.

«PQ» Class: PhysicalQuantity

The amount that was or is to be supplied

Attribute 'PhysicalQuantity.unit' of type ' Code' with cardinality of [1]

The unit of measure specified in the Unified Code for Units of Measure (UCUM) [].

Attribute 'PhysicalQuantity.value' of type ' Real' with cardinality of [1]

The magnitude of the quantity measured in terms of the unit.

«IVL_PQ» Class: PhysicalQuantityInterval

The amount of the therapeutic agent or other substance given at one administration event.

Attribute 'PhysicalQuantityInterval.highUnit' of type ' Code' with cardinality of [1]

The unit of measure specified in the Unified Code for Units of Measure (UCUM) [].

Attribute 'PhysicalQuantityInterval.highValue' of type ' Real' with cardinality of [1]

The magnitude of the quantity measured in terms of the unit.

Attribute 'PhysicalQuantityInterval.lowUnit' of type ' Code' with cardinality of [1]

The unit of measure specified in the Unified Code for Units of Measure (UCUM) [].

Attribute 'PhysicalQuantityInterval.lowValue' of type ' Real' with cardinality of [1]

The magnitude of the quantity measured in terms of the unit.

«TS» Class: PointInTime

A quantity specifying a point on the axis of natural time. A point in time is most often represented as a calendar expression. Semantically, however, time is independent from calendars and best described by its relationship to elapsed time (measured as a physical quantity in the dimension of time.) A point in time plus an elapsed time yields another point in time. Inversely, a point in time minus another point in time yields an elapsed time. As nobody knows when time began, a point in time is conceptualized as the amount of time that has elapsed from some arbitrary zero-point, called an epoch. Because there is no absolute zero-point on the time axis natural time is a difference-scale quantity, where only differences are defined but no ratios. (For example, no point in time is - absolutely speaking - 'twice as late' as another point in time.) Given some arbitrary zero-point, one can express any point in time as an elapsed time measured from that offset. Such an arbitrary zero-point is called an epoch. This epoch-offset form is used as a semantic representation here, without implying that any system would have to implement the TS data type in that way. Systems that do not need to compute distances between points in time will not need any other representation than a calendar expression literal

A datatype containing date/time information. This datatype is a placeholder, as various platforms have differing built-in date/time datatypes. It is anticipated that this datatype will be replaced by a different datatype when transforming to a particular implementation platform.

Attribute 'PointInTime.literal' of type ' String' with cardinality of [1]

For the default Gregorian calendar the calendar expression literals of this specification conform to the constrained ISO 8601 that is defined in ISO 8824 (ASN.1) under clause 32 (generalized time) and to the HL7 version 2 TS data format.

'TS literals are simple calendar expressions, as defined by the calendar definition table. By default, the western (Gregorian) calendar shall be used. For the default Gregorian calendar the calendar expression literals of this specification conform to the constrained ISO 8601 that is defined in ISO 8824

(ASN.1) under clause 32 (generalized time) and to the HL7 Version 2 TS data type. Thus, ... western calendar expressions begin with the 4-digit year (beginning counting at zero); followed by the 2-digit month of the year (beginning counting at one); followed by the 2-digit day of the month (beginning with one); followed by the 2-digit hour of the day (beginning with zero); and so forth. For example, '200004010315' is a valid expression for April 1, 2000, 3:15 am. A calendar expression can be of variable precision, omitting parts from the right. For example, '20000401' is precise only to the day of the month. The least defined calendar period (i.e. the second) may be written as a REAL, with the number of integer digits specified, followed by the decimal point and any number of fractional digits. For example, '20000401031520.34' means April 1, 2000, 3:15 and 20.34 seconds. When other calendars are used in the future, a prefix 'GREG:' can be placed before the western (Gregorian) calendar expression to disambiguate from other calendars. Each calendar shall have its own prefix. However, the western calendar is the default if no prefix is present. In the modern Gregorian calendar (and all calendars where time of day is based on UTC), the calendar expression may contain a time zone suffix. The time zone suffix begins with a plus (+) or minus (-) followed by digits for the hour and, for non UTC times, minute cycles. UTC is designated as offset '+00' or '-00'; the ISO 8601 and ISO 8824 suffix 'Z' for UTC is not permitted.' (HL7 v3 Datatypes).

«IVL_PQ» Class: RateQuantity

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.)

Attribute 'RateQuantity.high' of type ' PhysicalQuantity' with cardinality of [1]

This is the high limit of the interval.

Attribute 'RateQuantity.low' of type ' PhysicalQuantity' with cardinality of [1]

This is the low limit of the interval.

Attribute 'RateQuantity.period' of type ' TimeQuantity' with cardinality of [1]

A time duration specifying as a reciprocal measure of the frequency at which the periodic interval repeats.

«REAL» Class: Real

A datatype containing non-whole numbers. This datatype is a placeholder, as various platforms have differing built-in floating-point datatypes. It is anticipated that this datatype will be replaced by a different datatype when transforming to a particular implementation platform.

Attribute 'Real.literal' of type ' String' with cardinality of [1]

This is a placeholder for an actual datatype that will be substituted via transformation to a platform-specific datatype.

Class: Telecommunications

A collection of electronic addresses at which the person may be reached. This includes telephones, email addresses, etc.

Attribute 'Telecommunications.addressType' of type ' AddressType' with cardinality of [1]

Indicates the kind of communications address that is contained within this class. Examples include primaryHome, Work, etc. Note that in HL7 V3, this concept is part of the Telecom datatype (the 'use code'). This concept is made explicit in this Telecommunications class, because this is a platform-independent model - non V3 implementations will need other mechanisms to deal with the type.

Attribute 'Telecommunications.effectiveDateRange' of type ' TimeInterval' with cardinality of [1]

The time period for which the phone number or communications address is valid for the person or organization. The datatype is a TimeInterval, which includes both a start date and end date, either of which may be empty.

Attribute 'Telecommunications.universalResourceId' of type ' String' with cardinality of [1]

Represents a telecommunications address at which the person or organization may be reached. Note that this property is a simply a string, the formatting of which will depend on the type of communications address employed.

«IVL_TS» Class: TimeInterval

An interval of time specified as an interval of points in time - TS.

Attribute 'TimeInterval.high' of type ' PointInTime' with cardinality of [0..1]

This is the high limit of the interval.

Attribute 'TimeInterval.low' of type ' PointInTime' with cardinality of [0..1]

This is the low limit of the interval.

Attribute 'TimeInterval.width' of type ' TimeQuantity' with cardinality of [0..1]

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.

«PQ» Class: TimeQuantity

A length of time specified as a Physical Quantity, e.g., 5 minutes, 2.5 hours.

Attribute 'TimeQuantity.unit' of type ' Code' with cardinality of [1]

The unit of measure specified in the Unified Code for Units of Measure (UCUM).

Attribute 'TimeQuantity.value' of type ' Real' with cardinality of [1]

Value of the number of time units

«AD» Class: UsMailingAddress

A specialization of MailingAddress that is used for U.S. addresses. Note that the state attribute may only contain a code for a U.S. State, territory, or APO.

Attribute 'UsMailingAddress.state' of type ' Code' with cardinality of [1]

An Address Part (ADXP) that contains a sub-unit of a state or province. A sub-unit of a country with limited sovereignty in a federally organized country.

Class: VACode

VA code class was created to support the VUID within the VA

Encounter

Encounter Domain

_Encounter

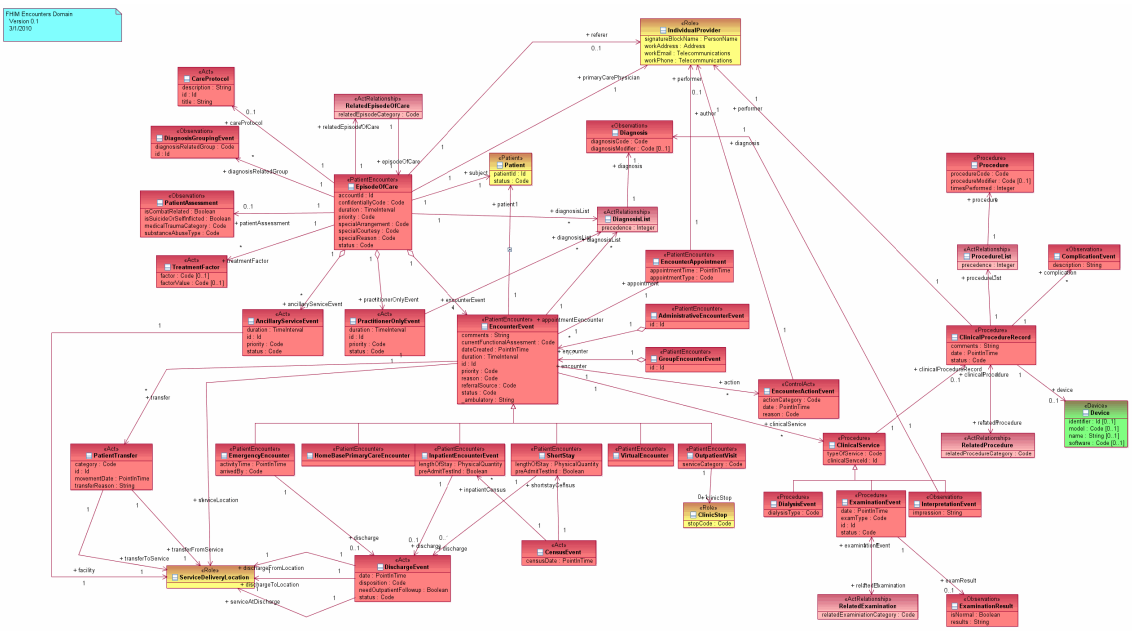

Figure _Encounter

«PatientEncounter» Class: AdministrativeEncounterEvent

A (perhaps artificial) grouping of encounters for administrative or financial purposes. There is no specific requirement that the encounters have anything particular in common.

Association 'AdministrativeEncounterEvent.encounter' of type ' EncounterEvent' with cardinality of [*]

An interaction between a patient and a practitioner at a given location under the auspices of a given organization for the purpose of providing healthcare-related service(s).

Attribute 'AdministrativeEncounterEvent.id' of type ' Id' with cardinality of [1]

The unique identifier for the administrative grouping encounters.

«Act» Class: AncillaryServiceEvent

An interaction between a patient and a practitioner in which the practitioner does not exercise independent judgement. For example, a lab test. The lab technician may generate results, but the

physician issues the diagnosis.

Attribute 'AncillaryServiceEvent.duration' of type ' TimeInterval' with cardinality of [1]

"The time interval starting with the administrative onset of the encounter (e.g. admission, registration, patient arrival) and ending with the patient's departure (e.g. discharge). Note_1: for active encounters the end of the effectiveTime range is the anticipated end date-time. Note_2: all messages, except the "nullify" message, require at least a starting time." (HL7). This is the start and end date/times of the Ancillary Service Event.

Attribute 'AncillaryServiceEvent.facility' of type ' ServiceDeliveryLocation' with cardinality of [1]

A building or place that provides a particular service or is used for a patient's encounter

Attribute 'AncillaryServiceEvent.id' of type ' Id' with cardinality of [1]

Unique identifier for the event.

Attribute 'AncillaryServiceEvent.priority' of type ' Code' with cardinality of [1]

"A value representing the urgency for the encounter" (HL7)

Attribute 'AncillaryServiceEvent.status' of type ' Code' with cardinality of [1]

A value specifying the state of this patient encounter (based on the RIM Act class state machine), for example, active, aborted, completed

«Act» Class: CareProtocol

A proposed or tentative course of action for the maintenance and restoration of health by the treatment and prevention of disease by trained and licensed professionals.

«Act» Class: CensusEvent

Date that an Inpatient or ShortStay Encounter was included in the Census. Census is taken 3 or 4 times a year at 11:59 pm. Only those Encounters that are active (admitted), at the time the Census Event triggers receive a date timestamps.

Attribute 'CensusEvent.censusDate' of type ' PointInTime' with cardinality of [1]

This field contains the date the census was taken for this Encounter

Association 'CensusEvent.inpatientCensus' of type ' InpatientEncounterEvent' with cardinality of [*]

Inpatient Encounter was included in the Census. Census is taken 3 or 4 times a year at 11:59 pm. Only those Encounters that are active (admitted), at the time the Census Event triggers receive a date timestamps.

Association 'CensusEvent.shortstayCensus' of type ' ShortStay' with cardinality of [*]

ShortStay Encounter was included in the Census. Census is taken 3 or 4 times a year at 11:59

pm. Only those Encounters that are active (admitted), at the time the Census Event triggers receive a date timestamps.

«Procedure» Class: ClinicalProcedureRecord

Clinical Procedures provided and or performed for the patient during the Encounter.

Attribute 'ClinicalProcedureRecord.comments' of type ' String' with cardinality of [1]

Textual Description of the procedure.

Association 'ClinicalProcedureRecord.complication' of type ' ComplicationEvent' with cardinality of [*]

An undesirable event experienced by a patient whilst undergoing a clinical procedure, especially if the event was caused by the procedure itself.

Attribute 'ClinicalProcedureRecord.date' of type ' PointInTime' with cardinality of [1]

The date and time the professional service was performed

Attribute 'ClinicalProcedureRecord.device' of type ' Device' with cardinality of [0..1]

"A contrivance or an invention serving a particular purpose, especially a machine used to perform one or more relatively simple tasks." (The American Heritage® Stedman's Medical Dictionary)

Attribute 'ClinicalProcedureRecord.status' of type ' Code' with cardinality of [1]

A value specifying the state of this patient encounter (based on the RIM Act class state machine), for example, active, aborted, completed

«Procedure» Class: ClinicalService

The provision of healthcare-related service(s) within the context of an encounter.

Attribute 'ClinicalService.clinicalServceId' of type ' Id' with cardinality of [1]

Unique Identifier for this Clinical service .

Attribute 'ClinicalService.typeOfService' of type ' Code' with cardinality of [1]

Clinical Speciality ID

«Observation» Class: ComplicationEvent

An undesirable event experienced by a patient whilst undergoing a clinical procedure, especially if the event was caused by the procedure itself.

Attribute 'ComplicationEvent.description' of type ' String' with cardinality of [1]

Describes the complication that may have occurred during the exam procedure.

«Observation» Class: DiagnosisGroupingEvent

The act or process of grouping diagnosis that determined the nature and cause of a disease or injury through evaluation of patient history, examination, and review of laboratory data.

Attribute 'DiagnosisGroupingEvent.diagnosisRelatedGroup' of type ' Code' with cardinality of [1]

Contains the diagnosis grouping code.

Attribute 'DiagnosisGroupingEvent.id' of type ' Id' with cardinality of [1]

Unique Identifier for the Grouping type

«Procedure» Class: DialysisEvent

dialysis type

Attribute 'DialysisEvent.dialysisType' of type ' Code' with cardinality of [1]

Identifies the type of dialysis for this Encounter.

«Act» Class: DischargeEvent

The release of a patient from a course of care.

Attribute 'DischargeEvent.date' of type ' PointInTime' with cardinality of [1]

The date this patient was dispositioned from the medical center.

Attribute 'DischargeEvent.dischargeFromLocation' of type ' ServiceDeliveryLocation' with cardinality of [1]

"The location to which the patient is assigned. It is a role played by a place at which services may be provided. Note that a single physical place can play multiple service delivery location roles each with its own attributes. For example, a Podiatry clinic and Research clinic may meet on alternate days in the same physical location; each clinic uses its own mailing address and telephone number." (HL7)

Attribute 'DischargeEvent.dischargeToLocation' of type ' ServiceDeliveryLocation' with cardinality of [1]

"The location to which the patient is assigned. It is a role played by a place at which services may be provided. Note that a single physical place can play multiple service delivery location roles each with its own attributes. For example, a Podiatry clinic and Research clinic may meet on alternate days in the same physical location; each clinic uses its own mailing address and telephone number." (HL7)

Attribute 'DischargeEvent.disposition' of type ' Code' with cardinality of [1]

A code depicting the disposition of the patient at the time of discharge (e.g., discharged to home, expired, against medical advice, etc.). While the encounter is still "active" (the encounter does not have an end date yet) this attribute should be interpreted as the expected discharge disposition. When the

encounter is "completed" this attribute contains the actual discharge disposition. Note: in the US realm this references the UB92 FL 22 - Patient Status value set.

Attribute 'DischargeEvent.serviceAtDischarge' of type ' ServiceDeliveryLocation' with cardinality of [1]

"The location to which the patient is assigned. It is a role played by a place at which services may be provided. Note that a single physical place can play multiple service delivery location roles each with its own attributes. For example, a Podiatry clinic and Research clinic may meet on alternate days in the same physical location; each clinic uses its own mailing address and telephone number." (HL7)

Attribute 'DischargeEvent.status' of type ' Code' with cardinality of [1]

This field identifies the discharge status for the patient during this episode of care. Suggested Values are: 1=Bed Occupant, 2=On Pass, 3=On Leave, 4=ASIH, ETC.

«PatientEncounter» Class: EmergencyEncounter

Emergency is an encounter without a scheduled appointment and urgent clinical services are required.

Attribute 'EmergencyEncounter.activityTime' of type ' PointInTime' with cardinality of [1]

"The time interval starting with the administrative onset of the encounter (e.g. admission, registration, patient arrival) and ending with the patient's departure (e.g. discharge). (HL7).

Attribute 'EmergencyEncounter.arrivedBy' of type ' Code' with cardinality of [1]

Identifies the mode of transportation. ie. ambulance, car, walking etc.

Association 'EmergencyEncounter.discharge' of type ' DischargeEvent' with cardinality of [0..1]

The release of a patient from a course of care.

«ControlAct» Class: EncounterActionEvent

An action that modifies the state of the encounter.

Attribute 'EncounterActionEvent.actionCategory' of type ' Code' with cardinality of [1]

Identifies the category of the Activity Event. For example, Hold, Release, Stop, Cancel, etc.

Attribute 'EncounterActionEvent.date' of type ' PointInTime' with cardinality of [1]

The date that the action took place

Attribute 'EncounterActionEvent.reason' of type ' Code' with cardinality of [1]

An indication of why the action occurred.

«PatientEncounter» Class: EncounterAppointment

Scheduled time of the Encounter.

Association 'EncounterAppointment.appointmentEencounter' of type ' EncounterEvent' with cardinality of [1]

An interaction between a patient and a practitioner at a given location under the auspices of a given organization for the purpose of providing healthcare-related service(s).

Attribute 'EncounterAppointment.appointmentTime' of type ' PointInTime' with cardinality of [1]

The actual date and time for the appointment of the scheduled visit.

Attribute 'EncounterAppointment.appointmentType' of type ' Code' with cardinality of [1]

Identifies the Type of visit. Suggested Code Value: 'I' FOR IHS; 'C' FOR CONTRACT; 'T' FOR TRIBAL; 'O' FOR OTHER; '6' FOR 638 PROGRAM; 'V' FOR VA., ETC.

«PatientEncounter» Class: EncounterEvent

An interaction between a patient and a practitioner under the auspices of a given organization for the purpose of providing healthcare-related service(s). It is important to understand that if the there is a change in provider or organization, by definition a new encounter will be generated. For example, if a patient is moved from Surgery to Post-Op, a new encounter is generated. Similarly, if a patient receives care from 2 nurses while in Post-Op, there will be 2 encounters.

NewDiagram

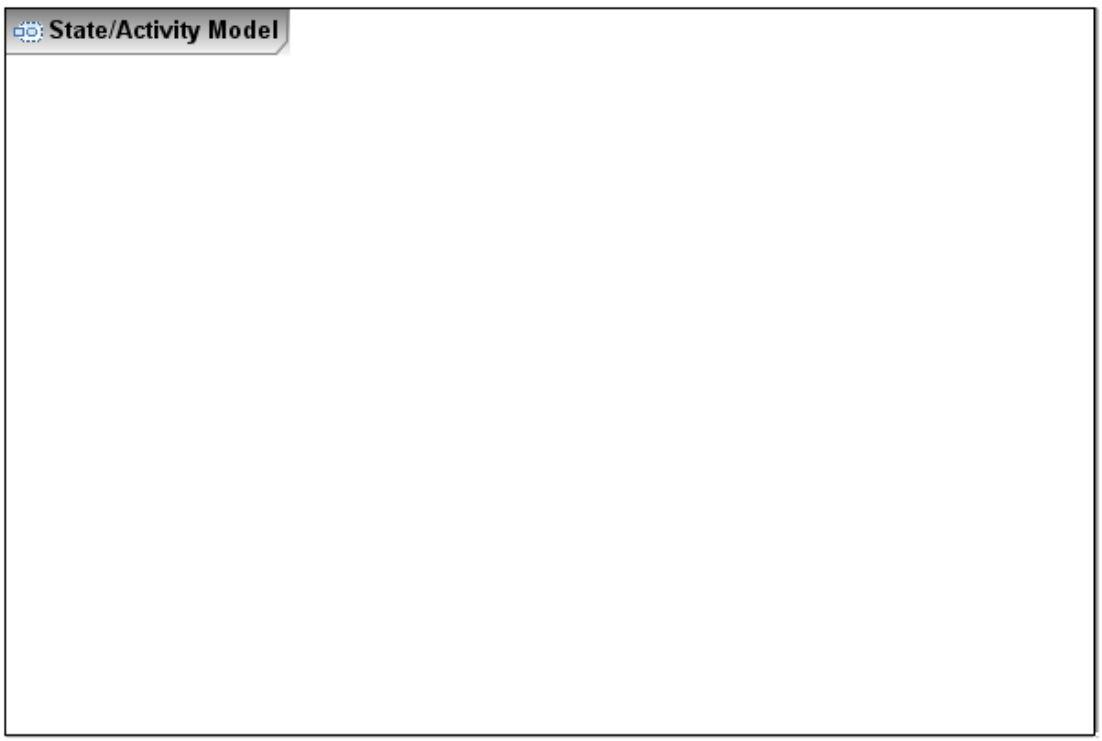

Figure NewDiagram

Association 'EncounterEvent.action' of type ' EncounterActionEvent' with cardinality of [*]

An action that modifies the state of the encounter.

Association 'EncounterEvent.appointment' of type ' EncounterAppointment' with cardinality of [1]

An arrangement to do something or meet someone at a particular time and place.

Attribute 'EncounterEvent.comments' of type ' String' with cardinality of [1]

A field to add comments as they pertain to a visit.

Attribute 'EncounterEvent.currentFunctionalAssesment' of type ' Code' with cardinality of [1]

Current level of stress.

Attribute 'EncounterEvent.dateCreated' of type ' PointInTime' with cardinality of [1]

Date the visit was entered / modified.

Attribute 'EncounterEvent.duration' of type ' TimeInterval' with cardinality of [1]

"The time interval starting with the administrative onset of the encounter (e.g. admission, registration, patient arrival) and ending with the patient's departure (e.g. discharge). Note_1: for active encounters the end of the effectiveTime range is the anticipated end date-time. Note_2: all messages, except the "nullify" message, require at least a starting time." (HL7). This is the start and end date/times of the Encounter.

Attribute 'EncounterEvent.evaluation' of type ' GlobalAssessmentOfFunctioning' with cardinality of [1]

Contains the clinician's evaluation of a person's psychological, social and occupation functioning on the Global Assessment of Functioning (GAF) Scale.

Attribute 'EncounterEvent.evaluationPyscoStressor' of type ' PsychoSocialStressor' with cardinality of [1]

Provides the evaluation of the Patient's mental stress level.

Attribute 'EncounterEvent.id' of type ' Id' with cardinality of [1]

Unique identifier for this Encounter

Attribute 'EncounterEvent.patient' of type ' Patient' with cardinality of [1]

The patient who is the subject of the Episode of Care.

Attribute 'EncounterEvent.priority' of type ' Code' with cardinality of [1]

"A value representing the urgency for the encounter" (HL7)

Attribute 'EncounterEvent.reason' of type ' Code' with cardinality of [1]

"A set of values specifying the non-medical reasons for this encounter. Examples are "Medical Necessity", "Patient's Request" and "Dependency". Note: medical reason(s) for the encounter are specified as associated diagnoses." (HL7)

Attribute 'EncounterEvent.referralSource' of type ' Code' with cardinality of [1]

Identifies the source of the admission or encounter. In other words, identified where the patient was before being sent for this encounter. Possible values include: Community, Other facility, etc.

Attribute 'EncounterEvent.serviceLocation' of type ' ServiceDeliveryLocation' with cardinality of [1]

"The location to which the patient is assigned. It is a role played by a place at which services may be provided. Note that a single physical place can play multiple service delivery location roles each with its own attributes. For example, a Podiatry clinic and Research clinic may meet on alternate days in the same physical location; each clinic uses its own mailing address and telephone number." (HL7)

Attribute 'EncounterEvent.status' of type ' Code' with cardinality of [1]

A value specifying the state of this patient encounter (based on the RIM Act class state machine), for example, active, aborted, completed

Association 'EncounterEvent.transfer' of type ' PatientTransfer' with cardinality of [*]

The act of transferring a patient from one location or responsible organization to another. Note that a transfer from organization to another will, by definition, trigger a new encounter. Note that a transfer from one location to another may trigger a new encounter depending on whether the responsible organization has changed. A movement from one bed within the same ward to another probably will not, but a movement from one ward to another probably would.

«PatientEncounter» Class: EpisodeOfCare

A collection of encounters that can be clustered based on a common clinically relevant factor such as the provider, diagnosis, health factor, or long-term problem.

Attribute 'EpisodeOfCare.accountId' of type ' Id' with cardinality of [1]

This field contains the unique identification number for this episode of care. This field associates the current encounter with a parent encounter.

Association 'EpisodeOfCare.careProtocol' of type ' CareProtocol' with cardinality of [0..1]

TA proposed or tentative course of action for the maintenance and restoration of health by the treatment and prevention of disease by trained and licensed professionals.

Attribute 'EpisodeOfCare.confidentiallyCode' of type ' Code' with cardinality of [1]

Contains a set of values that control the disclosure of information about this patient

Association 'EpisodeOfCare.diagnosisRelatedGroup' of type ' DiagnosisGroupingEvent' with cardinality of [*]

Provides the diagnosis grouping for the diagnosis/s provide for the patients visit

Attribute 'EpisodeOfCare.duration' of type ' TimeInterval' with cardinality of [1]

"The time interval starting with the administrative onset of the encounter (e.g. admission, registration, patient arrival) and ending with the patient's departure (e.g. discharge). Note_1: for active encounters the end of the effectiveTime range is the anticipated end date-time. Note_2: all messages, except the "nullify" message, require at least a starting time." (HL7). This is the start and end date/times of the Encounter.

Association 'EpisodeOfCare.patientAssessment' of type ' PatientAssessment' with cardinality of [0..1]

Identifies whether the encounter was due to a suicide attempt or self inflicted wound.

Attribute 'EpisodeOfCare.priority' of type ' Code' with cardinality of [1]

"A value representing the urgency for the encounter" (HL7). Identifies the complexity of the patient care, resource intensiveness of the patient care, or the urgency of the patient's medical condition upon arrival. Values may be derived from formal acuity coding schemes such as RBS

Attribute 'EpisodeOfCare.specialArrangement' of type ' Code' with cardinality of [1]

A set of values representing the types of special arrangements provided or to be provided for this patient encounter (e.g., wheelchair, stretcher, interpreter, attendant, seeing eye dog)

Attribute 'EpisodeOfCare.specialCourtesy' of type ' Code' with cardinality of [1]

A set of values identifying special courtesies extended or to be extended to the patient for this encounter (e.g., no courtesies, extended courtesies, professional courtesy, VIP courtesies).

Attribute 'EpisodeOfCare.specialReason' of type ' Code' with cardinality of [1]

"A set of values specifying the non-medical reasons for this encounter. Examples are "Medical Necessity", "Patient's Request" and "Dependency". Note: medical reason(s) for the encounter are specified as associated diagnoses." (HL7)

Attribute 'EpisodeOfCare.status' of type ' Code' with cardinality of [1]

A value specifying the state of this patient encounter (based on the RIM Act class state machine), for example, active, aborted, completed etc.

Attribute 'EpisodeOfCare.subject' of type ' Patient' with cardinality of [1]

identifies the patient for the Episode of care

«Procedure» Class: ExaminationEvent

"An investigation or inspection for the purpose of diagnosis" (The American Heritage Stedman's Medical Dictionary)

Attribute 'ExaminationEvent.date' of type ' PointInTime' with cardinality of [1]

The date and time of the examination for the patient.

Association 'ExaminationEvent.examResult' of type ' ExaminationResult' with cardinality of [0..1]

The consequence of a particular action, operation, or course; an outcome.

Attribute 'ExaminationEvent.examType' of type ' Code' with cardinality of [1]

Contains the code that identifies the type of examination performed for the patient.

Attribute 'ExaminationEvent.id' of type ' Id' with cardinality of [1]

Unique identifier for the is Examination occurrence.

Attribute 'ExaminationEvent.status' of type ' Code' with cardinality of [1]

The status of the examination for the patient.

«Observation» Class: ExaminationResult

Contains the results of the examination for the patient.

Attribute 'ExaminationResult.isNormal' of type ' Boolean' with cardinality of [1]

Identifies the results of the exam suggested values: A=Abnormal, N=Normal, etc

Attribute 'ExaminationResult.results' of type ' String' with cardinality of [1]

The consequence of a particular action, operation, or course; an outcome.

«PatientEncounter» Class: GroupEncounterEvent

A collection of like Encounters for multiple patients i.e. Group Therapy sessions. Note that each patient has its own Episode of Care.

Association 'GroupEncounterEvent.encounter' of type ' EncounterEvent' with cardinality of [1..*]

An interaction between a patient and a practitioner at a given location under the auspices of a given organization for the purpose of providing healthcare-related service(s).

Attribute 'GroupEncounterEvent.id' of type ' Id' with cardinality of [1]

Uniquely identifies the group encounter.

«PatientEncounter» Class: HomeBasePrimaryCareEncounter

Patient is being treated "In-Home" for this encounter.

«PatientEncounter» Class: InpatientEncounterEvent

Patient has been admitted to the facility and assigned a bed.

Association 'InpatientEncounterEvent.discharge' of type ' DischargeEvent' with cardinality of [0..1]

The release of a patient from a course of care.

Attribute 'InpatientEncounterEvent.lengthOfStay' of type ' PhysicalQuantity' with cardinality of [1]

Will contain the actual, calculated quantity (the actual days quantity cannot be simply calculated from the admission and discharge dates because of possible leaves of absence) instead of the expected length of stay.

Attribute 'InpatientEncounterEvent.preAdmitTestInd' of type ' Boolean' with cardinality of [1]

Indicates whether tests are required prior to this encounter.

«Observation» Class: InterpretationEvent

The act or process of explaining the meaning of an image or test.

Attribute 'InterpretationEvent.impression' of type ' String' with cardinality of [1]

A narrative explaining the meaning of an image or test.

«PatientEncounter» Class: OutpatientVisit

One or more encounters at one site within a specified length of time.

Attribute 'OutpatientVisit.serviceCategory' of type ' Code' with cardinality of [1]

A categorization of the outpatient visit, based on the services provided and/or the circumstances

under which the visit occurred. Possible values include: Ambulatory, In-Hospital (i.e., an patient made an "outpatient" visit while concurrently being an inpatient), Day Surgery, Observation, Nursing Home, Day Hospitalization, etc.

«Observation» Class: PatientAssessment

Identifies whether the encounter was due to a suicide attempt or self inflicted wound.

Attribute 'PatientAssessment.isCombatRelated' of type ' Boolean' with cardinality of [1]

Indicates whether the purpose of the encounter was due to a combat-related injury.

Attribute 'PatientAssessment.isSuicideOrSelfInflicted' of type ' Boolean' with cardinality of [1]

This field identifies whether the suicide was attempted or accomplished or if a self inflicted injury occurred. Suggested values are:1=Attempted Suicide, 2=Accomplished Suicide, 3=Self Inflicted Injury, ETC.

Attribute 'PatientAssessment.medicalTraumaCategory' of type ' Code' with cardinality of [1]

Identifies whether an injury (as a wound) to living tissue caused by an extrinsic agent exists.

Attribute 'PatientAssessment.substanceAbuseType' of type ' Code' with cardinality of [1]

Identifies the substance abused by the patient.

«Act» Class: PatientTransfer

The act of transferring a patient from one location or responsible organization to another. Note that a transfer from organization to another will, by definition, trigger a new encounter. Note that a transfer from one location to another may trigger a new encounter depending on whether the responsible organization has changed. A movement from one bed within the same ward to another probably will not, but a movement from one ward to another probably would.

Attribute 'PatientTransfer.category' of type ' Code' with cardinality of [1]

Categorizes the patient transfer. Possible values include Admission, Transfer, Discharge, etc.

Attribute 'PatientTransfer.id' of type ' Id' with cardinality of [1]

Uniquely identifies the patient transfer

Attribute 'PatientTransfer.movementDate' of type ' PointInTime' with cardinality of [1]

Date of the movement of the patient.

Attribute 'PatientTransfer.transferFromService' of type ' ServiceDeliveryLocation' with cardinality of [1]

"The location to which the patient is assigned. It is a role played by a place at which services may be provided. Note that a single physical place can play multiple service delivery location roles each

with its own attributes. For example, a Podiatry clinic and Research clinic may meet on alternate days in the same physical location; each clinic uses its own mailing address and telephone number." (HL7)

Attribute 'PatientTransfer.transferReason' of type ' String' with cardinality of [1]

This field contains the short description of the reason for a patient location change.

Attribute 'PatientTransfer.transferToService' of type ' ServiceDeliveryLocation' with cardinality of [1]

"The location to which the patient is assigned. It is a role played by a place at which services may be provided. Note that a single physical place can play multiple service delivery location roles each with its own attributes. For example, a Podiatry clinic and Research clinic may meet on alternate days in the same physical location; each clinic uses its own mailing address and telephone number." (HL7)

«Act» Class: PractitionerOnlyEvent

An action taken by a practitioner on the patient's behalf in which the patient is not present. For example, a radiologist reading an x-ray.

Attribute 'PractitionerOnlyEvent.duration' of type ' TimeInterval' with cardinality of [1]

"The time interval starting with the administrative onset of the encounter (e.g. admission, registration, patient arrival) and ending with the patient's departure (e.g. discharge). Note_1: for active encounters the end of the effectiveTime range is the anticipated end date-time. Note_2: all messages, except the "nullify" message, require at least a starting time." (HL7). This is the start and end date/times of the Practitioner-Only Event.

Attribute 'PractitionerOnlyEvent.id' of type ' Id' with cardinality of [1]

Unique identifier for the event.

Attribute 'PractitionerOnlyEvent.priority' of type ' Code' with cardinality of [1]

"A value representing the urgency for the encounter" (HL7)

Attribute 'PractitionerOnlyEvent.status' of type ' Code' with cardinality of [1]

A value specifying the state of this patient encounter (based on the RIM Act class state machine), for example, active, aborted, completed

«PatientEncounter» Class: ShortStay

An encounter that is similar to outpatient but the patient is admitted to a bed.

Association 'ShortStay.discharge' of type ' DischargeEvent' with cardinality of [0..1]

The release of a patient from a course of care.

Attribute 'ShortStay.lengthOfStay' of type ' PhysicalQuantity' with cardinality of [1]

Will contain the actual, calculated quantity (the actual days quantity cannot be simply calculated

from the admission and discharge dates because of possible leaves of absence) instead of the expected length of stay.

Attribute 'ShortStay.preAdmitTestInd' of type ' Boolean' with cardinality of [1]

Indicates whether tests are required prior to this encounter.

«PatientEncounter» Class: VirtualEncounter

Services provided includes Telehealth, Web health etc.

ProblemList

ProblemList

_ProblemList

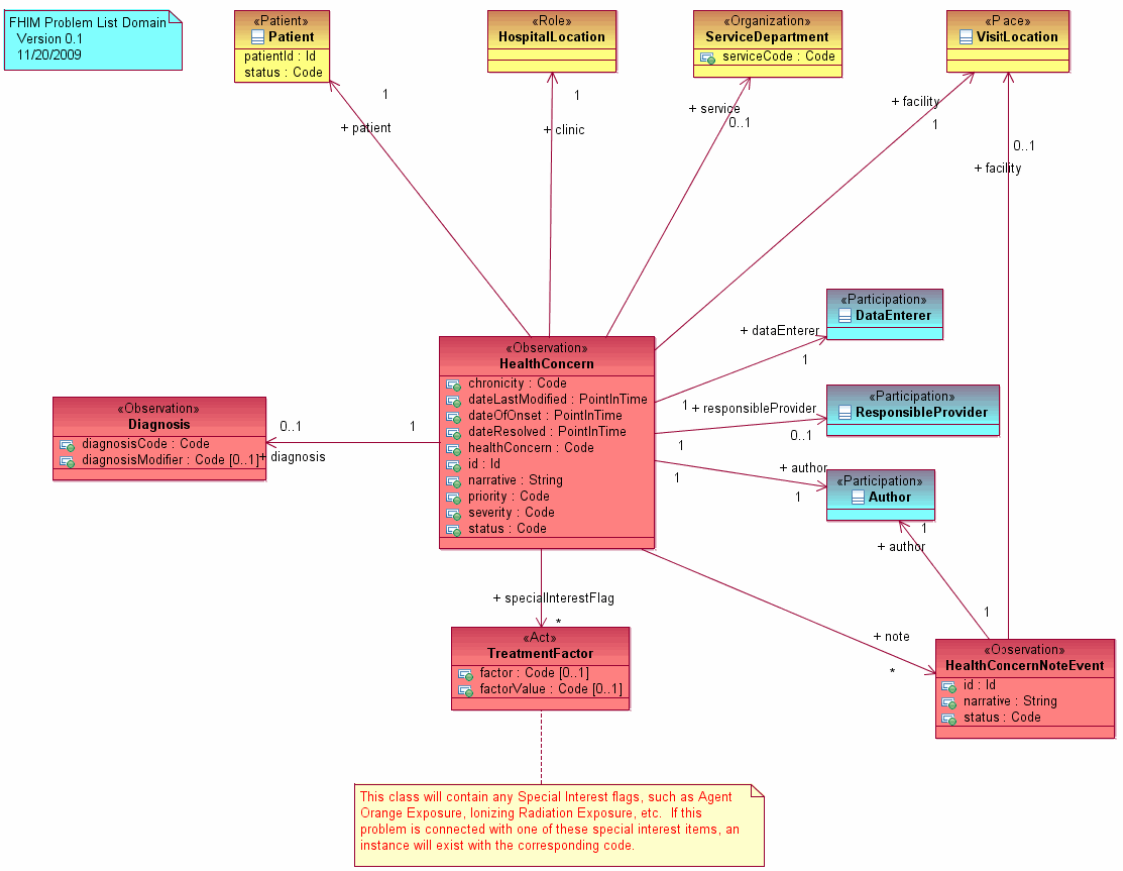

Figure _ProblemList

«Observation» Class: HealthConcern

Observation of the problem in a narrative description of the problem.

Attribute 'HealthConcern.chronicity' of type ' Code' with cardinality of [1]

This is a flag to indicate how critical this problem is for this patient; problems marked as Acute will be flagged on the Problem List display. A=Acute, C=Chronic

Attribute 'HealthConcern.clinic' of type ' HospitalLocation' with cardinality of [1]

A pointer to the facility/ clinic file identifying the facility in which this patient is being seen for this

problem.

Attribute 'HealthConcern.dateLastModified' of type ' PointInTime' with cardinality of [1]

The date and time the problem being observed is last modified.

Attribute 'HealthConcern.facility' of type ' VisitLocation' with cardinality of [1]

A pointer to Location file identifying the location at which this problem was originally observed and documented.

Attribute 'HealthConcern.id' of type ' Id' with cardinality of [1]

A Unique internal identifier for Problem List File.

Association 'HealthConcern.note' of type ' HealthConcernNoteEvent' with cardinality of [*]

Note/s providing additional textual description of the problem.

Attribute 'HealthConcern.patient' of type ' Patient' with cardinality of [1]

The patient whose problems are being observed and documented.

Attribute 'HealthConcern.priority' of type ' Code' with cardinality of [1]

This is the current activity status of this problem, whether active or inactive; if more detail is needed, a notation may be filed with this problem. A=Active, I=Inactive.

Attribute 'HealthConcern.service' of type ' ServiceDepartment' with cardinality of [0..1]

A pointer to the service file identifying the service primarily involved in the treatment of this problem.

Attribute 'HealthConcern.specialInterestFlag' of type ' TreatmentFactor' with cardinality of [*]

A pointer to Treatment Factor class identifying the treatment factor and its associated value. e.g. Agent Orange Exposure, Ionizing Radiation Exposure, Combat Veterans, Shipboard Hazard & Defense.

Attribute 'HealthConcern.status' of type ' Code' with cardinality of [1]

This is the current activity status of this problem, whether active or inactive; if more detail is needed, a notation may be filed with this problem. A=Active, I=Inactive.

«Observation» Class: HealthConcernNoteEvent

Note/s providing additional textual description of the problem for the patient.

Attribute 'HealthConcernNoteEvent.facility' of type ' VisitLocation' with cardinality of [0..1]

A pointer to Location file identifying the location at which the notes in this multiple originated.

Attribute 'HealthConcernNoteEvent.id' of type ' Id' with cardinality of [1]

Unique identifies for the additional problem notes for the patient.

Attribute 'HealthConcernNoteEvent.narrative' of type ' String' with cardinality of [1]

Additional information on the observed problem

Attribute 'HealthConcernNoteEvent.status' of type ' Code' with cardinality of [1]

This flag indicates if this note is currently active.