DHS GEOSPATIAL DATA MODEL

DHS Geospatial Management Office

VERSION 1.1

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1 Executive Summary

The Department of Homeland Security (DHS), Office of the Chief Information Officer (OCIO), Geospatial Management Office (GMO) has developed this draft DHS Geospatial Data Model (DHS GDM) in support of urgent DHS mission requirements. This DHS GDM is a standards-based logical data model to be used for collection, discovery, storage, and sharing of homeland security geospatial data.

This version 1.0 document is the deliverable of Phase I of a three phase model development process. The second phase, due to complete September 1, 2006 will harmonize the content of the model both internally and externally with other important DHS data models. The final phase will deliver tools to better support the uptake and use of the model in the components, as well as address feedback from early adopters of the model, and is due to complete December 1, 2006.

2 Introduction

The Department of Homeland Security (DHS), Office of the Chief Information Officer (OCIO), Geospatial Management Office (GMO) has developed this draft DHS Geospatial Data Model (DHS GDM) in support of urgent DHS mission requirements. This DHS GDM is a standards-based logical data model to be used for collection, discovery, storage, and sharing of homeland security geospatial data. The model will support development of the Department's services-based geospatial architecture, and will serve as an extract, transform, and load (ETL) template for content aggregation. The DHS GDM draws from three major bodies of work:

- The National Information Exchange Model (NIEM)[1] ;
- The Federal Geographic Data Committee (FGDC) Framework Data Content Standard[2] ; and
- The Project Bluebook[3] model.

The resulting, unified, model is a neutral baseline from which the Department (and its allies) may construct a federated network of interoperable geospatial data stores.

The reader unfamiliar with logical data models is provided with short definitional and needs discussion in the next two sections. Those familiar with these concepts might choose to move directly to section 2.3.

2.1 What is a Logical Data Model?

A logical data model is a representation[1] of the information requirements of a business area; it is not a database schema.

The word logical is very critical because it modifies the phrase data modeling to a more specific activity. A logical data model is independent of physical, data storage devices and data transfer encodings. This is the key concept of the logical data model. The reason that a logical data model must be independent of technology is simply because technology is changing so rapidly.

2.2 Why do we need a Logical Data Model?

Most business areas do not change as rapidly as technology. Think of industries that have been in business for 100 or 200 years. Insurance companies provide coverage, receive payments, and pay claims; and have done so for their entire history. They performed this business without computers and now perform it on mainframes, minicomputers, PCs, networks, and the Internet. What the business does, has not changed, but how the work is accomplished, has changed significantly. This difference between WHAT the business requirements are and HOW they are accomplished describes the difference between a logical data model and a physical database or data transfer encoding.

[1] The DHS GDM will be maintained and updated as a Unified Modeling Language (UML) model using a UML modeling tool that can be used to automatically generate XML Schema and Data Dictionary representations of the DHS GDM for use by providers of data and software. This modeling tool can also generate XML Model Interchange (XMI) files for sharing with other modeling tools.

When a change request or new technology comes along, analysts with access to a logical data model do not need to go back to the business people and ask: “What do you do?” and “What data elements do you need to support your business?” We, as Information Technology professionals, should review our logical models—our understanding of the business requirements and offer suggestions for implementing the changes, or suggest how the new technology could change the way the business requirements are accomplished. A logical data model built and maintained for the geospatial business area will allow the provision of the service just discussed.

Furthermore, the need for this model is rooted in two primary challenges relating to the collection and management of geospatial information in support of a DHS Geospatial Data Warehouse. These are:

- Geospatial information is expensive to collect (or produce); and
- Geospatial information is typically collected for specific purposes; therefore it often reflects that purpose rather explicitly, making it difficult and expensive or even impossible to repurpose.

The DHS GDM will provide a common target to which collection and ETL efforts can be aimed such that the results will be much more useful and interoperable with the collection and ETL efforts of others and, eventually, will lead to a better and more complete national coverage.

2.3 What is in this document?

This document contains:

- Section 3—a discussion of how the DHS GDM meets the business requirements of DHS for a logical model (things that influence the choice of source material);
- Section 4—a description of the modeling effort in terms of the source material (things that shaped the content of the model);
- Section 5—a discussion of modeling considerations (things that shaped the form of the model);
- Section 0—an overview on the overall structure of the model;
- Section 7—an overview of each of the major packages in the model;
- Section 8—a discussion of implementation issues and recommendations;
- Annex A—list of references;
- Annex B—an overview of UML modeling notation;
- Annex C—The DHS GDM UML model and data dictionaries

3 Business Requirements

In order to support the business requirements of DHS the DHS GDM must:

- **Support DHS Business Missions**—an extensive analysis of the DHS business with respect to geospatial information was conducted soon after the Geospatial Management Office was created. This analysis led to the creation of the “Geospatial View of the DHS Enterprise Architecture” (GEA). The GEA contained

eight key mission-oriented geospatial data types[2] including 1) Location Object, 2) Feature, 3) Feature Collection, 4) Coverage, 5) Mobile Object, 6) Observation, 7) Route, and 8) Structure. Later a ninth type, the Map Object, was added. These nine types have been subsequently submitted as NIEM and are included in this DHS GDM as key set of elements of the model. The FGDC Framework (proven over years of collective experience with geospatial information in the US Federal Government) and Project Bluebook content (proven over the course of several pilot activities within Project Homeland) complete the DHS GDM and together they provide a substantial basis for meeting DHS business mission requirements.

- **Enable Data Exchange among DHS Components**—much of the DHS GDM content is already represented in an XML Schema form that is suitable for inclusion in the design of specific information exchange packages. In fact, the NIEM was specifically developed with information exchange in mind. Further work is required to ensure that the other elements of the DHS GDM directly support such information exchange.
- **Build a foundation for SOA-based geospatial data warehousing at DHS**—most SOA best practices documentation recognizes that a logical data model is an essential component of a successful SOA-based enterprise.
- **Enable ETL Processes with States & Locals**—while far from actually arranging for ETL processes that are active and continuous with States and Locals, a well-structured and standards-bases logical data model will provide a good basis for developing effective ETL processes. Implementation guidance is included in this document as a starting point for accomplishing the final goal.
- **Comply with FGDC Standards and Guidelines**—the DHS GDM includes the FGDC Framework as its description of the seven important core themes. Furthermore, the DHS GDM follows the same modeling and data dictionary guidelines as the FGDC Framework.
- **Align with DHS Enterprise Architecture (EA), DHS Geospatial Enterprise Architecture (GEA), DHS Geospatial Data Warehousing Strategy**—this model has been specifically designed to accomplish alignment with the DHS EA, DHS GEA, and the DHS Geospatial Data Warehousing Strategy.
- **Be Public Accessible (Not FOUO or SBU)**—much care has been taken to avoid using sources for this DHS GDM that would require the resulting model to be classified as For Official Use Only or Sensitive But Unclassified.
- **Leverage Existing Data Models**—the DHS GDM is based on three of the most applicable data model sources and via the NIEM, also reflects the data modeling best practices of the geospatial industry.
- **Have Sufficient Documentation for Future Implementation**—this document serves as the starting point for implementation, and plans are in place to continually evolve and improve this document.

2 DHS Geospatial Management Office, Homeland Security Geospatial Enterprise Architecture, Attachment G Data 1 Geospatial Entities, Version 0.6.1, April 13, 2004

4 Model Development Phases and Scope

The Geospatial Data Model by its very nature builds on other models and schema and does not attempt to repeat the vast quantity of information contained in the documentation of those models and schemas. The work of developing the DHS GDM is in unifying, into a logical model expressed in UML, models from various sources and forms. The requirement to provide a useful transition strategy for DHS and its allies that wish to support the DHS GDM leads to a three phase development effort and transition path. Phase I (resulting in this version 1.0) consists of bringing together major model components from existing models and aligning them along the "form" axis; that is to ensure that they are all in a consistent modeling notation and style and are ready for Phase II. During Phase II, the "content" phase, the model components will be internally and externally harmonized. The Phase I model elements that do not survive the harmonization, or that change drastically during Phase II, will be retained as "legacy adapters" in the resultant version 1.1 and targeted for deprecation in version 2.0. In Phase III the first feedback from the field will be incorporated and "tools" will be developed to help users implement the DHS GDM. In Phase III (resulting in version 2.0) and beyond, deprecated elements will be removed from the model, more feedback will be incorporated, and more tools will be provided to support implementers.

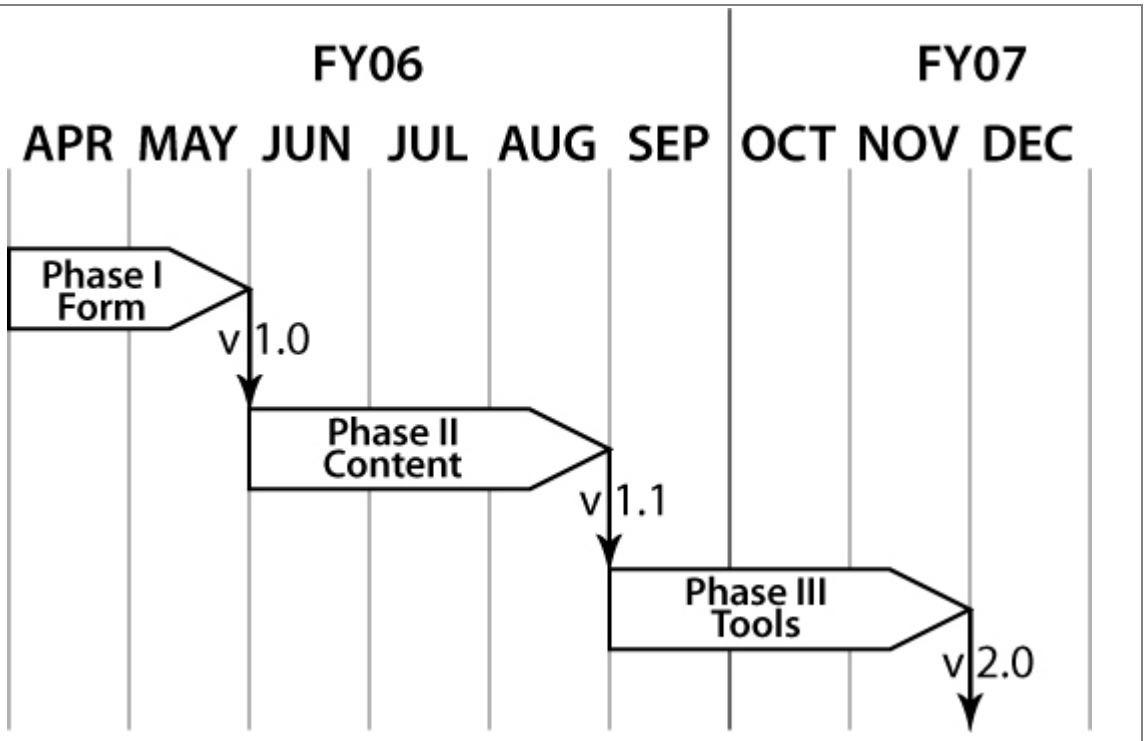

Figure 1: DHS GDM Schedule

The work of unification (via model harmonization) will continue beyond this particular release (version 1.0) of the DHS GDM. This section presents what is in the final scope of the version 1.0 model by identifying the elements of the source that are in this version.

4.1 FGDC Framework Model Components

The FGDC Framework components of the model describe the seven “framework” data themes and all are included in the model. The seven themes are:

- **Cadastral** data describe the geographic extent of past, current, and future right, title, and interest in real property, including above, surface, and below ground and water, and the conceptual structure to support the description of that geographic extent
- **Digital Orthoimages** are georeferenced images of the Earth's surface for which image object displacement caused by sensor orientation, sensor distortions, and terrain relief has been removed.
- **Elevation** data may be modeled in various forms, such as in an evenly spaced grid or as irregularly spaced points (triangulated irregular network, hypsography, or mass points).
- **Geodetic control** provides a common, consistent, and accurate reference system for establishing coordinates for all geographic data.
- **Governmental Unit Boundaries** and other geographic area boundaries establishes the content requirements for the collection and interchange of governmental unit and other legal entity boundary data to facilitate the maintenance and use of that information.
- **Hydrology** includes surface water features such as lakes, ponds, streams or rivers, canals, oceans, and shorelines.
- **Transportation** data are used to model the geographic locations, interconnectedness, and characteristics of the transportation system (airport facilities, waterways, roads, railroads, and transit).

Also contained within the FGDC Framework portion of the model are a set of base types on which the framework is built.

4.2 NIEM Model Components

The NIEM component of the model describes many geospatial elements. These types define the representation of a large domain of geospatial data with a wide range of uses. They define geospatial data objects that are used to identify locations on the Earth, model real-world phenomena, and contain location representations that support transformations between reference systems. There are nine of these core types: Location, Feature, Coverage, Mobile Object, Observation, Route, Structure, Map, and Alert[3].

- A **Location** references a site or place via (point) geometry, a point or area feature, an address, or a combination thereof, in a normalized structure suitable for data interchange.
- A **Feature** describes real-world phenomena in a geospatial context. It may have an associated Location Object to support transformation between the two representations for the same real-world entity. Other classes also describe real-world phenomena, but the Feature is typically used for immobile phenomena or those that are slow to move or change.

[3] The Alert type has been deferred until a later release of this model.

- A **Structure** describes a building, utility transmission or distribution network, or other structure in an engineering context with references to its geospatial location.
- An **Observation** associates an observed or measured value or set of values with the geospatial, temporal, and procedural context of the observation.
- A **Mobile Object** describes real-world phenomena similar to a Feature that changes position or state relatively rapidly. A Coverage associates a set of discrete values with a geospatial area.
- A **Route** describes a path between locations.
- A **Map** represents selected geospatial-temporal data, annotated and symbolized for an intended purpose.
- An **Alert** communicates a message with geospatial and temporal context related to a threatening event.

Table 1 provides a mapping between these core types and the standards pedigree from which the model components were derived.

Table 1: Standards Pedigree for Geospatial Core Types

Type	Standards (see Appendix A for the references)
Feature	ISO Geography Markup Language (GML) [4] , and OGC GML simple feature profile [6]
Location (Object)	ISO GML [4] , Open Location Services (OpenLS®) [7] , and FGDC Street Address Data Standard [8]
Coverage	ISO GML [4]
Observation	ISO GML [4] OGC Observations and Measurements [9] ISO Metadata [21] ISO Metadata – XML Schema Implementation [22]
Route	Open Location Services (OpenLS®) [7] ISO Location Based Services – Tracking and Navigation [10] ISO Location Based Services – Multimodal routing and navigation [11]
Map	ISO Web Map Server interface [12]

	Open Location Services (OpenLS®) [7] OGC Web Map Context Documents [13] OGC Styled Layer Descriptor [14] OGC Filter Encoding [15]
Mobile Object	ISO GML [4] , and ISO Schema for moving features [16]
Alert	OASIS Common Alert Protocol (CAP) [17] , and ISO GML [4]
Structure	LandXML [18] and ifcXML [19]
HSIP	FGDC HSIP Geospatial Data Content [20] and the types: Geometry, Feature, Location, and Address

4.3 Project Bluebook

The Project Bluebook portion of the model defines four primary components:

- **Base Types**—the set of core types that are common amongst the remaining elements of the Project Bluebook model components.
- **Foundation**—this component of the model includes several framework-like themes including Basemap, Environmental, Utilities, and some that currently overlap the FGDC Framework that will be harmonized in Phase II of the model development, including Hydrography, Transportation, and Governmental Units.
- **Structures/Critical Infrastructure**—this component of the model includes information about man-made features. Included in this theme are critical infrastructure features, which are of vital interest to local, state, and federal emergency response community.
- **Emergency Operations**—this component of the model includes data the results from natural or man-made disaster events and the data that is required to plan, mitigate, prepare, respond, or recover from such events.

5 Modeling Considerations

During the creation of the DHS GDM a few modeling considerations we followed in order to achieve a more unified and consistent result. These considerations are discussed in this section.

The first major decision was to select a modeling tool for the DHS GDM; the somewhat obvious choice was UML (Unified Modeling Language) because it is the tool of choice for most of the standards in the geospatial information space, including FGDC, ISO, and Open Geospatial Consortium. In the documentation for the FGDC Framework it states:

> "The use of UML class diagrams is an application-neutral approach to depict the inherent description of and relationships among data entities. These diagrams should neither be interpreted as requiring object-oriented implementation – methods

> or interfaces are not typically shown on these data classes – nor should they be interpreted as representing tables in relational databases. Instead, the UML classes should be used as the basis for translation to and from internal organization data stores and applications. UML modeling environments typically support conversion of logical UML models into implementations in various programming environments through rule-based transforms."

The decision was then made to follow UML practices in the FGDC Framework Standard (which happen to be the same as those used in ISO and OGC). Aside from the use of as many UML best practices as possible from past experience, these guidelines indicate that the model should use stereotypes (e.g., <<Enumeration>> or <<ApplicationSchema>>) as a semantic extension mechanism for existing UML concepts. Please see Annex B for a guide to UML notation.

It was decided to select International/National standards-based constructs over proprietary constructs whenever faced with the choice of using one of two elements that are duplicated amongst the source materials, select the standards-based construct over the proprietary one. It was decided to select semantic rich data constructs—whenever faced with the choice of using one of two elements that are duplicated amongst the source materials, select the semantically rich construct over the less rich one.

Each of the DHS GDM parts contains, as appropriate, documentation of all features, attributes, and relationships and their definitions. A data dictionary table describes the characteristics of the UML model diagrams.

- The data dictionary (see Table 2) is structured as follows:
- Each UML model class equates to a data dictionary entity
- Each UML model class attribute equates to a data dictionary element
- Each UML model role name equates to a data dictionary element
- The shaded rows define entities

The entities and elements within the data dictionary are defined by six attributes based on those specified in ISO/IEC 11179-3 for the description of data element concepts, that is, data elements without representation

Table 2: Data dictionary table format

Line	Name/Role Name	Definition	Obligation/ Condition	Maximum Occurrence	Data Type	Domain
1						
2						
3						

5.1 Name/Role name

The name/role name is a label assigned to a data dictionary entity or to a data dictionary element.

The class name begins with an upper case letter. Spaces do not appear in an entity name: instead, multiple words are concatenated, with each word starting with a capital letter (example: XnnnYmmm). When prefixed with model package names, entity names are unique within the entire data dictionary of this standard (example: Package::Entity).

Element names start with a lower case letter. Spaces do not appear in an element name: instead, multiple words are concatenated, with subsequent words starting with a capital letter (example: xnnnYmmm). Element names are unique within an entity by the combination of the entity and element names (example: Dataset.name).

Role names are used to identify the roles of the classes at the ends of a model association and are preceded by the term “Role name” followed by a colon to distinguish them from other types of data dictionary elements.

5.2 Definition

The definition is the data or metadata entity description.

5.3 Obligation/Condition

5.3.1 General

Obligation/Condition is a descriptor indicating whether an entity or element shall always be populated (that is, contain a value or values) or sometimes will be populated. This descriptor may have the following values: M (mandatory), C (conditional), or O (optional).

5.3.2 Mandatory (M)

Mandatory (M) indicates that the entity or element shall be populated.

5.3.3 Conditional (C)

Conditional (C) specifies an electronically manageable condition under which at least one entity or element is mandatory. “Conditional” is used for one of the three following possibilities:

- Expressing a choice between two or more options. At least one option is mandatory and must be populated
- Populating an entity or element if another element has been populated
- Populating an element if a specific value for another element has been populated. To facilitate reading by humans, the specific value is used in plain text (for example, “C/not defined by encoding?”). However, the code shall be used to verify the condition in electronic user interface

If the answer to the condition is positive, then the entity or the element shall be populated.

5.3.4 Optional (O)

The entity or the element may be populated. Optional (O) entities and optional elements have been defined to provide a guide to those looking to fully document their data. (Use of this common set of defined elements will help promote interoperability among framework data users and producers.) Optional entities may have mandatory elements. If the optional entity is used, the mandatory elements shall be used. If an optional entity is not used, the elements contained within that entity (including mandatory elements) will also not be used.

5.4 Maximum occurrence

Maximum occurrence specifies the maximum number of instances the entity or the element may have. Single occurrences are shown by “1”; unconstrained number of instances are represented by an asterisk “*”. Fixed number occurrences, other than one, are allowed and will be represented by the corresponding number (that is, “2”, “3” …and so on).

5.5 Data type

Specifies a set of distinct values for representing the elements (example: integer, real, CharacterString, DateTime, and Boolean). The data type attribute is also used to define entities, stereotypes, and associations.

5.6 Domain

For an entity, the domain indicates line numbers covered by that entity in the table.

For an element, the domain specifies the values allowed. “Unrestricted” indicates that no restrictions are placed on the content of the field. Code lists provide a list of potential values though additional values can be used. Enumerations provide a non-extensible list of potential values.

6 Model (Structure) Overview

The model itself is found in Annex C. Figure 2 depicts the high-level structure of the model demonstrating the three major elements described in section 4.

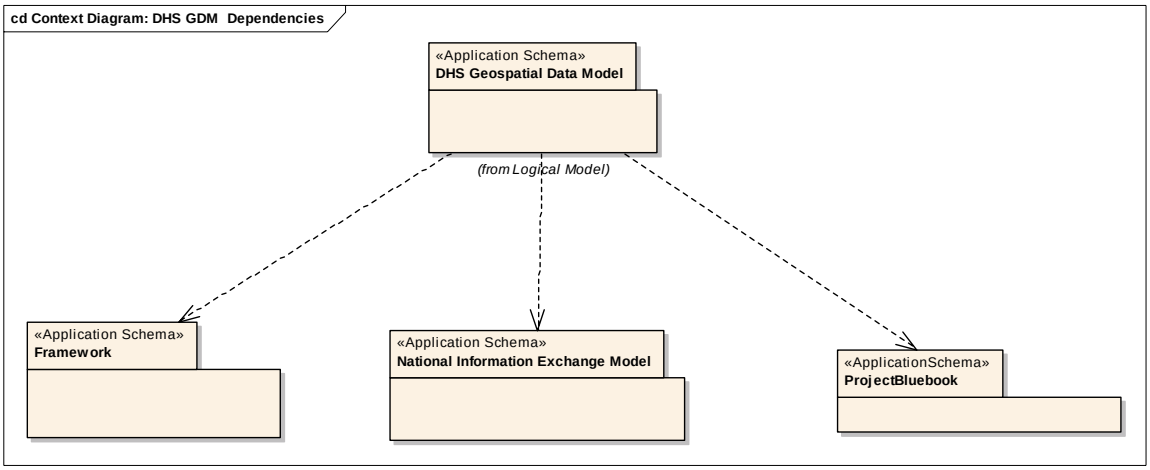

Figure 2: Model Structure Overview

7 Package Overviews

This section provides a brief overview of the structure of each of the packages seen in Figure 2.

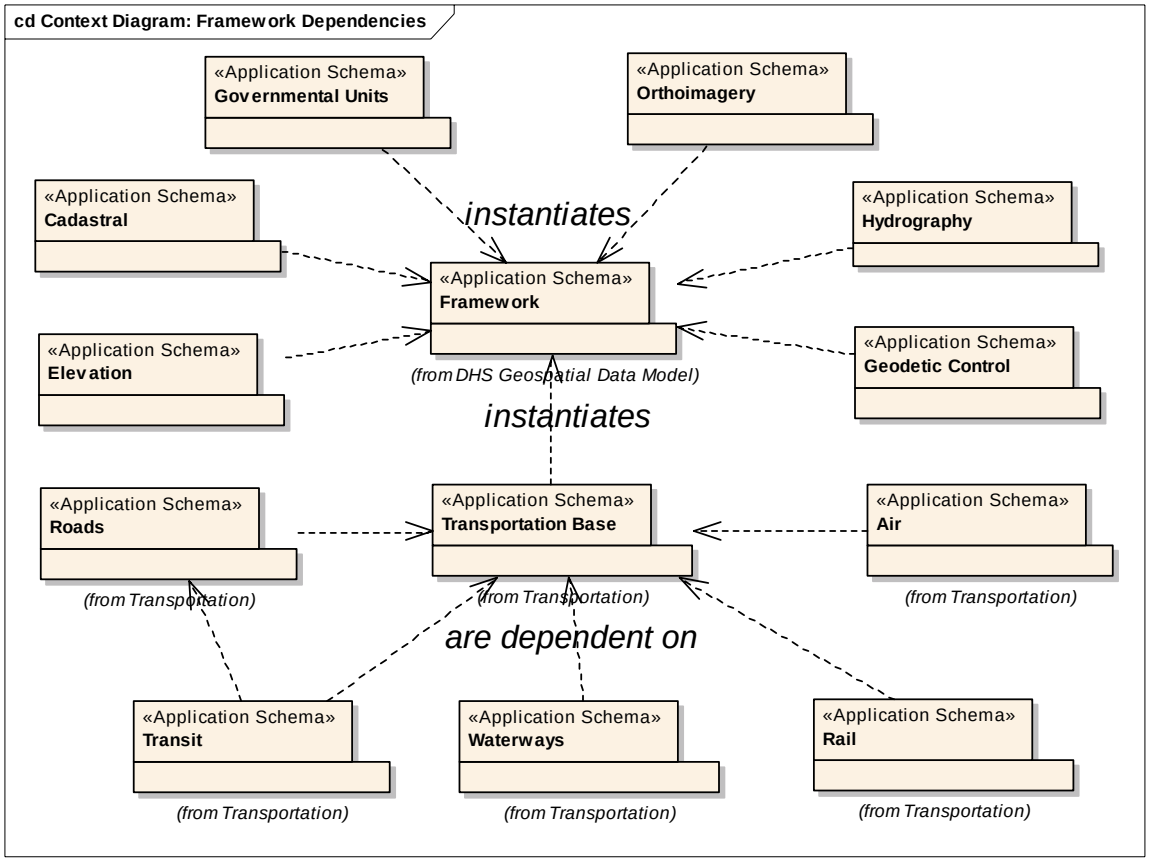

Figure 3: (FGDC) Framework Package Overview

Figure 3 depicts the Framework package and shows that it follows the discussion in Section 4, including a package for each of the Framework themes. In addition, there is a base framework package for those types that are used by all of the theme packages. Note that the transportation package is further subdivided into a base package of types and a package for each of the major transportation modalities (air, rail, roads, transit, and waterways).

In Figure 4, the NIEM package breakdown is depicted. Here the structure is organized around the seven primary geospatial types.

Figure 5 depicts the package structutre of the Project Bluebook package. This follows the scheme presented in Section 4.

8 Implementation Guidance

The following implementation guidance is targeted at the software vendors, architects, and engineers who will be implementing the DHS GDM in current projects or for existing and new products so that they can better serve Local, State, Tribal, and Federal customers who are exchanging and processing information described by the DHS GDM.

The first decision to make is whether you can build on previous work, or must begin anew. Start by considering the task at hand, mapping any existing legacy or task-specific data structures with

the DHS GDM, and assessing existing implementation models or applications that may be reused as is or repurposed to meet your requirements.

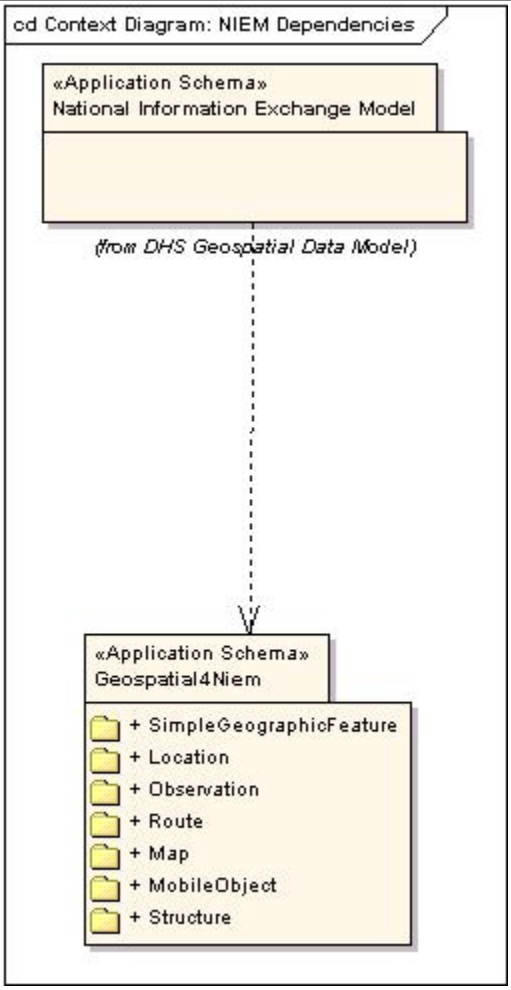

Figure 4: NIEM Package Overview

As was stated above, much of the DHS GDM content is already represented in an XML Schema form. If your target implementation will use XML encoding of DHS GDM constructs, then review those schemas first. XML Schemas for the Framework portion of the model are available from FGDC. They were derived from the Framework model in an automated fashion, and the particular ones of interest to you may or may not have been used in pilot or production applications. XML Schemas for the NIEM portion of the model are currently being used in pilot applications. Some of the standards-based geospatial ones for NIEM are in widespread use outside DHS.

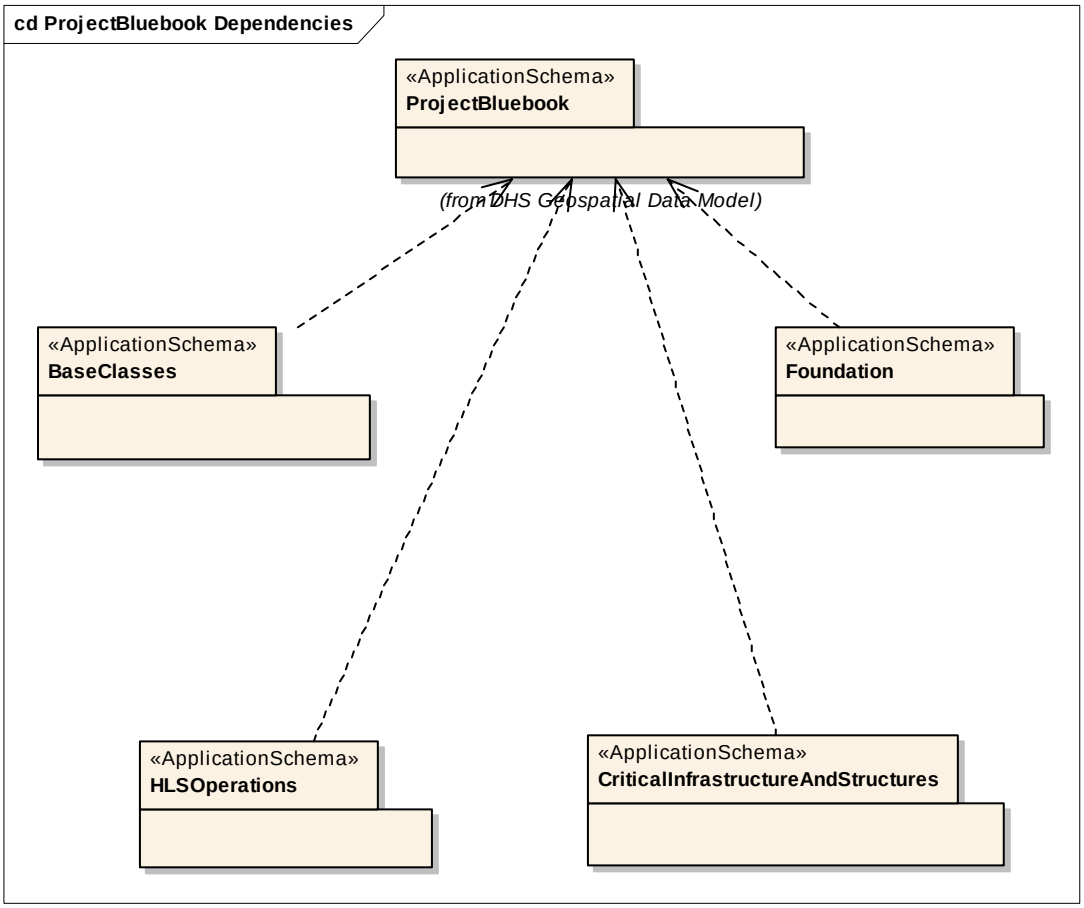

Figure 5: Project Bluebook Package Overview

The Project Bluebook portion of the DHS GDM content resulted from pilot activities within Project Homeland. Determine whether the implementation models, applications and processing environment of those pilots are suitable for your tasks, and the cost and effort that would be required to tailor them to your needs.

If you can not leverage existing XML Schemas and Project Bluebook pilot artifacts in a timely and cost-effective manner, then you must begin anew. The next thing to determine is the extent of automated support you can get to convert the DHS GDM logical model constructs you need into whatever database schemas, data transfer encodings, and working applications are required for your tasks in your target implementation environment.

Few will find a complete Object Management Group (OMG) Model Driven Architecture (MDA) solution available to move from logical models to physical design to deployment. But many automated model conversion and implementation generation tools are available that can ingest UML models exported in XML for Metadata Interchange (XMI) form. Determine whether such tools are available to interface with the management and deployment tools in your target implementation environment, and the details of the UML model XMI encoding that they support. If the encoding capabilities and tagging conventions match, you may be in business with little model data conversion effort.

Incomplete transfer of DHS GDM model information means that you must determine whether appropriate XMI conversion utilities, or XMI and XML for Stylesheet Transformation (XLST) development expertise to build such utilities, are available. If not, then assess how much effort is required to clean up and augment the partially completed model by hand.

As a last resort, create appropriate implementation models and applications by hand from inspection of the DHS GDM logical model.

In any case, you will probably discover that your tasks involve additional data items that are not in, or that are structured differently in legacy applications than in the DHS GDM. Determine whether you can use implementation models that are extensions of the DHS GDM in your applications. If not, consider the time, cost, and implementation evolution benefits of building interfaces that do, and conversion adapters to transform DHS GDM conformant data into the forms most suited to your implementation. Usually this approach best meets immediate data interchange needs while allowing de-coupled evolution of the DHS DGM and its implementations.

Implementers are highly encouraged to coordinate with DHS GMO on your task-specific additions when you think they may be more generally applicable and useful for others.

In order to support your implementations, DHS GMO is offering a few artifacts that may be useful:

- The Enterprise Architect version of the DHS GDM;
- The XMI version of the DHS GDM; and
- XML and HTML versions of the data dictionaries.

Any of the above can be obtained by contacting Mark Eustis (mark.eustis@associates.dhs.gov).

9 Future Work

As stated in section 4 this document represents the completion of Phase I of the DHS GDM model development. The DHS GDM will now enter Phase II where more detail and content will be added by a process of internal and external (specifically with the FEMA Multi-hazard Data Model, the National Asset Database (NADB), the Homeland Security Infrastructure Protection (HSIP) Geospatial Data Content) harmonization. During Phase II, the DHS GMO will also obtain feedback through the FGDC Homeland Security Working Group and the DHS Enterprise Architecture Standardization process.

Annex A—References

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[21] International Standards Organization, "ISO 19115: Geographic information – Metadata" January, 2003.

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Annex B—Unified Modeling Language Notation Quick Reference

Introduction

This appendix provides a description of UML notation as used in the UML diagrams in this standard.

UML class

UML class notation

UML class diagram notation

A UML class (Figure 6) represents a concept within the system being modeled. It describes a set of objects that share the same attributes, operations, methods, relationships, and semantics. A class is drawn as a solid-outline rectangle with three compartments separated by solid horizontal lines. The top compartment holds the class name and other general properties of the class, including stereotypes; the middle compartment holds a list of attributes; and the bottom compartment holds a list of operations. The attribute and operations compartments may be suppressed to simplify a diagram, however, suppression does not indicate that there are no attributes or operations.

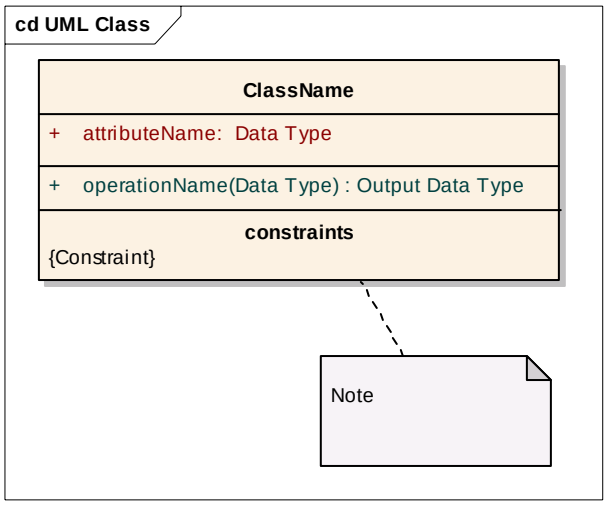


Figure 6: UML class

Class name format

Class names start with an upper case letter. Spaces do not appear in a class name. Multiple words are concatenated, with each new subword starting with a capital letter (for example, XnnnYnnn). Class names are unique within the entire data dictionary of the standard.

Stereotypes

A UML stereotype is an extension mechanism for existing UML concepts. Below are brief descriptions of the stereotypes used in this standard.

<<*DataType*>>—descriptor of a set of values that lack identity (independent existence and the possibility of side effects). Data types include primitive predefined types and user-defined types. A DataType is thus a class with few or no operations whose primary purpose is to hold the abstract state of another class

<<*Enumeration*>>—data type in which instances form a list of named literal values. Both the enumeration name and its literal values are declared. Enumeration means a short list of well-understood potential values within a class. Enumerations are not extensible

<<*CodeList*>>—data type used to describe a more open enumeration. A code list is a flexible enumeration. Code lists are useful for expressing a long list of potential values. Code lists are extensible

NOTE If the elements of the list are completely known, an enumeration should be used. If only likely values of the elements are known, a code list should be used.

<<*Abstract*>>—class, or other classifier, that cannot be directly instantiated. UML notation for this is to show the name in italics

<<*Leaf*>>—package that contains definitions, without any sub-packages

<<*Union*>>—type consisting of one and only one of several alternatives (listed as member attributes)

Attribute

An attribute represents a characteristic common to the object of a class. An attribute is specified by a text string that can be parsed into elements that describe the properties of the attribute:

visibility name: type-expression – initial-value [multiplicity]

where:

visibility may be public (indicated by a plus sign "+") or private (indicated by a minus sign "-").

name is a character string. The attribute name shall include no blank spaces and shall begin with a lower case letter. Individual words in the name, following the first word, shall begin with an upper case letter. Attribute names are unique within a class, but not throughout the entire data dictionary of this standard. Attribute names are made unique, within an application, by the combination of the class and attribute names (example: Dataset.descripton).

type-expression identifies the data type of the attribute.

initial-value value specifies the default value for the attribute.

multiplicity specifies the number of values that an instance of a class may have for a given attribute (default = 1).

Constraint

A constraint specifies a semantic condition or restriction. A constraint may be written using any formal notation, or a natural language. A constraint is shown as a text string in braces “{}”. It is placed near the element to which it applies. If the notation for an element is a text string, such as an attribute, the constraint string may follow the element text string in braces. A constraint included as an element in a list applies to all subsequent elements in the list, down to the next constraint element or the end of the list.

Note

A note contains textual information. It is shown as a rectangle with a “bent corner” in the upper right corner, attached to zero or more model elements by a dashed line. Notes may be used to contain comments or constraints.

UML associations

Association

Introduction

An association is a semantic relationship between classes that specifies connections between their instances. Figure 7 shows how associations are represented.

An association is drawn as a solid line connecting class rectangles. An association may have a name, represented as a character string placed near the line, but not close to either end.

If the navigability of an association is not shown by an arrowhead, it is assumed to be navigable in both directions. The end of an association may be adorned with information pertinent to the class at that end, including multiplicity and role name.

Role name

If an association is navigable in a particular direction shown with an arrowhead in the line, the model shall supply a role name that is appropriate for the role of the target object in relation to the source object. Thus, in a two-way association, two role names shall be supplied.

Role names explain how an object participates in the relationship. A role name adorning an association end specifies behavior of the class at that end with respect to the class at the other end of the association. In Figure 7, role Alpha describes the role that the class named Alpha has with respect to the class named Beta.

A role name is represented as a character string. A role name shall include no blank spaces and shall begin with a lower case letter. Individual words in the name, following the first word, shall begin with upper case letters. When placed in a diagram, the role name shall be preceded by a plus sign “+” to indicate that the role name is public.

In a data dictionary table, the word “Role name” followed by a colon should precede the name to distinguish role elements from other elements. In a UML diagram, however, the “Role:” prefix is not used, since the position of a role name identifies it as a role.

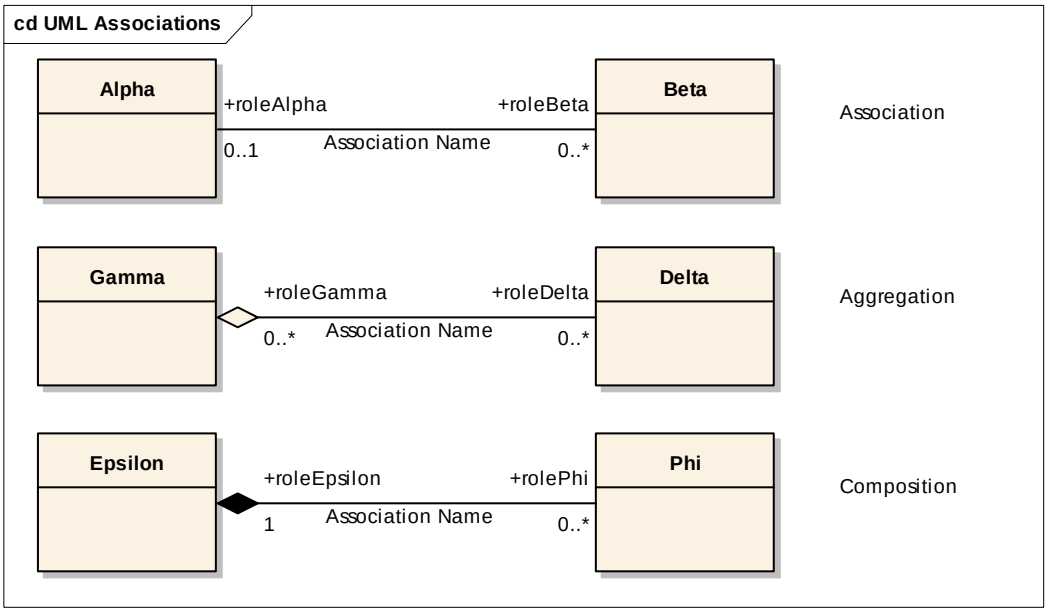


Figure 7: UML associations

Multiplicity

Multiplicity specifies the number of instances of a class that may be associated with the number of instances of a class at the other end of the association. The values shown in Figure 7 have the following meanings:

- Zero or one instance of Alpha may be associated with one instance of Beta
- Zero or more instances of Beta may be associated with one instance of Alpha
- Zero or more instances of Gamma may be associated with one instance of Delta
- Zero or more instances of Delta may be associated with one instance of Gamma
- One instance of Epsilon may be associated with one instance of Phi
- Zero or more instances of Phi may be associated with one instance of Epsilon

Aggregation

An aggregation is an association which one class (the containee) is a component of the other class (the container). The members of an aggregation can exist independently of the aggregation and can be members of more than one aggregation.

An open diamond on an association end indicates that the class at the end of the association is the container, that is, an aggregate of instances of the class at the other end (see Figure 7).

Composition

A composition is an association on which the class at one end of the association (the container) is composed of instances of the class at the other end (the containee). Members of a composite cannot exist independently of the composite class, nor can they be members of more than one composite class. If the composite class is deleted, then all of its members are deleted as well.

A closed diamond on an association end indicates that the class at the end of the association is the container, that is, a composite of instances of the class at the other end (see Figure 7).

Generalization

A generalization is a relationship between a superclass and the subclasses that may be substituted for it. The superclass is the generalized class, while the subclasses are specified classes. Figure 8 shows how the generalization relationship is represented. In Figure 8, Alpha is the superclass, while Beta and Gamma are the subclasses.

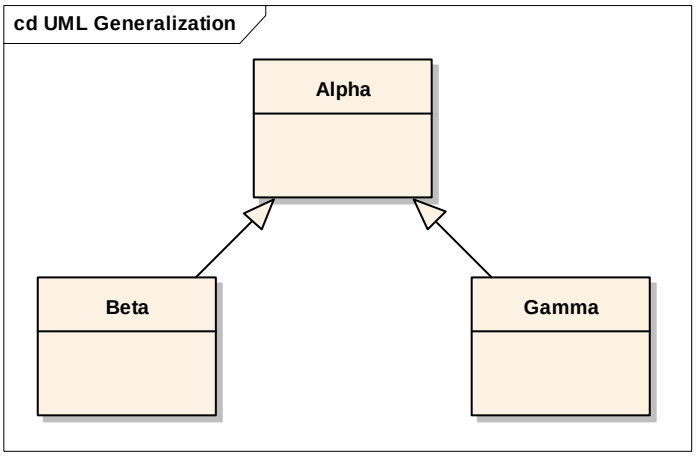


Figure 8: UML generalization

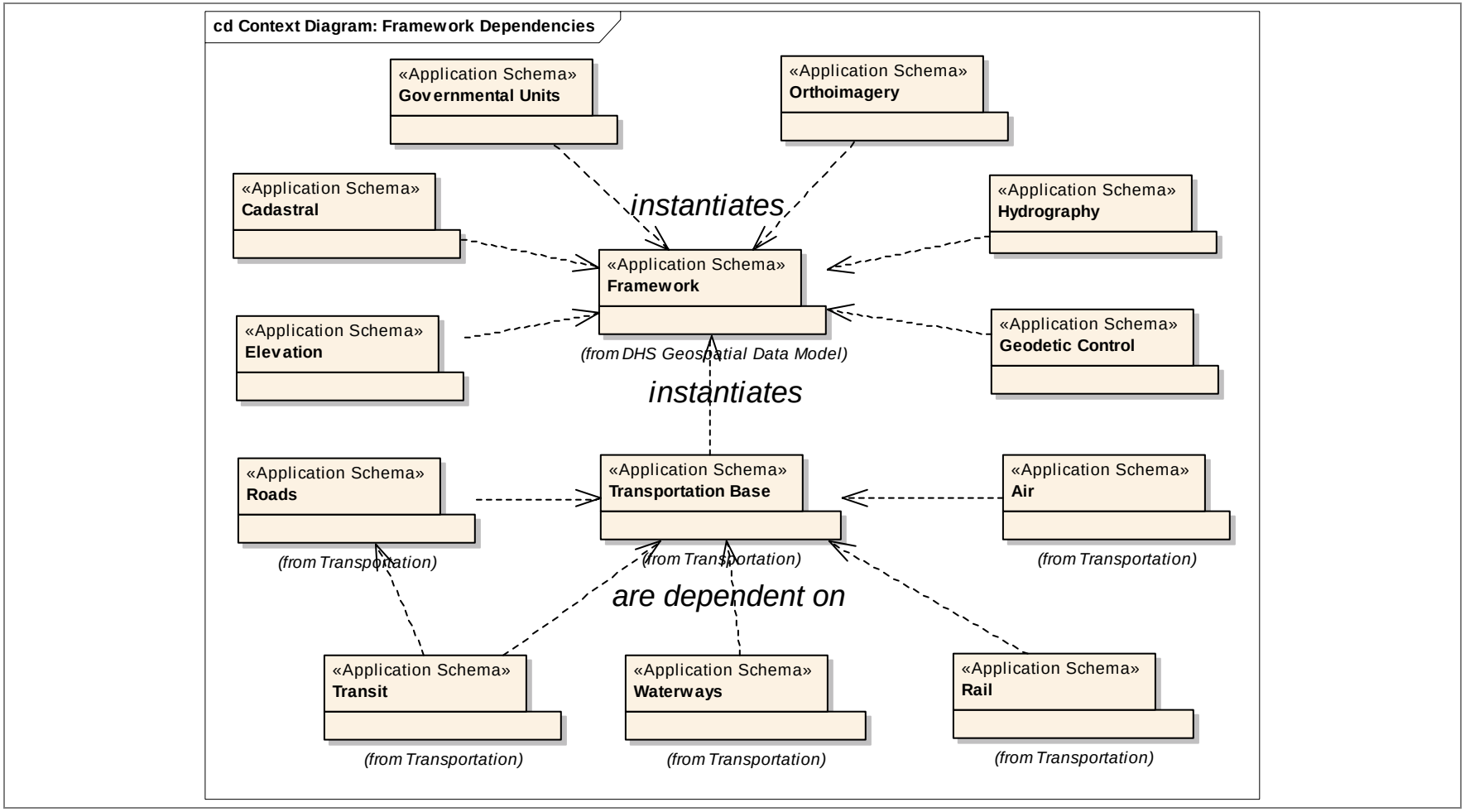
ISO/IEC 19501, Information technology – Open distributed processing – Unified Modeling Language (UML), Version 1.4.2 defines generalization as a taxonomic relationship between a more general element and a more specific element. The more specific element is fully consistent with the more general element and contains additional information. Instance of the more specific element may be used where the more general element is allowed. Generalization is shown with a solid line path from the child (the more specific element, such as a subclass) to the parent (the more general element such as a superclass), with a hollow triangle at the end of the path where it meets the more general element.

All attributes or operations specified for Alpha (that is, appearing in the Alpha class box) are inherited by both the Beta and Gamma. These are not explicitly shown in the class boxes for Beta and Gamma.

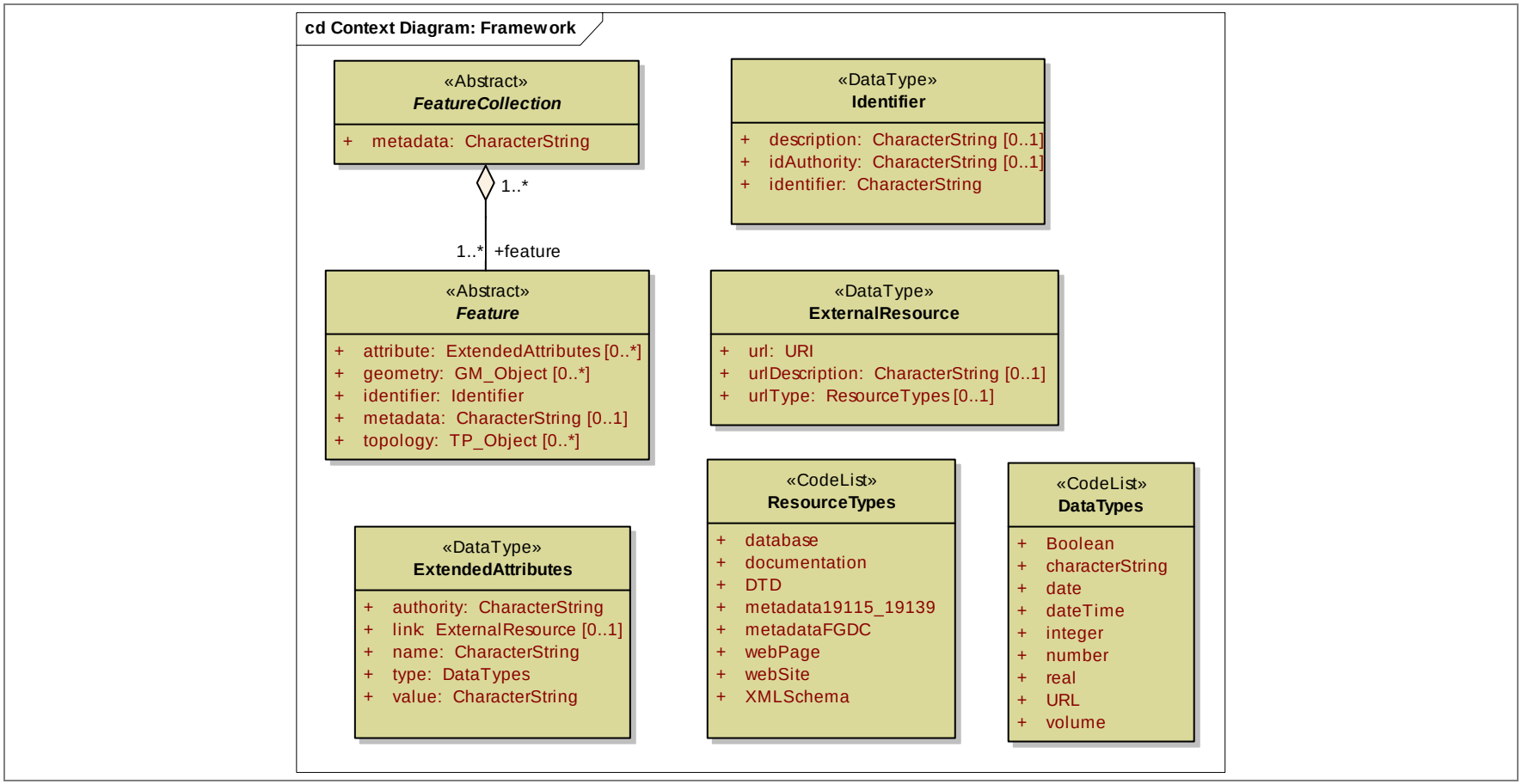
FGDC Framework Model Components

NOTE: No data dictionaries are provided with the FGDC Framework Components as these are listed in [2]. Please contact FGDC for a copy of this document and the data dictionaries.

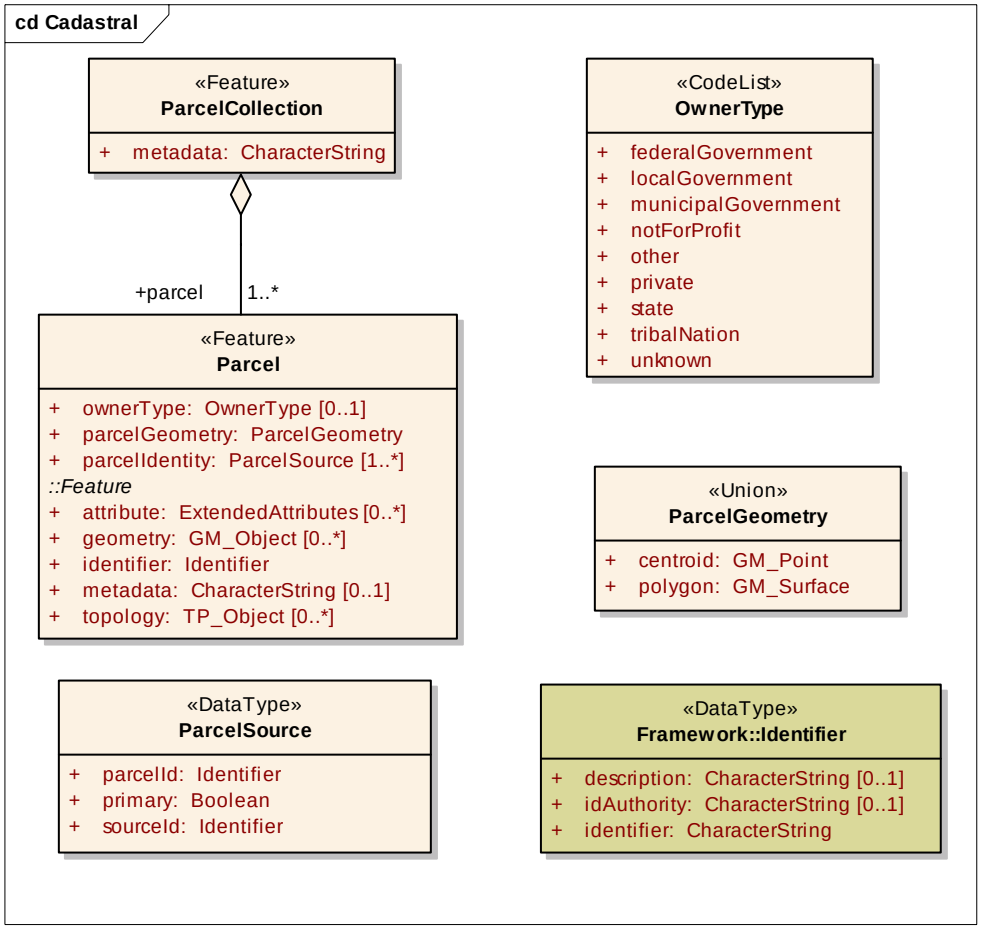
Framework Packages and Dependencies



Framework Base Types



Cadastral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«Feature»
ParcelCollection
+ metadata: CharacterString
+parcel
1..*
«Feature»
Parcel
+ ownerType: OwnerType [0..1]
+ parcelGeometry: ParcelGeometry
+ parcelIdentity: ParcelSource [1..*]
::Feature
+ attribute: ExtendedAttributes [0..*]
+ geometry: GM_Object [0..*]
+ identifier: Identifier
+ metadata: CharacterString [0..1]
+ topology: TP_Object [0..*]
«CodeList»
OwnerType
+ federalGovernment
+ localGovernment
+ municipalGovernment
+ notForProfit
+ other
+ private
+ state
+ tribalNation
+ unknown
«Union»
ParcelGeometry
+ centroid: GM_Point
+ polygon: GM_Surface
«DataType»
ParcelSource
+ parcelId: Identifier
+ primary: Boolean
+ sourceId: Identifier
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Framework::Identifier
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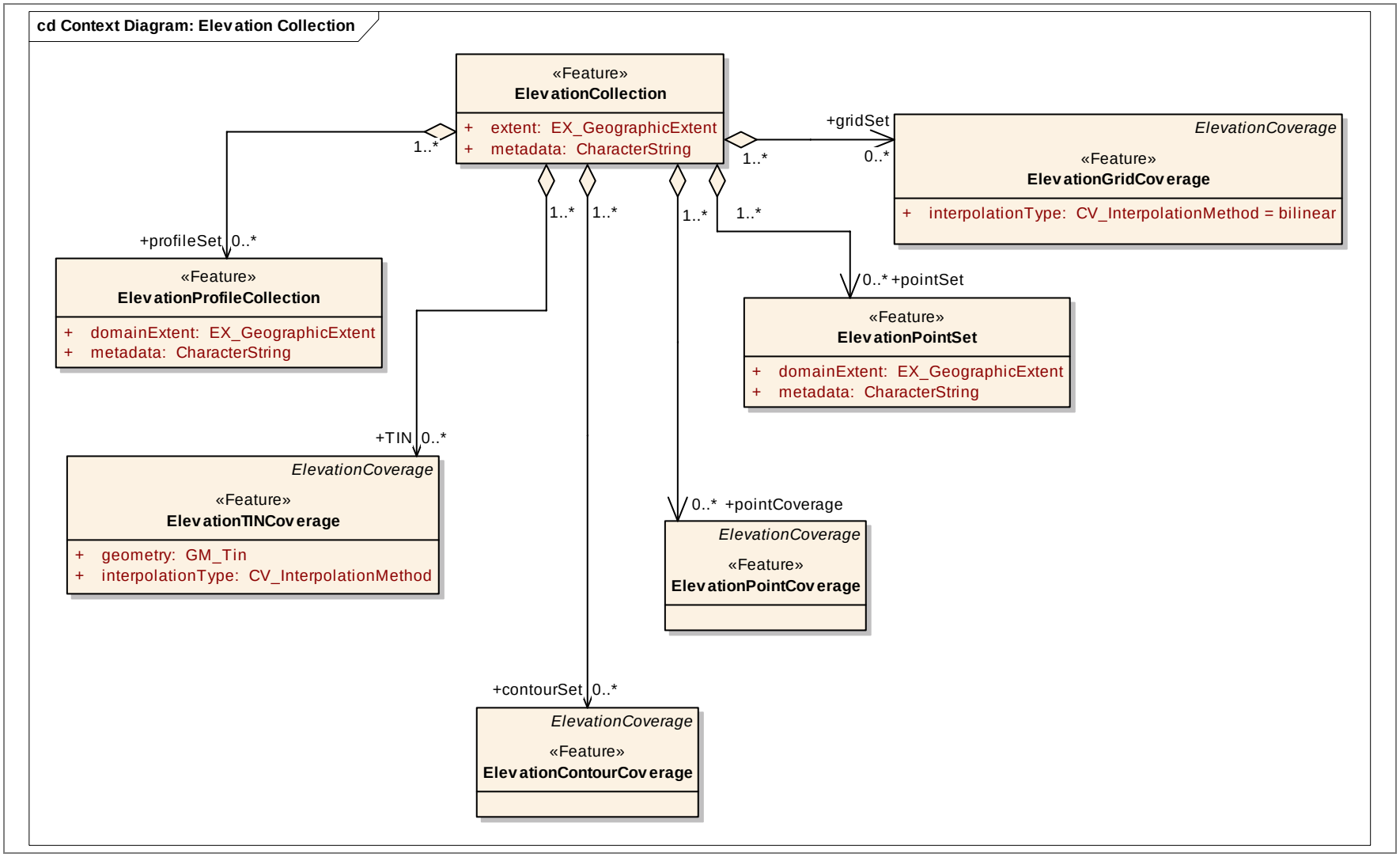
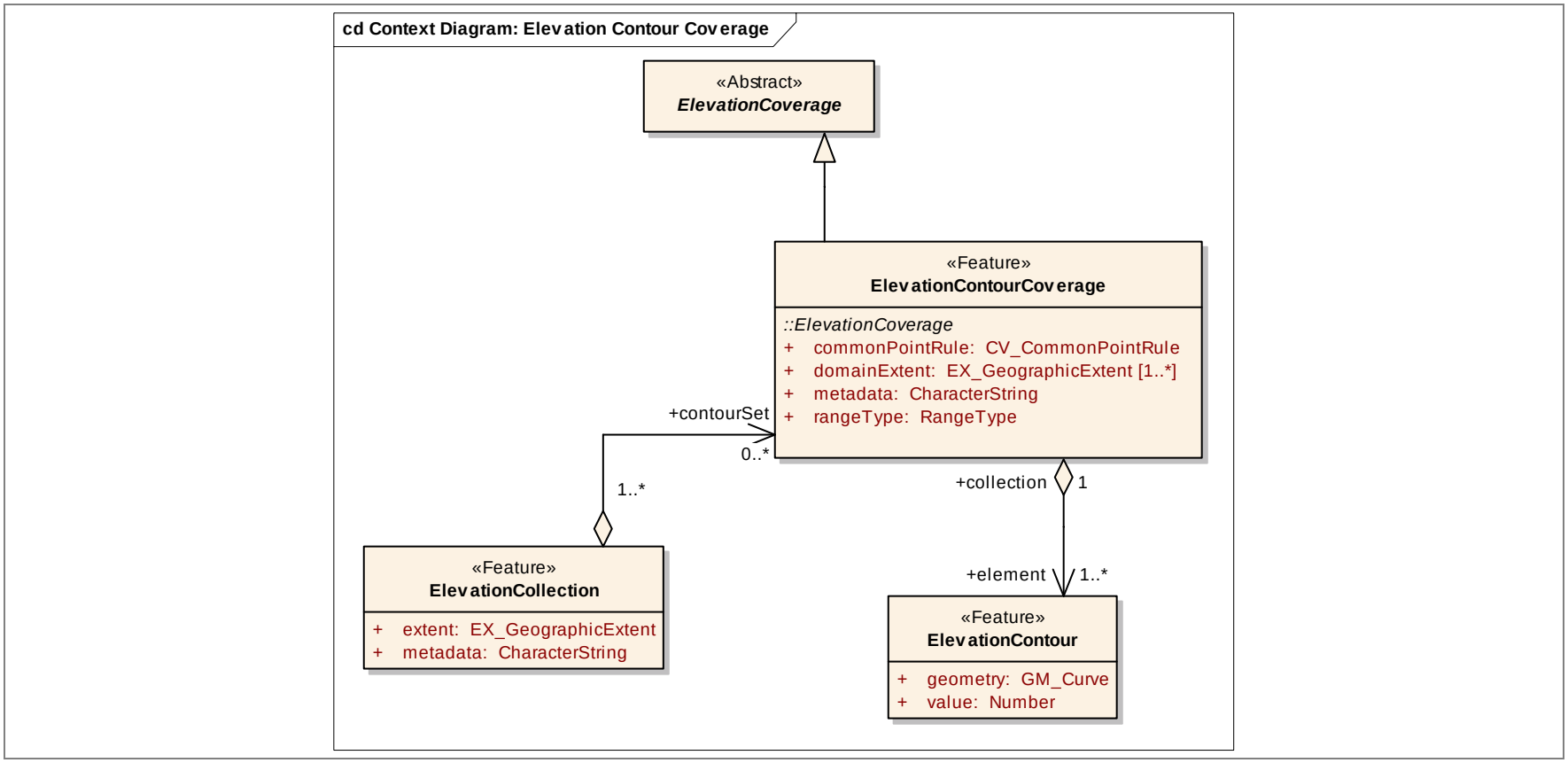
+ idAuthority: CharacterString [0..1]
+ identifier: CharacterString

Elevation

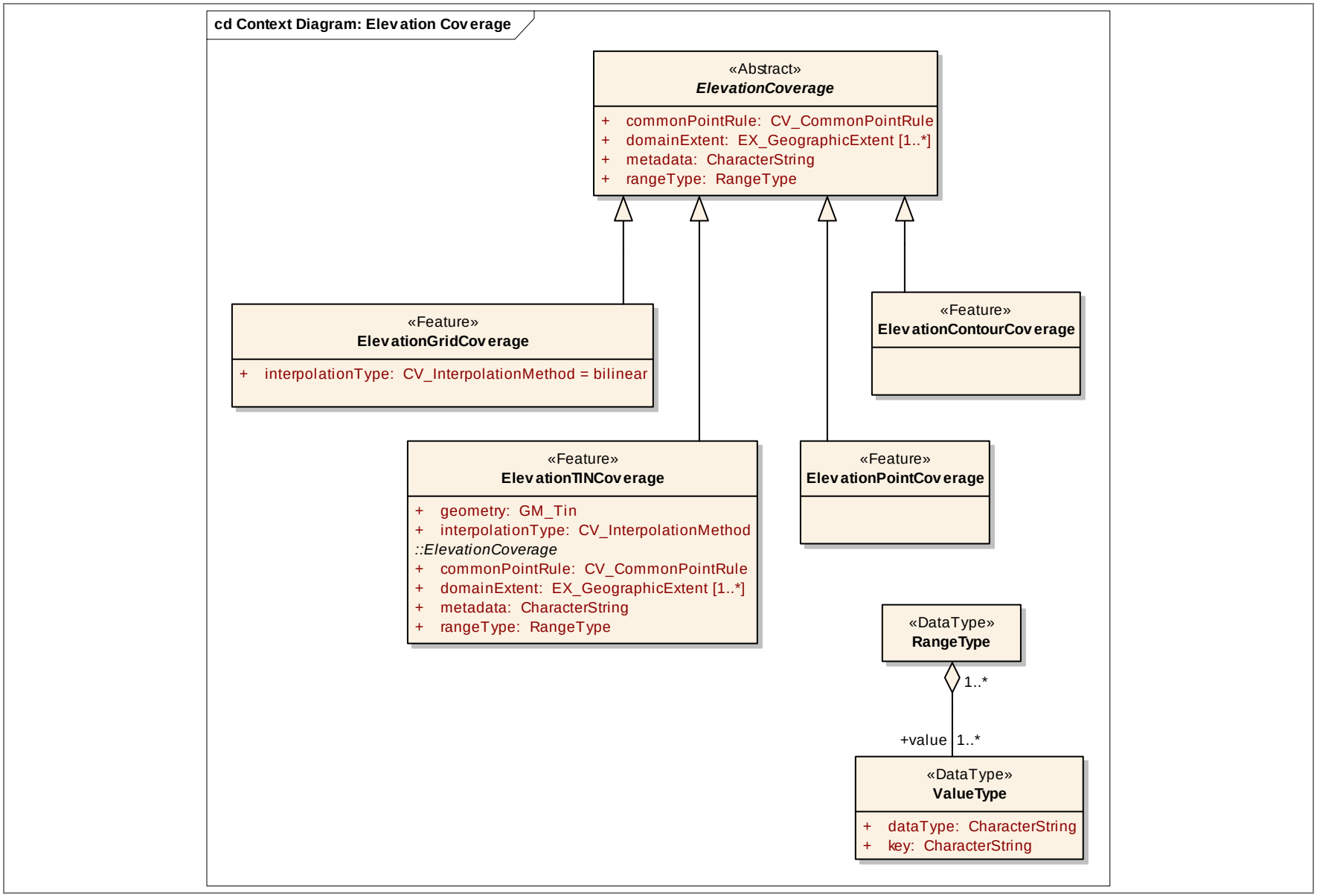
Elevation Collection



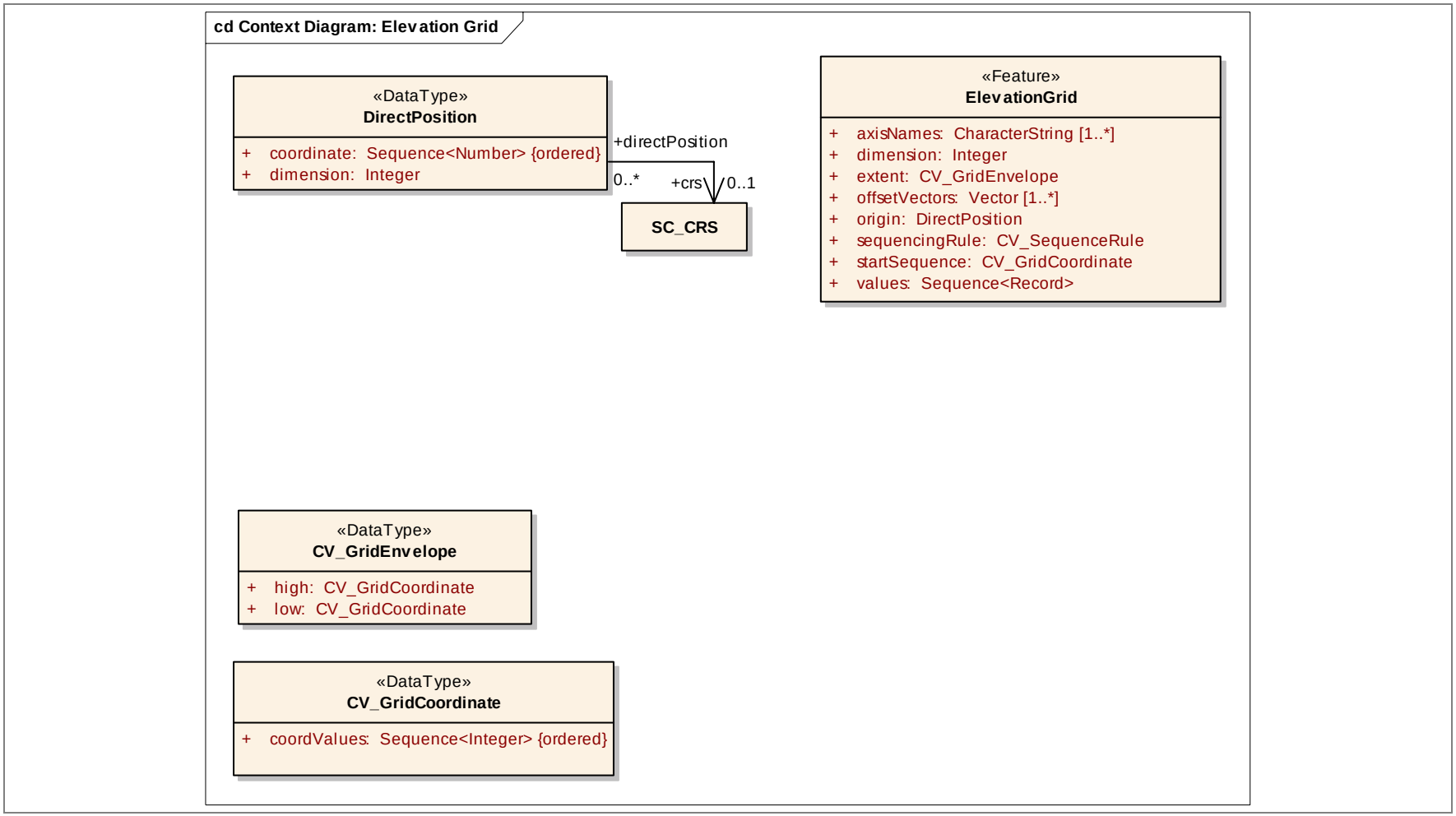
Elevation Contour Coverage



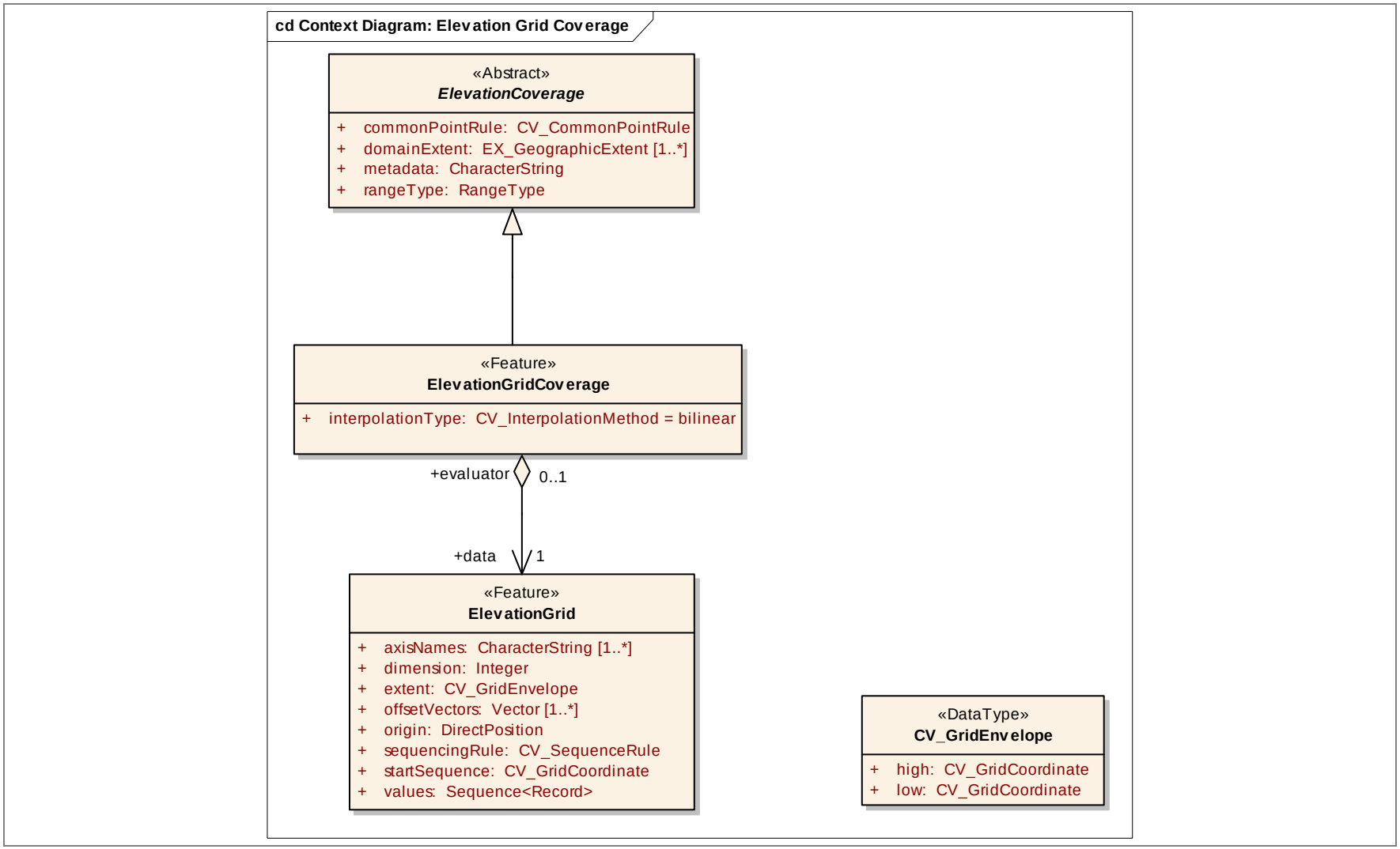
Elevation Coverage



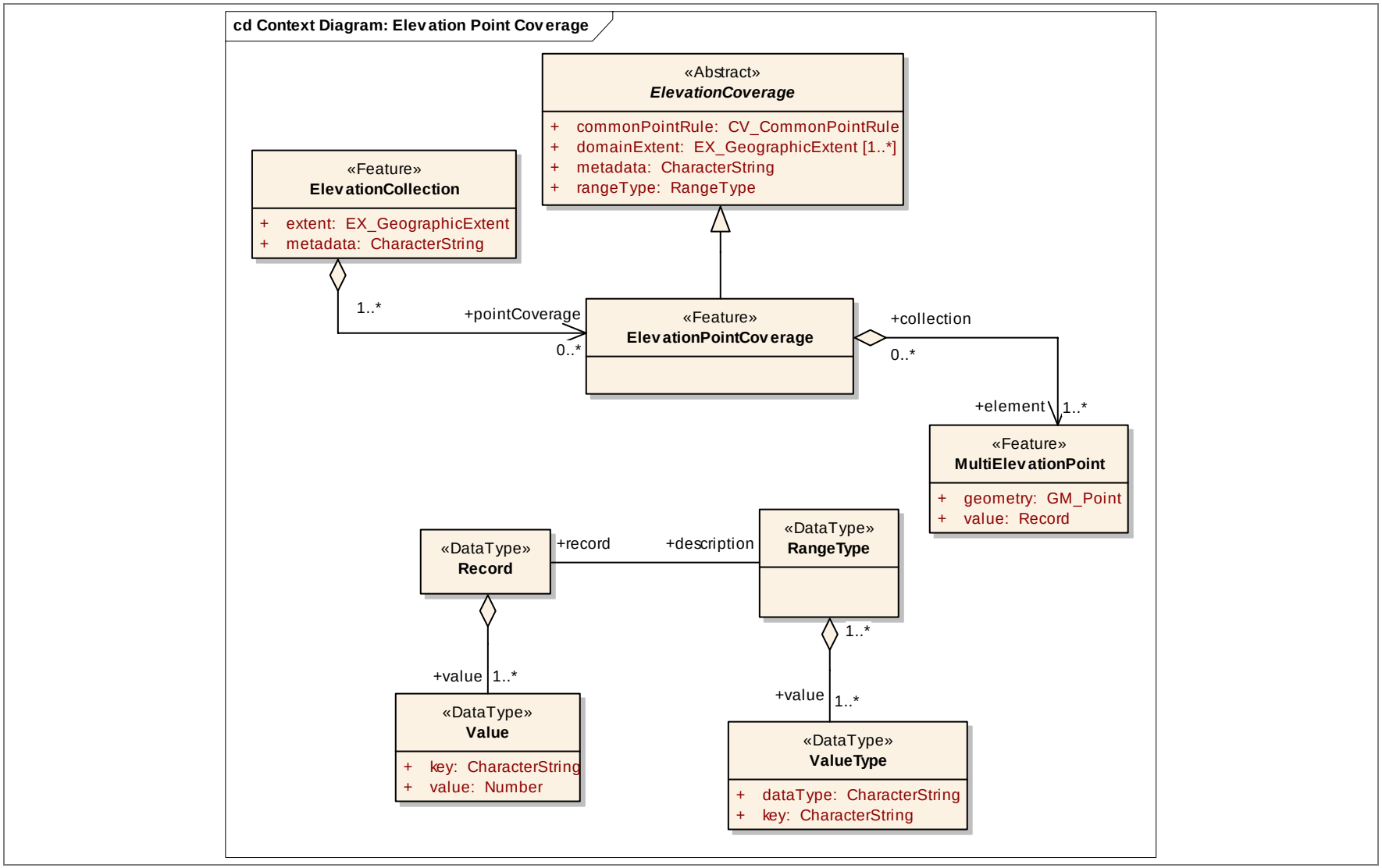
Elevation Grid



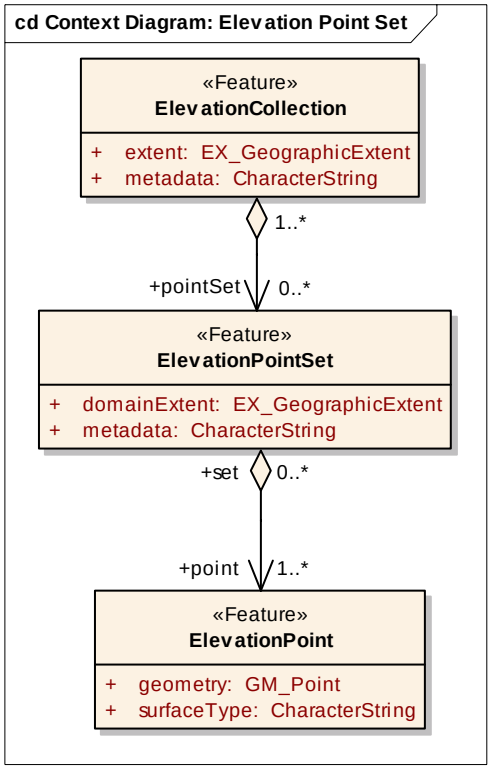
Elevation Grid Coverage



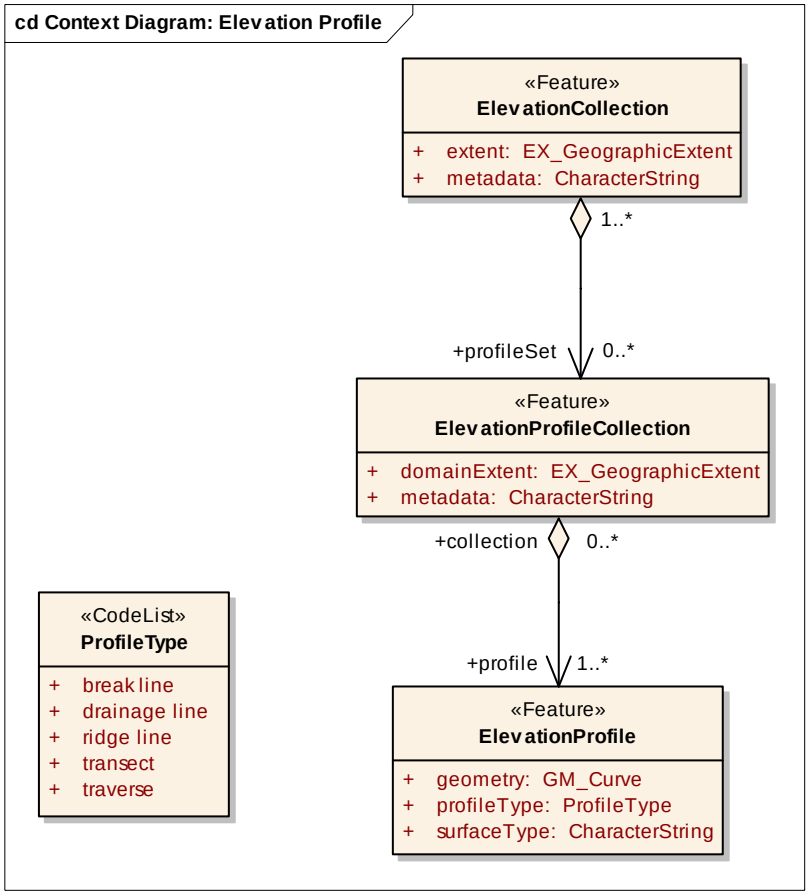
Elevation Point Coverage



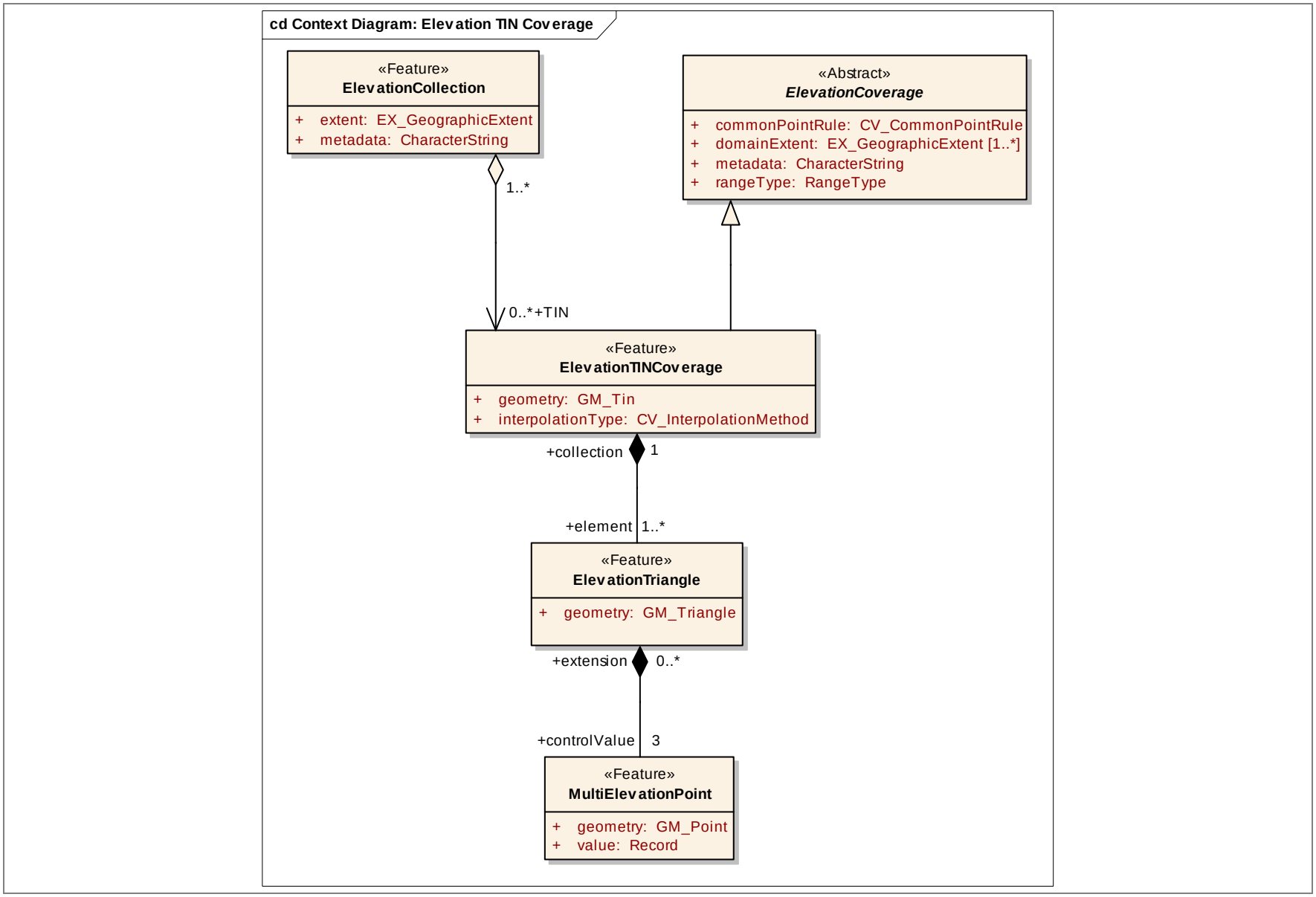
Elevation Point Set



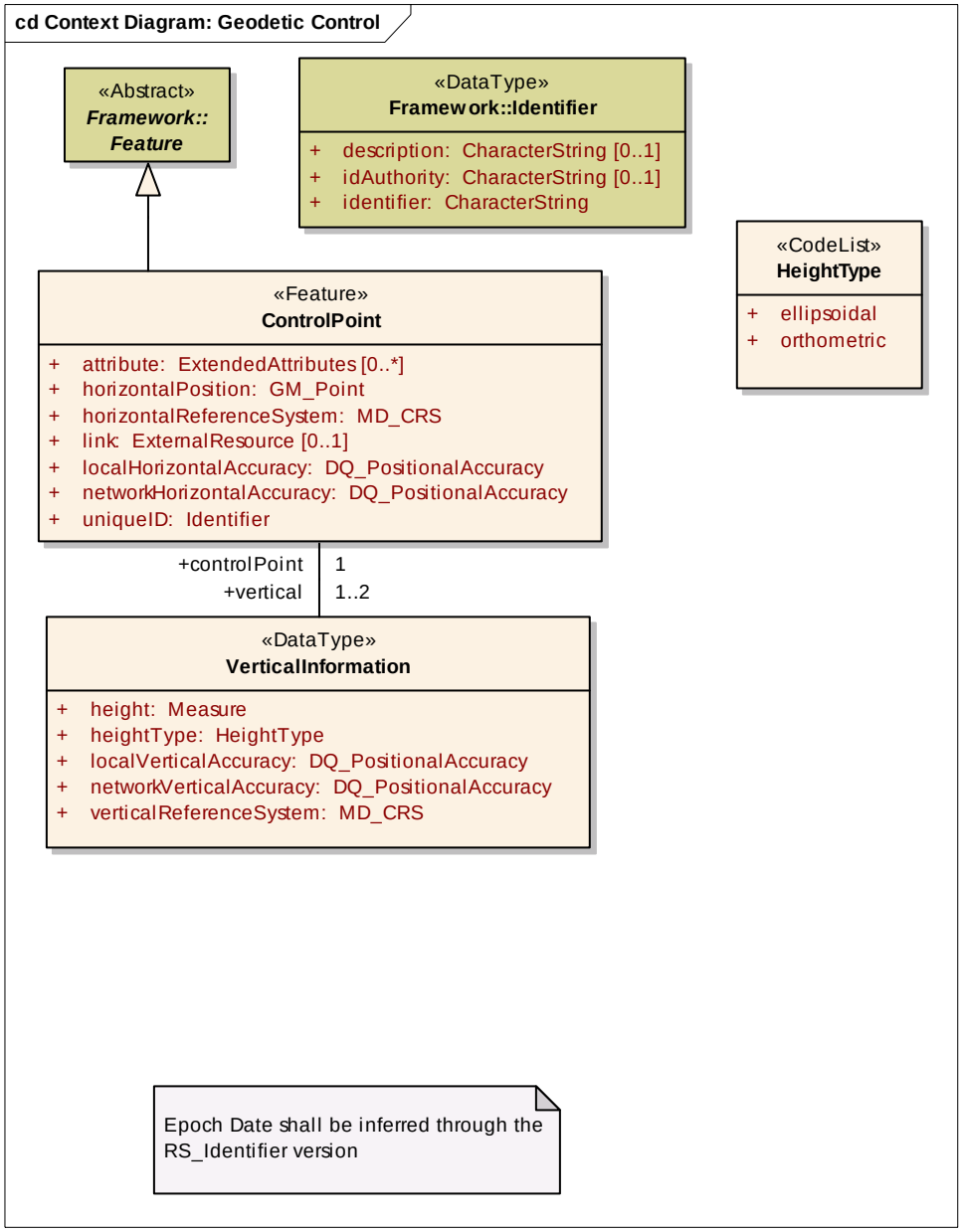
Elevation Profile



Elevation TIN Coverage

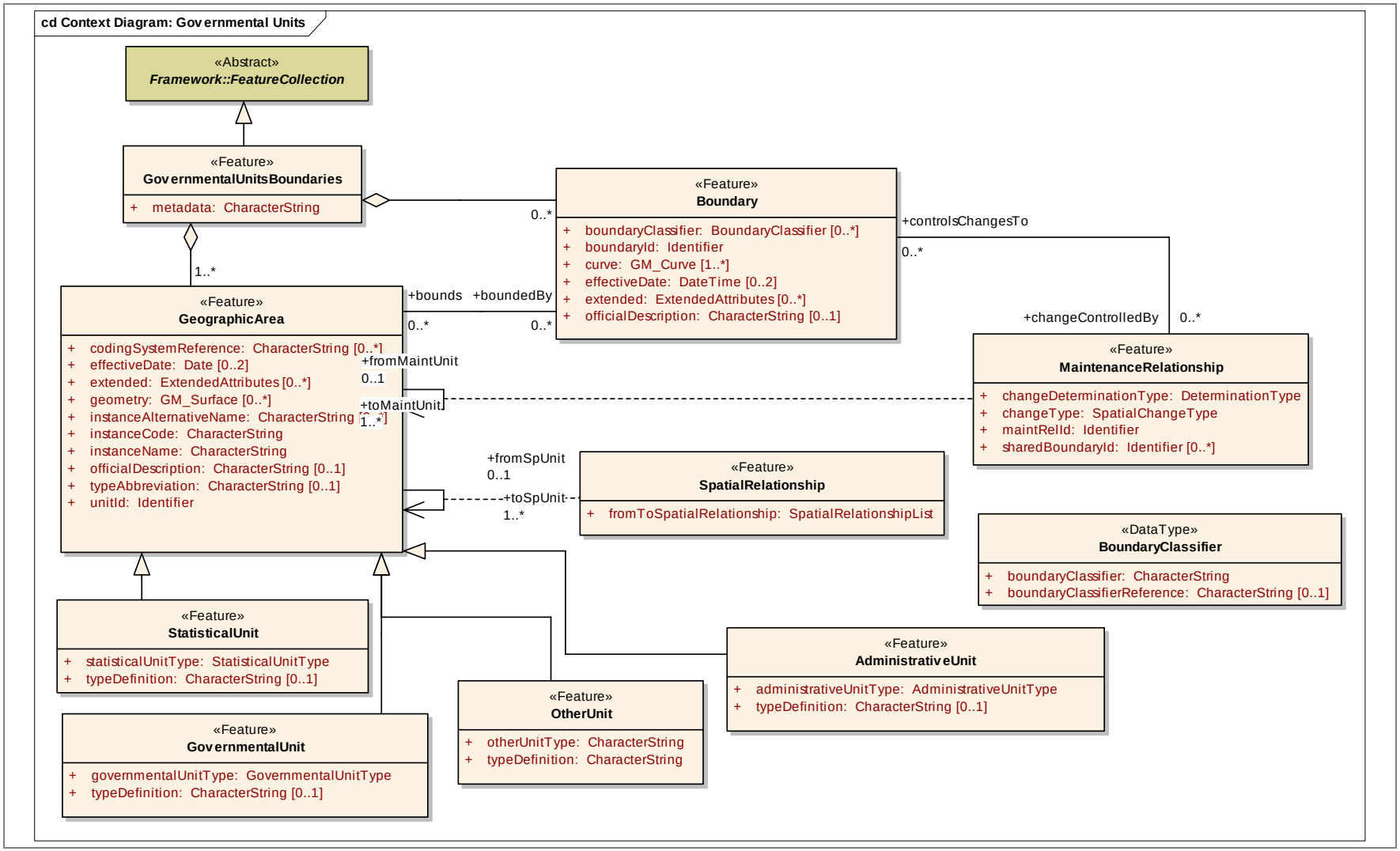


Geodetic Control

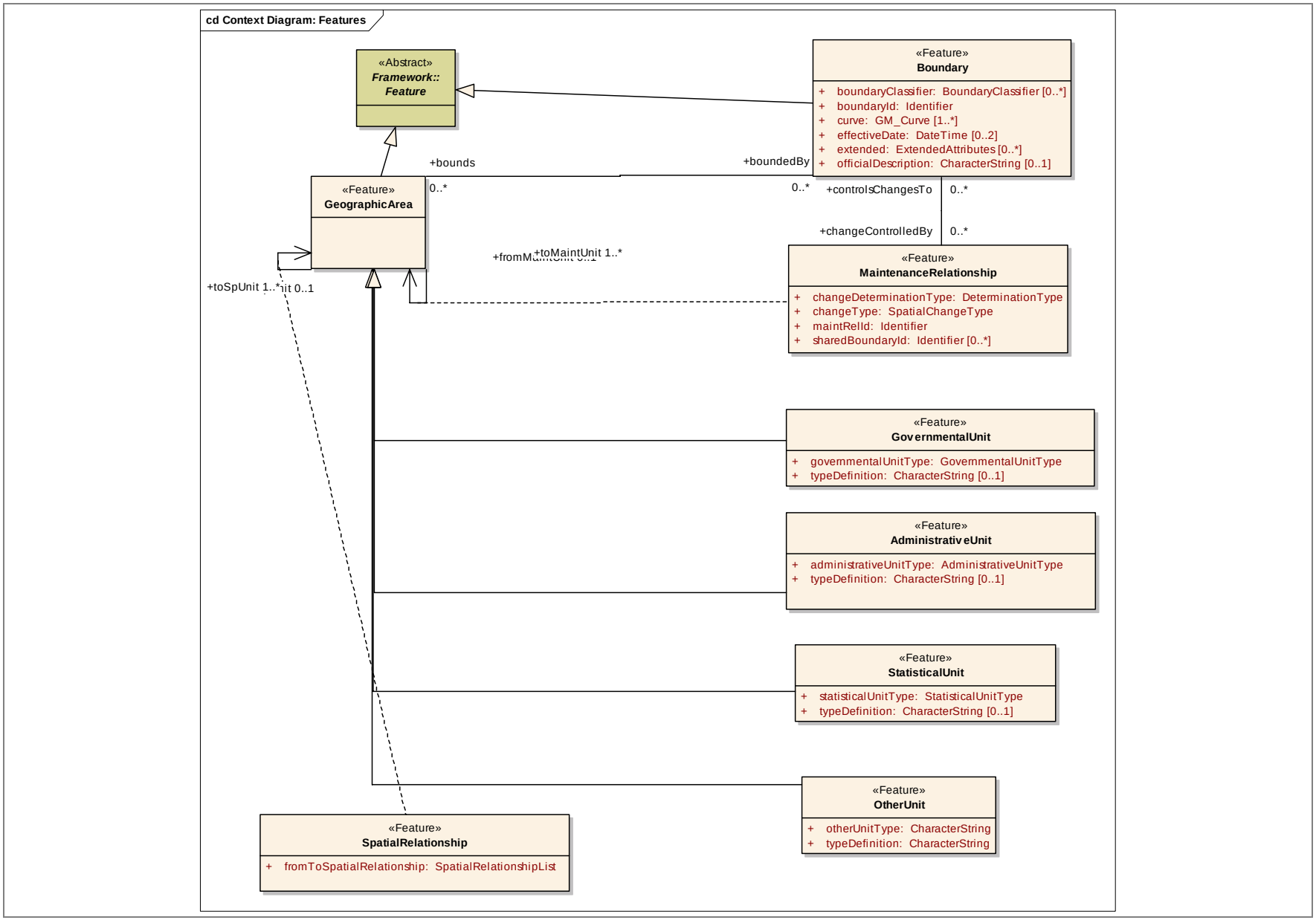


Governmental Units

Governmental Units



Features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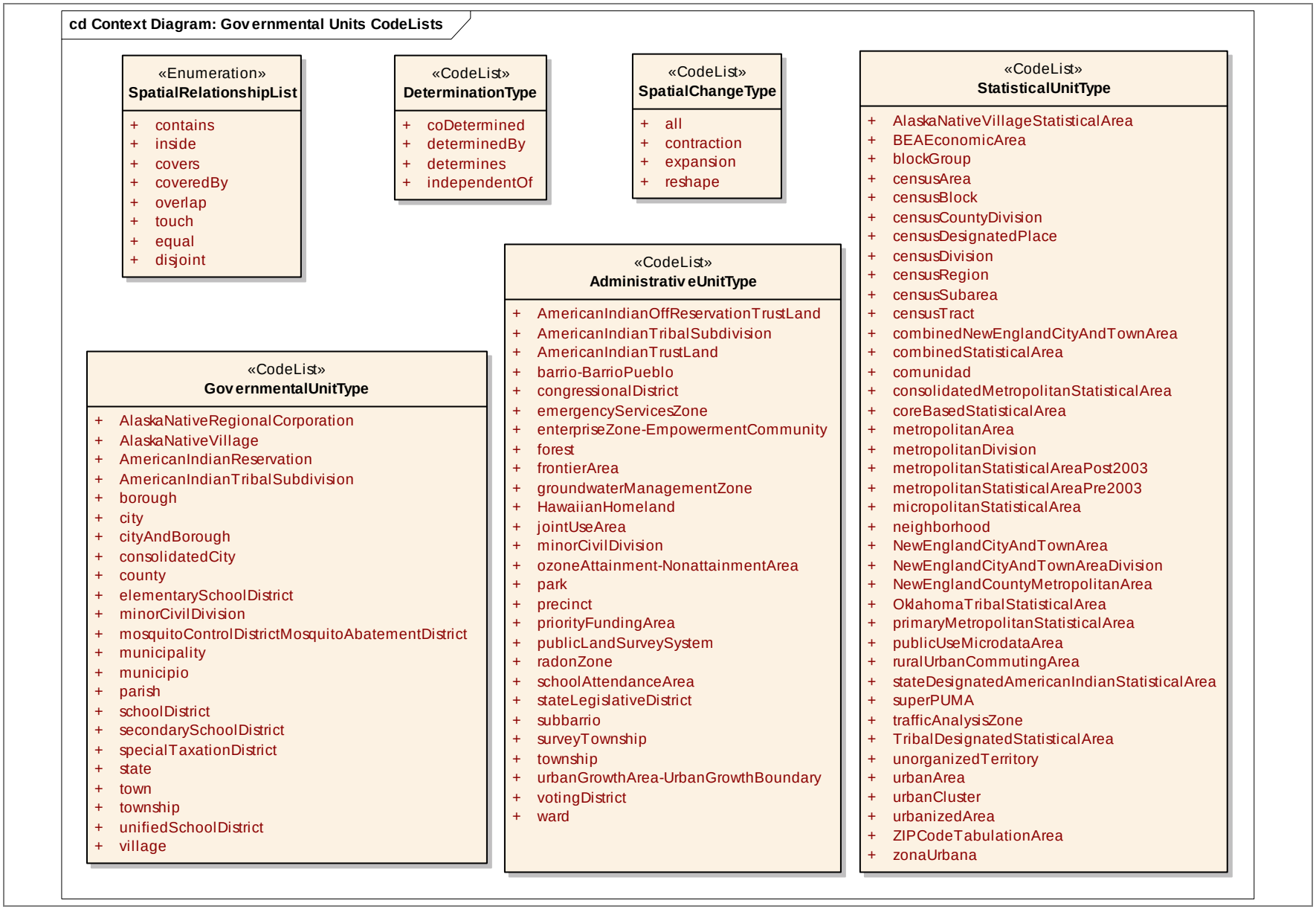
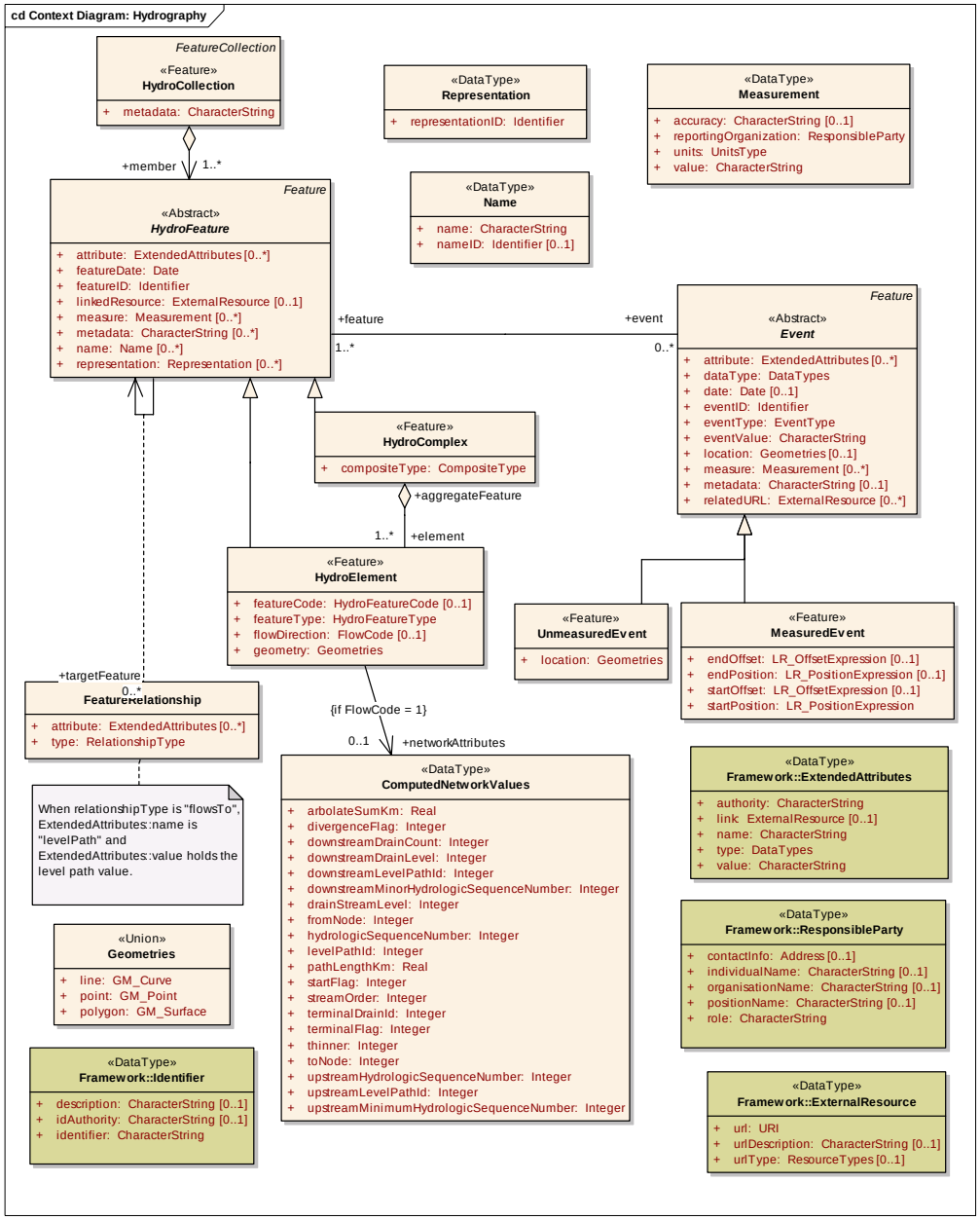
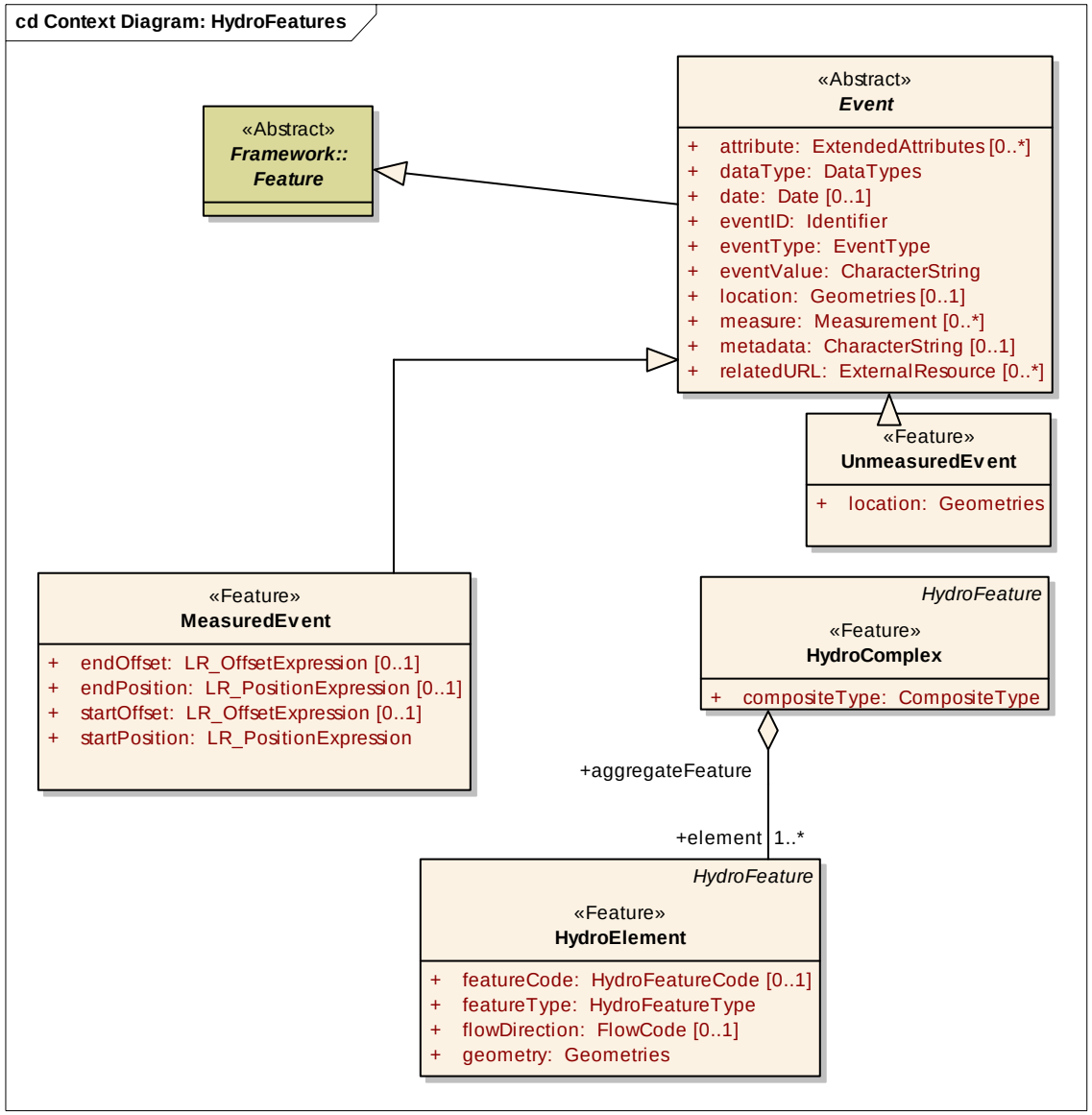
«Abstract»
Framework::
Feature
«Feature»
Boundary
+ boundaryClassifier: BoundaryClassifier [0..*]
+ boundaryId: Identifier
+ curve: GM_Curve [1..*]
+ effectiveDate: DateTime [0..2]
+ extended: ExtendedAttributes [0..*]
+ officialDescription: CharacterString [0..1]
+bounds
+boundedBy
0..*
0..*
+controlsChangesTo
0..*
+changeControlledBy
0..*
«Feature»
GeographicArea
+toMaintUnit 1..*
+toSpUnit 1..*
0..1
«Feature»
MaintenanceRelationship
+ changeDeterminationType: DeterminationType
+ changeType: SpatialChangeType
+ maintRelId: Identifier
+ sharedBoundaryId: Identifier [0..*]
«Feature»
GovernmentalUnit
+ governmentalUnitType: GovernmentalUnitType
+ typeDefinition: CharacterString [0..1]
«Feature»
AdministrativeUnit
+ administrativeUnitType: AdministrativeUnitType
+ typeDefinition: CharacterString [0..1]
«Feature»
StatisticalUnit
+ statisticalUnitType: StatisticalUnitType
+ typeDefinition: CharacterString [0..1]
«Feature»
OtherUnit
+ otherUnitType: CharacterString
+ typeDefinition: CharacterString
«Feature»
SpatialRelationship
+ fromToSpatialRelationship: SpatialRelationshipList


cd Context Diagram: Governmental Units CodeLists
«Enumeration»
SpatialRelationshipList
+ contains
+ inside
+ covers
+ coveredBy
+ overlap
+ touch
+ equal
+ disjoint
«CodeList»
DeterminationType
+ coDetermined
+ determinedBy
+ determines
+ independentOf
«CodeList»
SpatialChangeType
+ all
+ contraction
+ expansion
+ reshape
«CodeList»
StatisticalUnitType
+ AlaskaNativeVillageStatisticalArea
+ BEAEconomicArea
+ blockGroup
+ censusArea
+ censusBlock
+ censusCountyDivision
+ censusDesignatedPlace
+ censusDivision
+ censusRegion
+ censusSubarea
+ censusTract
+ combinedNewEnglandCityAndTownArea
+ combinedStatisticalArea
+ comunidad
+ consolidatedMetropolitanStatisticalArea
+ coreBasedStatisticalArea
+ metropolitanArea
+ metropolitanDivision
+ metropolitanStatisticalAreaPost2003
+ metropolitanStatisticalAreaPre2003
+ micropolitanStatisticalArea
+ neighborhood
+ NewEnglandCityAndTownArea
+ NewEnglandCityAndTownAreaDivision
+ NewEnglandCountyMetropolitanArea
+ OklahomaTribalStatisticalArea
+ primaryMetropolitanStatisticalArea
+ publicUseMicrodataArea
+ ruralUrbanCommutingArea
+ stateDesignatedAmericanIndianStatisticalArea
+ superPUMA
+ trafficAnalysisZone
+ TribalDesignatedStatisticalArea
+ unorganizedTerritory
+ urbanArea
+ urbanCluster
+ urbanizedArea
+ ZIPCodeTabulationArea
+ zonaUrbana
«CodeList»
AdministrativeUnitType
+ AmericanIndianOffReservationTrustLand
+ AmericanIndianTribalSubdivision
+ AmericanIndianTrustLand
+ barrio-BarrioPueblo
+ congressionalDistrict
+ emergencyServicesZone
+ enterpriseZone-EmpowermentCommunity
+ forest
+ frontierArea
+ groundwaterManagementZone
+ HawaiianHomeland
+ jointUseArea
+ minorCivilDivision
+ ozoneAttainment-NonattainmentArea
+ park
+ precinct
+ priorityFundingArea
+ publicLandSurveySystem
+ radonZone
+ schoolAttendanceArea
+ stateLegislativeDistrict
+ subbarrio
+ surveyTownship
+ township
+ urbanGrowthArea-UrbanGrowthBoundary
+ votingDistrict
+ ward
«CodeList»
GovernmentalUnitType
+ AlaskaNativeRegionalCorporation
+ AlaskaNativeVillage
+ AmericanIndianReservation
+ AmericanIndianTribalSubdivision
+ borough
+ city
+ cityAndBorough
+ consolidatedCity
+ county
+ elementarySchoolDistrict
+ minorCivilDivision
+ mosquitoControlDistrictMosquitoAbatementDistrict
+ municipality
+ municipio
+ parish
+ schoolDistrict
+ secondarySchoolDistrict
+ specialTaxationDistrict
+ state
+ town
+ township
+ unifiedSchoolDistrict
+ village

Hydrography

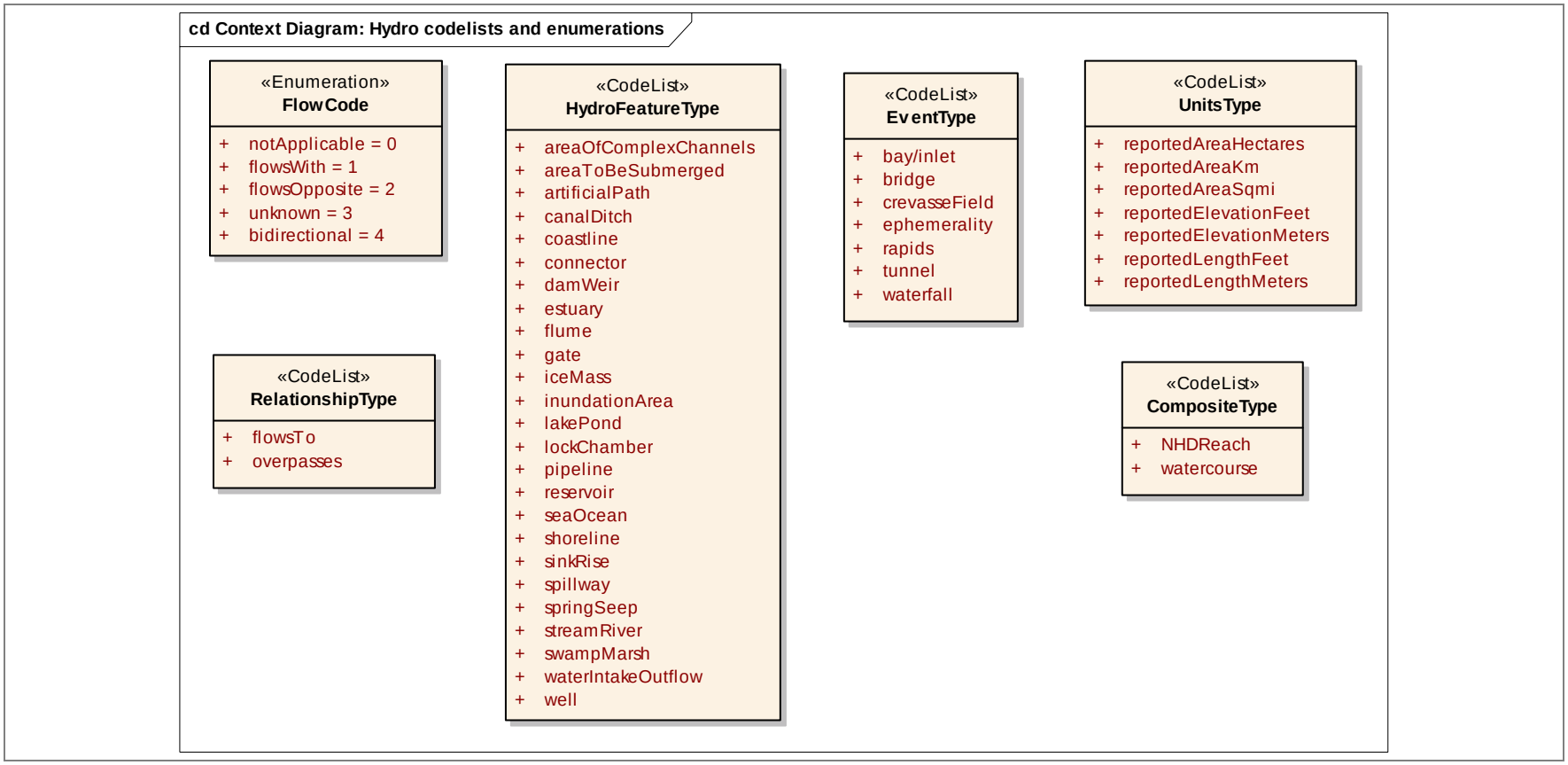



cd Context Diagram: HydroFeatures
«Abstract»
Framework::
Feature
«Abstract»
Event
+ attribute: ExtendedAttributes [0..*]
+ dataType: DataTypes
+ date: Date [0..1]
+ eventID: Identifier
+ eventType: EventType
+ eventValue: CharacterString
+ location: Geometries [0..1]
+ measure: Measurement [0..*]
+ metadata: CharacterString [0..1]
+ relatedURL: ExternalResource [0..*]
«Feature»
UnmeasuredEvent
+ location: Geometries
«Feature»
MeasuredEvent
+ endOffset: LR_OffsetExpression [0..1]
+ endPosition: LR_PositionExpression [0..1]
+ startOffset: LR_OffsetExpression [0..1]
+ startPosition: LR_PositionExpression
HydroFeature
«Feature»
HydroComplex
+ compositeType: CompositeType
+aggregateFeature
+element
1..*
HydroFeature
«Feature»
HydroElement
+ featureCode: HydroFeatureCode [0..1]
+ featureType: HydroFeatureType
+ flowDirection: FlowCode [0..1]
+ geometry: Geometries

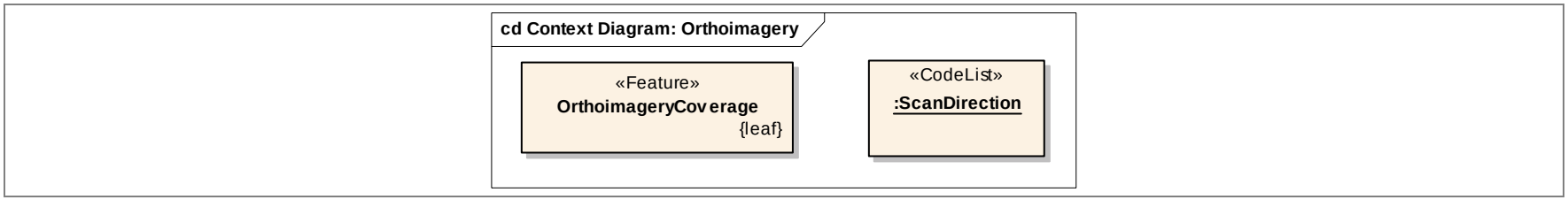
cd Context Diagram: Hydro FeatureCodes

«enumeration»
HydroFeatureCode

+ Area of Complex Channels: = 53700
+ Area to be Submerged: = 30700
+ Artificial Path: = 55800
+ Canal/Ditch: = 33600
+ Canal/Ditch, Canal/Ditch Type = Aqueduct: = 33601
+ Coastline: = 56600
+ Connector: = 33400
+ Dam/Weir: = 34300
+ Dam/Weir, Construction material = Earthen: = 34305
+ Dam/Weir, Construction Material = Nonearthen: = 34306
+ Estuary: = 49300
+ Flume: = 36200
+ Gate: = 36900
+ Ice Mass: = 37800
+ Inundation Area: = 40300
+ Inundation Area, Inundation Control Status = Not Controlled: = 40307
+ Inundation Area, Inundation Status = Controlled: = 40308
+ Inundation Area, Inundation Status = Controlled, Stage = Flood Elevation: = 40309
+ Lake/Pond: = 39000
+ Lake/Pond, Hydrographic Category = Intermittent: = 39001
+ Lake/Pond, Hydrographic Category = Intermittent, Stage = Date of Photography: = 39006
+ Lake/Pond, Hydrographic Category = Perennial: = 39004
+ Lake/Pond, Hydrographic Category = Perennial, Stage = Average Water Elevation: = 39009
+ Lake/Pond, Hydrographic Category = Perennial, Stage = Date of Photography: = 39011
+ Lake/Pond, Hydrographic Category = Perennial, Stage = Normal Pool: = 39010
+ Lake/Pond, Hydrographic Category = Perennial, Stage = Spillway Elevation: = 39012
+ Lock Chamber: = 39800
+ Pipeline: = 42800
+ Pipeline, Pipeline Type = Aqueduct: = 42816
+ Pipeline, Pipeline Type = Aqueduct, Relationship to Surface = At or Near: = 42801
+ Pipeline, Pipeline Type = Aqueduct, Relationship to Surface = Elevated: = 42802
+ Pipeline, Pipeline Type = Aqueduct, Relationship to Surface = Underground: = 42803
+ Pipeline, Pipeline Type = Aqueduct, Relationship to Surface = Underwater: = 42804
+ Pipeline, Pipeline Type = General Case: = 42814
+ Pipeline, Pipeline Type = General Case, Relationship to Surface = At or Near: = 42805
+ Pipeline, Pipeline Type = General Case, Relationship to Surface = Elevated: = 42806
+ Pipeline, Pipeline Type = General Case, Relationship to Surface = Underground: = 42807
+ Pipeline, Pipeline Type = General Case, Relationship to Surface = Underwater: = 42808
+ Pipeline, Pipeline Type = Penstock: = 42815
+ Pipeline, Pipeline Type = Penstock, Relationship to Surface = At or Near: = 42809
+ Pipeline, Pipeline Type = Penstock, Relationship to Surface = Elevated: = 42810
+ Pipeline, Pipeline Type = Penstock, Relationship to Surface = Underground: = 42811
+ Pipeline, Pipeline Type = Penstock, Relationship to Surface = Underwater: = 42812
+ Pipeline, Pipeline Type = Siphon: = 42813
+ Reservoir: = 43600
+ Reservoir, Construction Material = Earthen: = 43618
+ Reservoir, Construction Material = Nonearthen: = 43619
+ Reservoir, Reservoir Type = Aquaculture: = 43601
+ Reservoir, Reservoir Type = Cooling Pond: = 43609
+ Reservoir, Reservoir Type = Decorative Pool: = 43603
+ Reservoir, Reservoir Type = Disposal: = 43606
+ Reservoir, Reservoir Type = Disposal, Construction Material = Earthen: = 43625
+ Reservoir, Reservoir Type = Disposal, Construction Material = Nonearthen: = 43626
+ Reservoir, Reservoir Type = Evaporator: = 43607
+ Reservoir, Reservoir Type = Evaporator, Construction Material = Earthen: = 43623
+ Reservoir, Reservoir Type = Filtration Pond: = 43610
+ Reservoir, Reservoir Type = Settling Pond: = 43611
+ Reservoir, Reservoir Type = Sewage Treatment Pond: = 43612
+ Reservoir, Reservoir Type = Swimming Pool: = 43608
+ Reservoir, Reservoir Type = Tailings Pond: = 43605
+ Reservoir, Reservoir Type = Tailings Pond, Construction Material = Earthen: = 43604
+ Reservoir, Reservoir Type = Treatment: = 43624
+ Reservoir, Reservoir Type = Water Storage: = 43617
+ Reservoir, Reservoir Type = Water Storage, Construction Material = Earthen, Hydrographic Category = Intermittent: = 43614
+ Reservoir, Reservoir Type = Water Storage, Construction Material = Earthen, Hydrographic Category = Perennial: = 43615
+ Reservoir, Reservoir Type = Water Storage, Construction Material = Nonearthen: = 43613
+ Reservoir, Reservoir Type = Water Storage, Hydrographic Category = Perennial: = 43621
+ Sea/Ocean: = 44500
+ Sink/Rise: = 45000
+ Spillway: = 45500
+ Spring/Seep: = 45800
+ Stream/River: = 46000
+ Stream/River, Hydrographic Category = Intermittent: = 46003
+ Stream/River, Hydrographic Category = Perennial: = 46006
+ Swamp/Marsh: = 46600
+ Water Intake/Outflow: = 48500
+ Well: = 48800

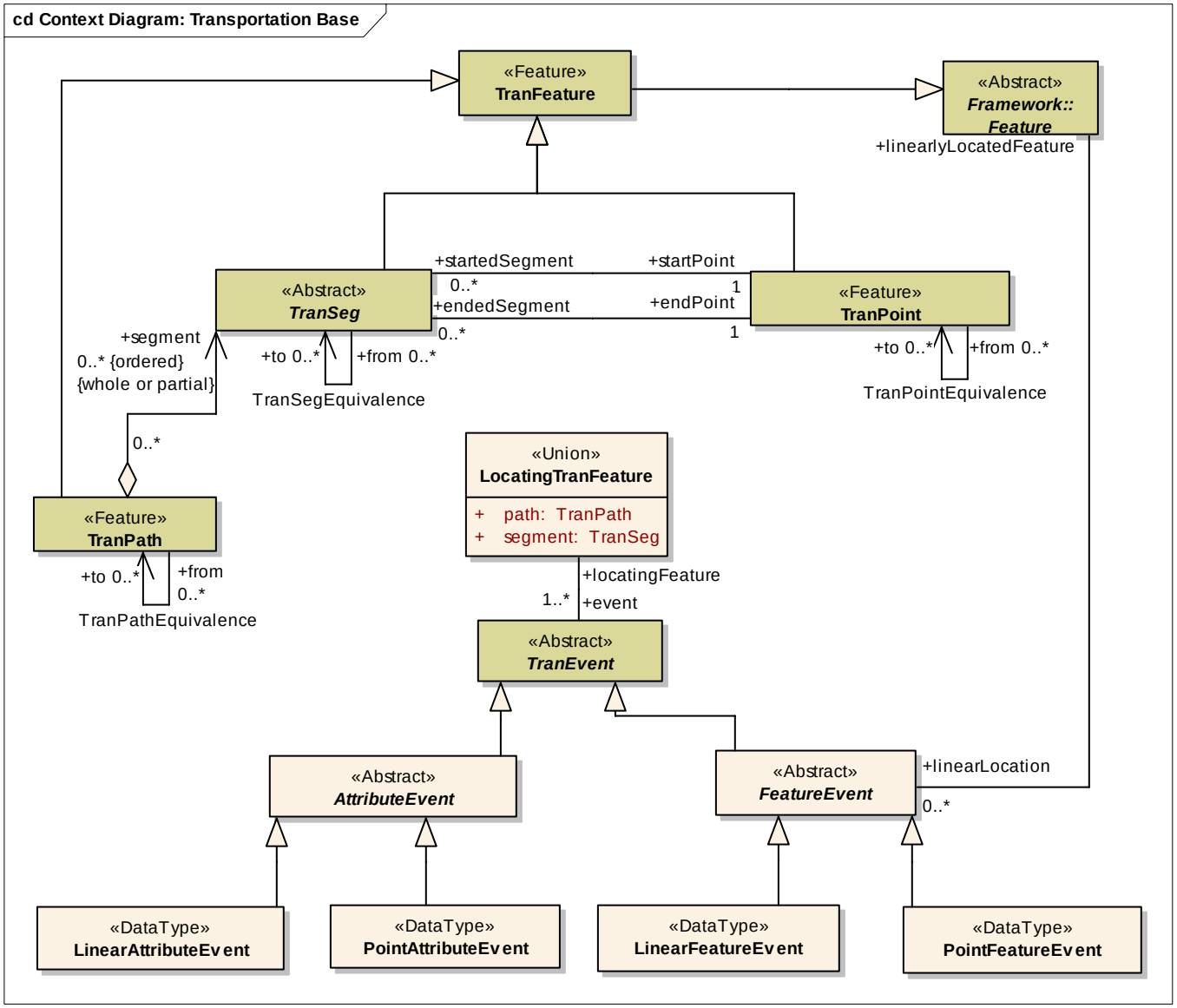

cd Context Diagram: Hydro codelists and enumerations
«Enumeration»
FlowCode
+ notApplicable = 0
+ flowsWith = 1
+ flowsOpposite = 2
+ unknown = 3
+ bidirectional = 4
«CodeList»
HydroFeatureType
+ areaOfComplexChannels
+ areaToBeSubmerged
+ artificialPath
+ canalDitch
+ coastline
+ connector
+ damWeir
+ estuary
+ flume
+ gate
+ iceMass
+ inundationArea
+ lakePond
+ lockChamber
+ pipeline
+ reservoir
+ seaOcean
+ shoreline
+ sinkRise
+ spillway
+ springSeep
+ streamRiver
+ swampMarsh
+ waterIntakeOutflow
+ well
«CodeList»
EventType
+ bay/inlet
+ bridge
+ crevasseField
+ ephemerality
+ rapids
+ tunnel
+ waterfall
«CodeList»
UnitsType
+ reportedAreaHectares
+ reportedAreaKm
+ reportedAreaSqmi
+ reportedElevationFeet
+ reportedElevationMeters
+ reportedLengthFeet
+ reportedLengthMeters
«CodeList»
RelationshipType
+ flowsTo
+ overpasses
«CodeList»
CompositeType
+ NHDReach
+ watercourse

Orthoimagery

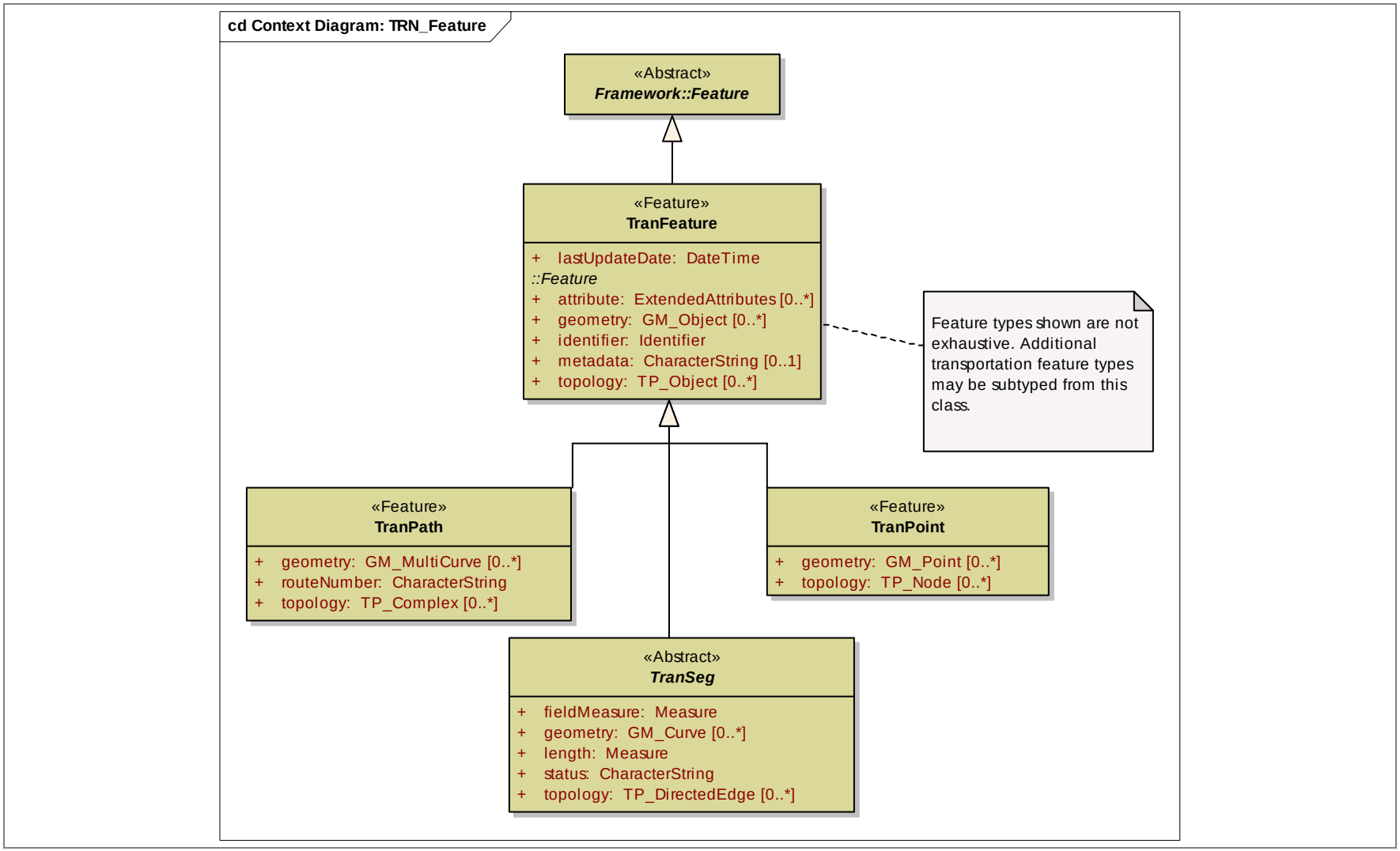


Transportation

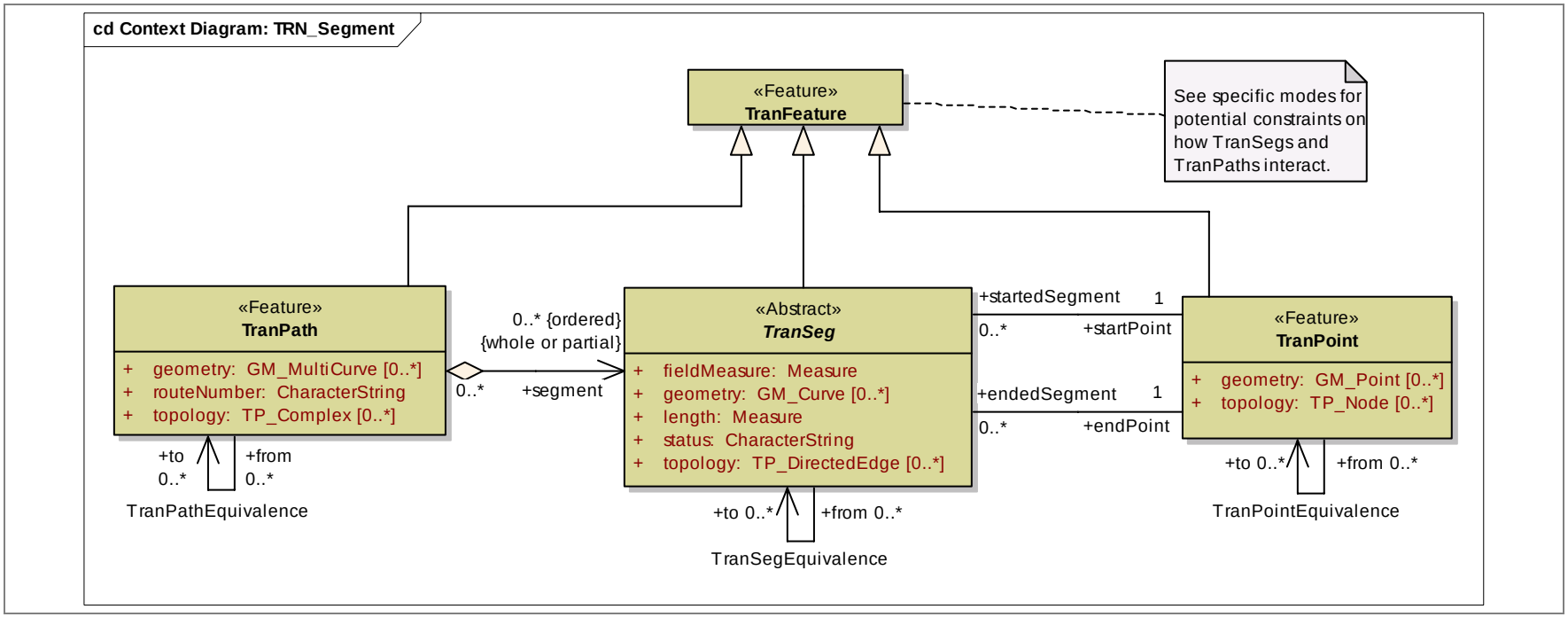
TransportationBase



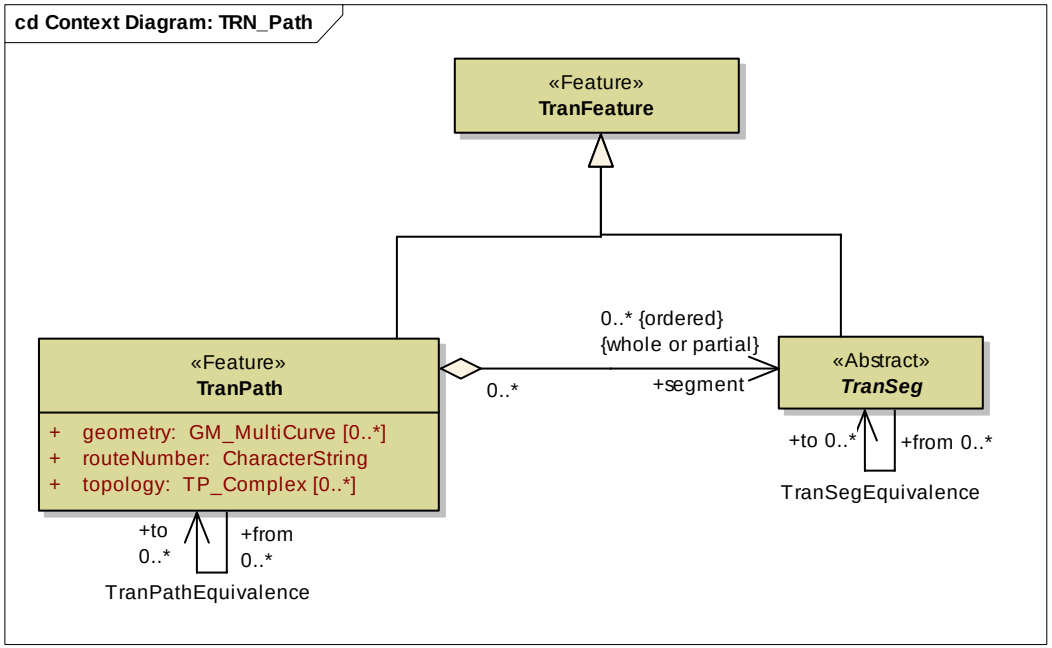
TransportationBase::TranFeature



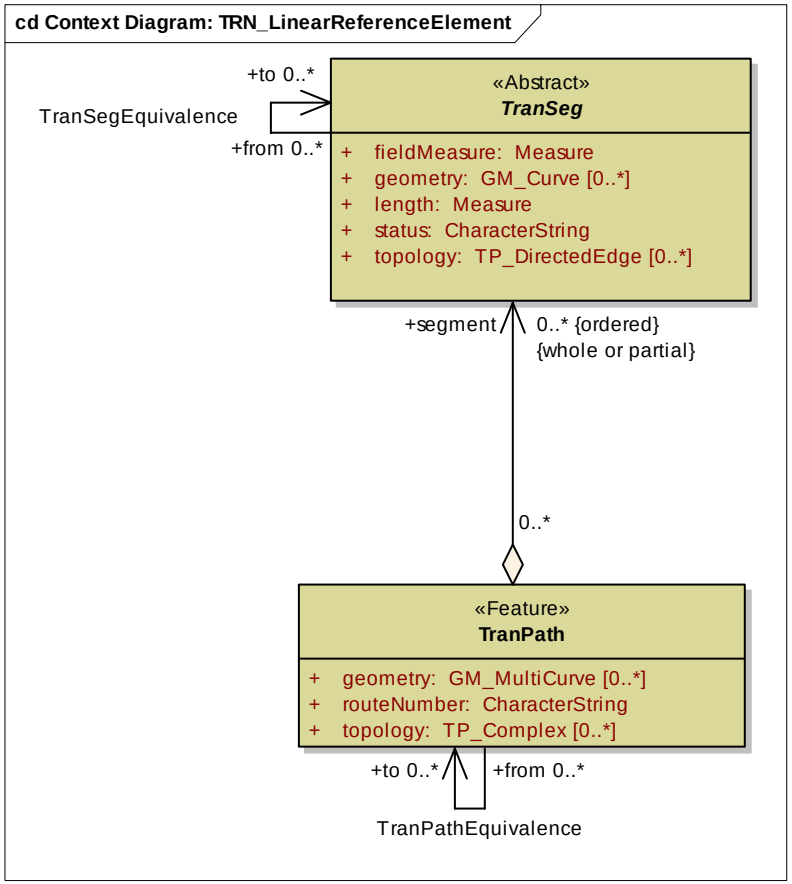
TransportationBase::TranSeg



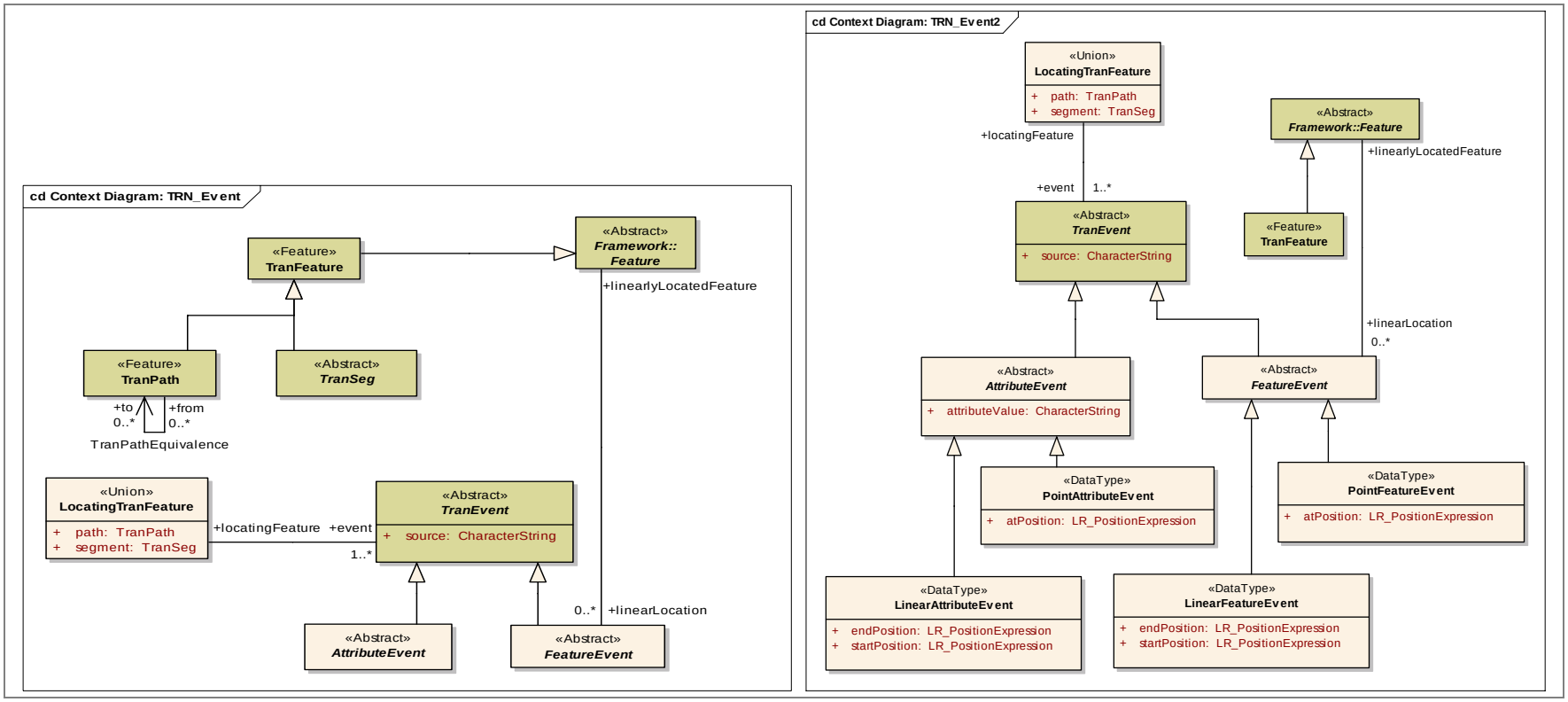
TransportationBase::TranPath



TransportationBase::Linear Reference Element

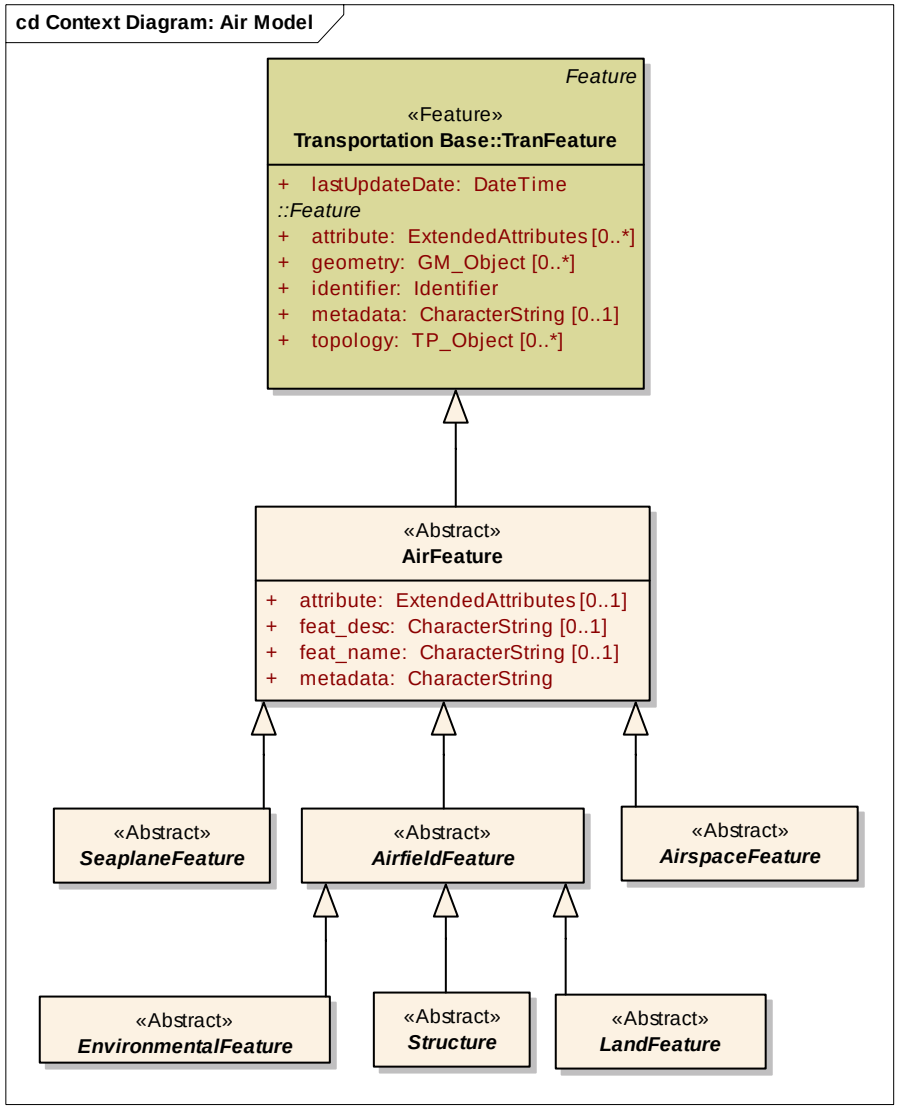


TransportationBase::Event

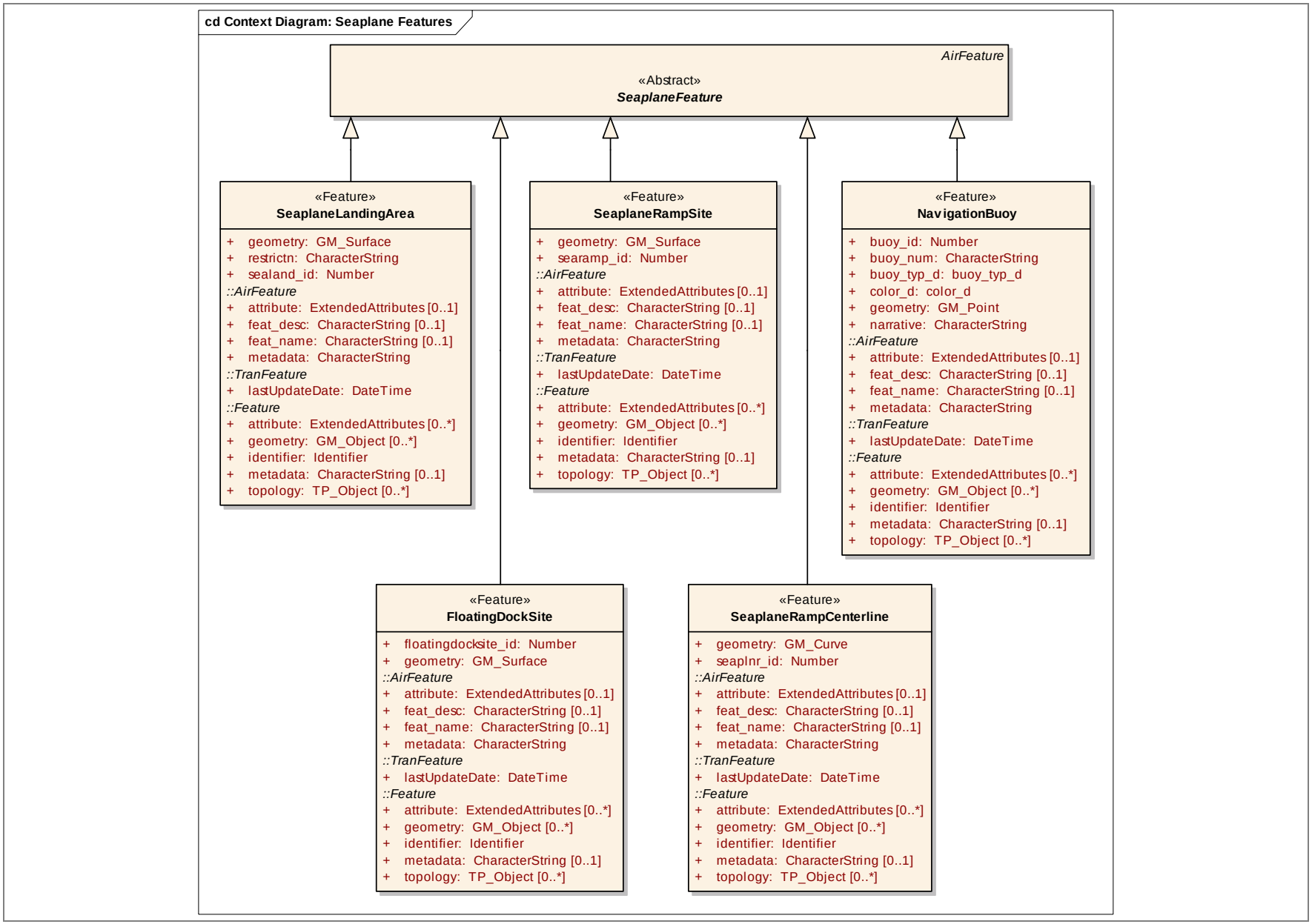


Air

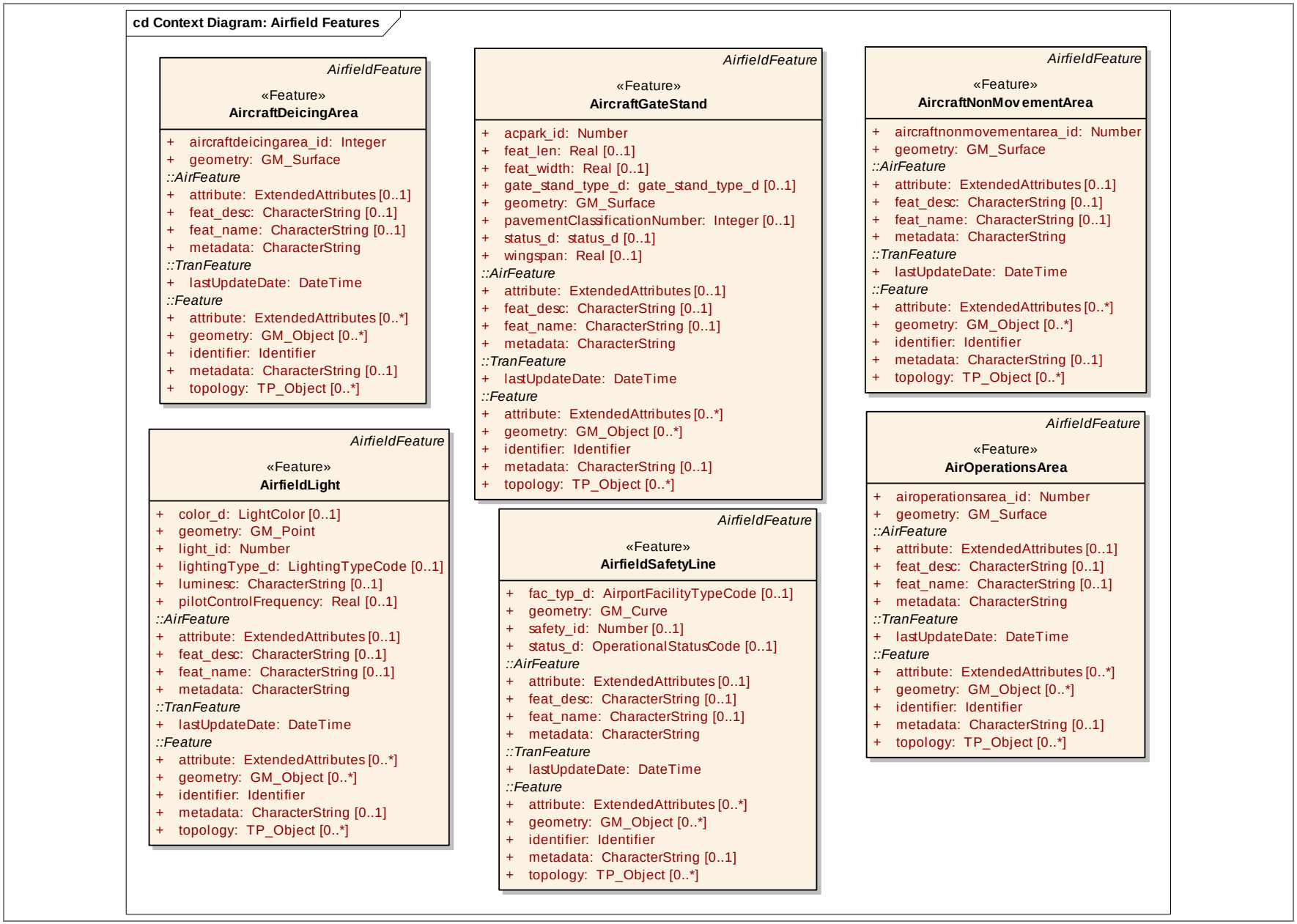
(NOTE: Not all objects in the Air package are elaborated in this document, please obtain the model itself for more information)



Seaplane Feature



Airfield Feature (1 of 3)



Airfield Feature (2 of 3)

cd Context Diagram: Airfield Features2

AirfieldFeature

«Feature»
AirportBoundary

+ airfld_id: Number [0..1]
+ airportFacilityType_d: airportFacilityType_d [0..1]
+ facLocId: CharacterString [0..1]
+ geometry: GM_Surface
+ iataCode: CharacterString [0..1]
+ icaoCode: CharacterString [0..1]
+ LndFacSiteNum: Number [0..1]
+ LndFacTypeCode: CharacterString [0..1]
+ operationsType_d: operationsType_d [0..1]
+ owner_d: owner_d [0..1]
::AirFeature
+ attribute: ExtendedAttributes [0..1]
+ feat_desc: CharacterString [0..1]
+ feat_name: CharacterString [0..1]
+ metadata: CharacterString
::TranFeature
+ lastUpdateDate: DateTime
::Feature
+ attribute: ExtendedAttributes [0..*]
+ geometry: GM_Object [0..*]
+ identifier: Identifier
+ metadata: CharacterString [0..1]
+ topology: TP_Object [0..*]

AirfieldFeature

«Feature»
AirportSign

+ feat_ht: Real [0..1]
+ feature_id: Number
+ geometry: GM_Point
+ message: CharacterString [0..1]
+ signTypeCode_d: signTypeCode_d [0..1]
::AirFeature
+ attribute: ExtendedAttributes [0..1]
+ feat_desc: CharacterString [0..1]
+ feat_name: CharacterString [0..1]
+ metadata: CharacterString
::TranFeature
+ lastUpdateDate: DateTime
::Feature
+ attribute: ExtendedAttributes [0..*]
+ geometry: GM_Object [0..*]
+ identifier: Identifier
+ metadata: CharacterString [0..1]
+ topology: TP_Object [0..*]

AirfieldFeature

«Feature»
Apron

+ air_sur_id: Number
+ apronType_d: apronType_d [0..1]
+ geometry: GM_Surface
+ pavementClassificationNumber: Integer [0..1]
+ status_d: status_d [0..1]
+ surfaceCondition_d: surfaceCondition_d [0..1]
+ surfaceMaterial_d: surfaceMaterial_d [0..1]
+ surfaceType_d: surfaceType_d [0..1]
+ tiedowns: Integer [0..1]
::AirFeature
+ attribute: ExtendedAttributes [0..1]
+ feat_desc: CharacterString [0..1]
+ feat_name: CharacterString [0..1]
+ metadata: CharacterString
::TranFeature
+ lastUpdateDate: DateTime
::Feature
+ attribute: ExtendedAttributes [0..*]
+ geometry: GM_Object [0..*]
+ identifier: Identifier
+ metadata: CharacterString [0..1]
+ topology: TP_Object [0..*]

AirfieldFeature

«Feature»
MarkingArea

+ color_d: color_d [0..1]
+ geometry: GM_Surface
+ mark_id: Number [0..1]
+ markingFeatureType_d: markingFeatureType_d [0..1]
::AirFeature
+ attribute: ExtendedAttributes [0..1]
+ feat_desc: CharacterString [0..1]
+ feat_name: CharacterString [0..1]
+ metadata: CharacterString
::TranFeature
+ lastUpdateDate: DateTime
::Feature
+ attribute: ExtendedAttributes [0..*]
+ geometry: GM_Object [0..*]
+ identifier: Identifier
+ metadata: CharacterString [0..1]
+ topology: TP_Object [0..*]

AirfieldFeature

«Feature»
DisplacedThreshold

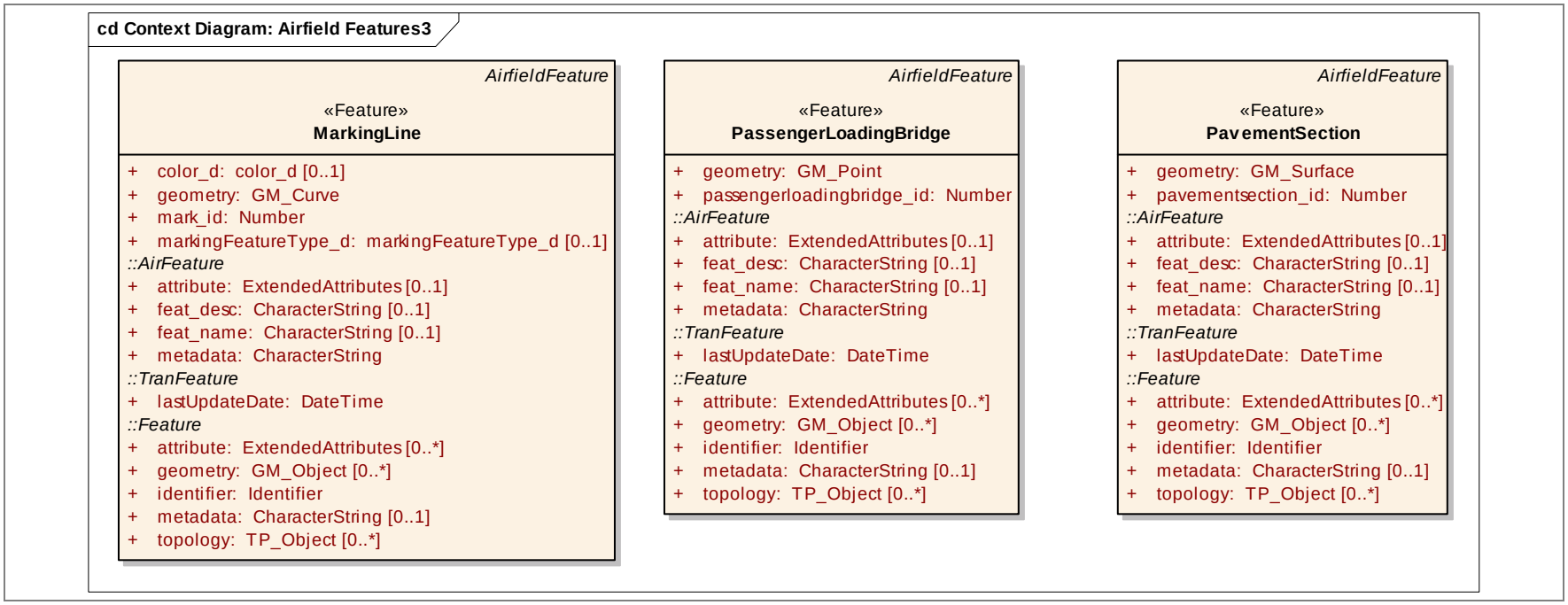
+ displacedthreshold_id: Number
+ elevation: Real [0..1]
+ ellipsoidElevation: Real [0..1]
+ geometry: GM_Point
+ latitude: Real [0..1]
+ longitude: Real [0..1]
+ pointType_d: pointType_d [0..1]
::AirFeature
+ attribute: ExtendedAttributes [0..1]
+ feat_desc: CharacterString [0..1]
+ feat_name: CharacterString [0..1]
+ metadata: CharacterString
::TranFeature
+ lastUpdateDate: DateTime
::Feature
+ attribute: ExtendedAttributes [0..*]
+ geometry: GM_Object [0..*]
+ identifier: Identifier
+ metadata: CharacterString [0..1]
+ topology: TP_Object [0..*]

AirfieldFeature

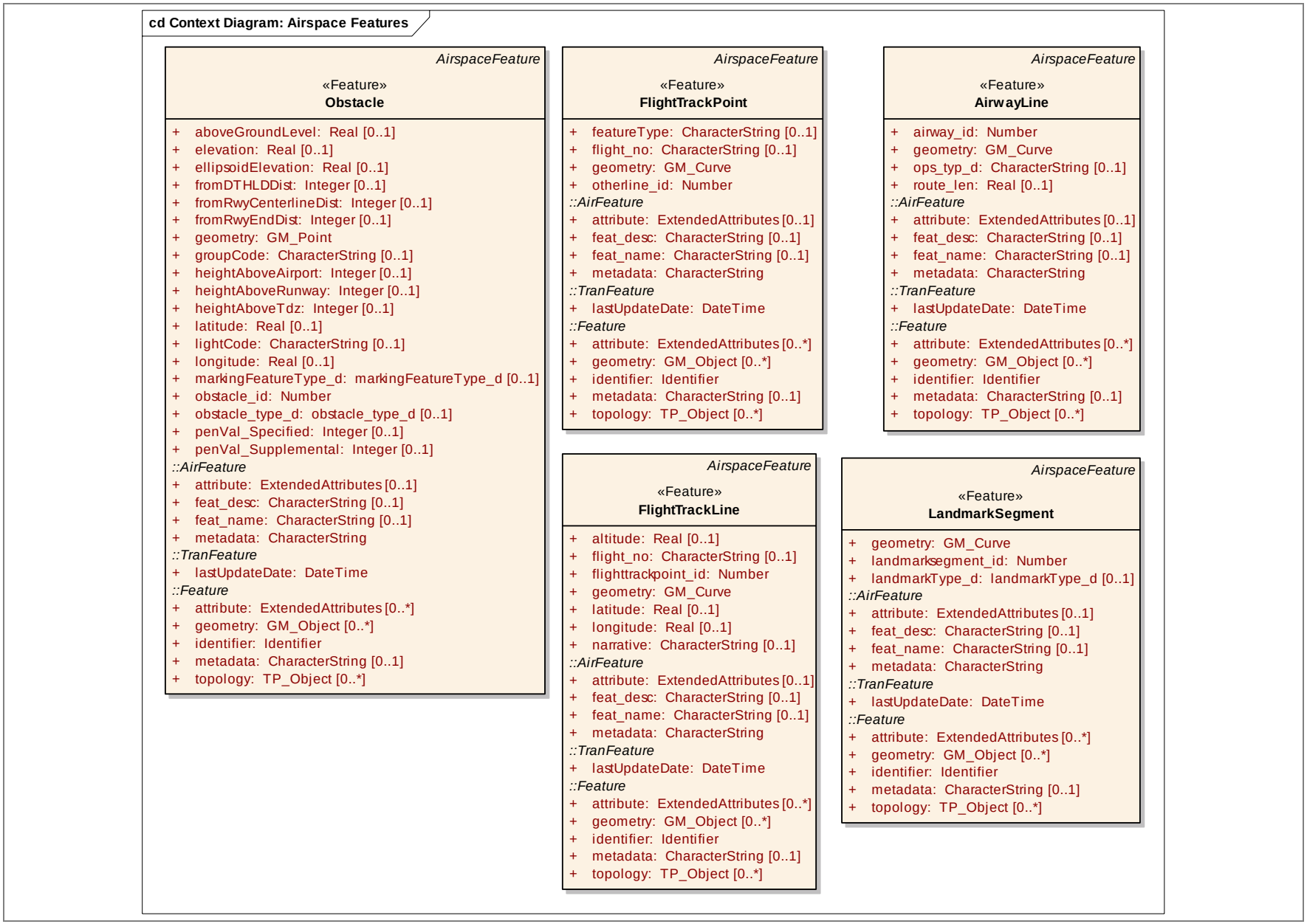
«Feature»
FrequencyArea

+ frequency: Real [0..1]
+ geometry: GM_Surface
+ gwv_id: Number
+ station: CharacterString [0..1]
::AirFeature
+ attribute: ExtendedAttributes [0..1]
+ feat_desc: CharacterString [0..1]
+ feat_name: CharacterString [0..1]
+ metadata: CharacterString
::TranFeature
+ lastUpdateDate: DateTime
::Feature
+ attribute: ExtendedAttributes [0..*]
+ geometry: GM_Object [0..*]
+ identifier: Identifier
+ metadata: CharacterString [0..1]
+ topology: TP_Object [0..*]

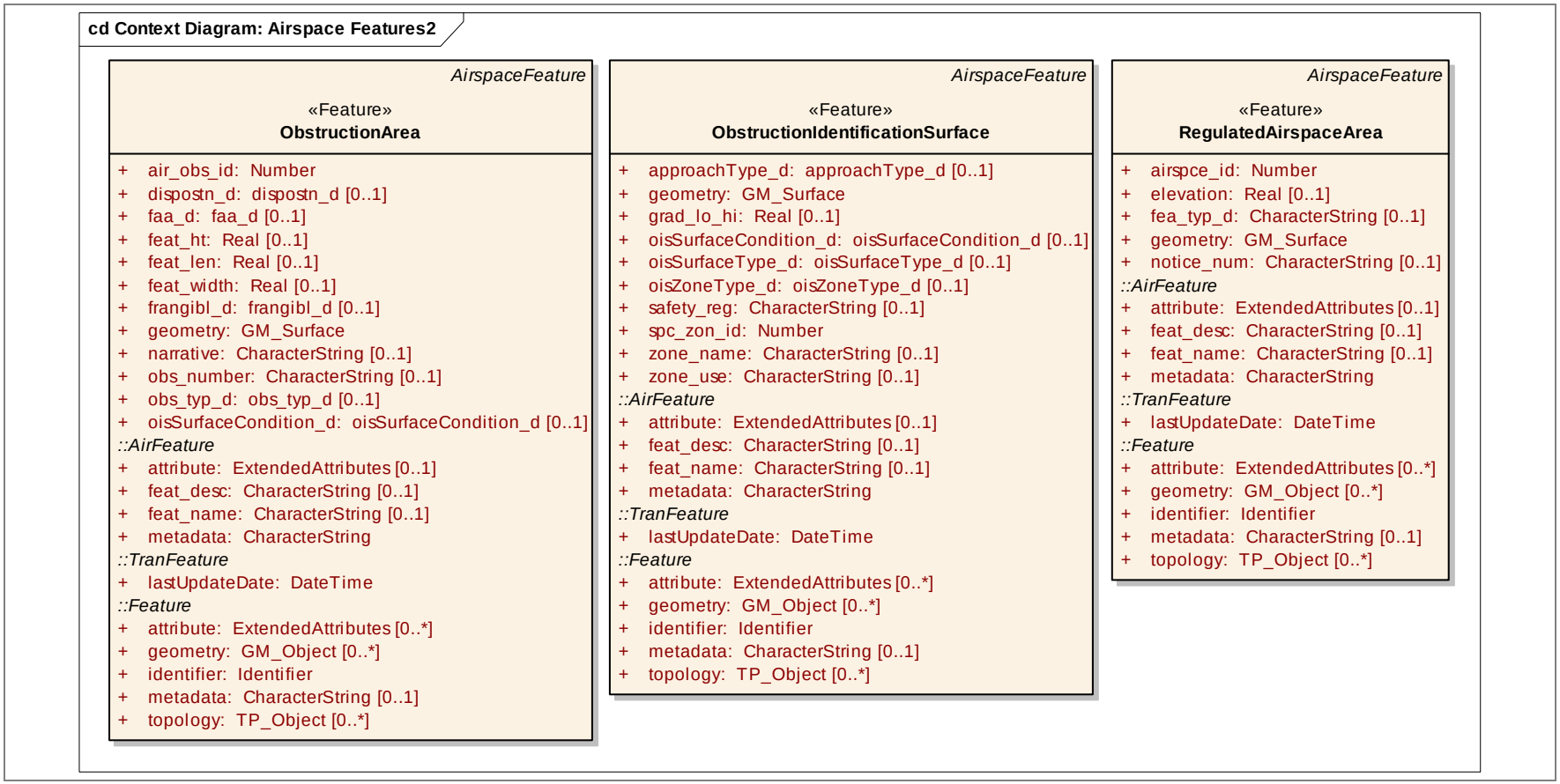
Airfield Feature (3 of 3)



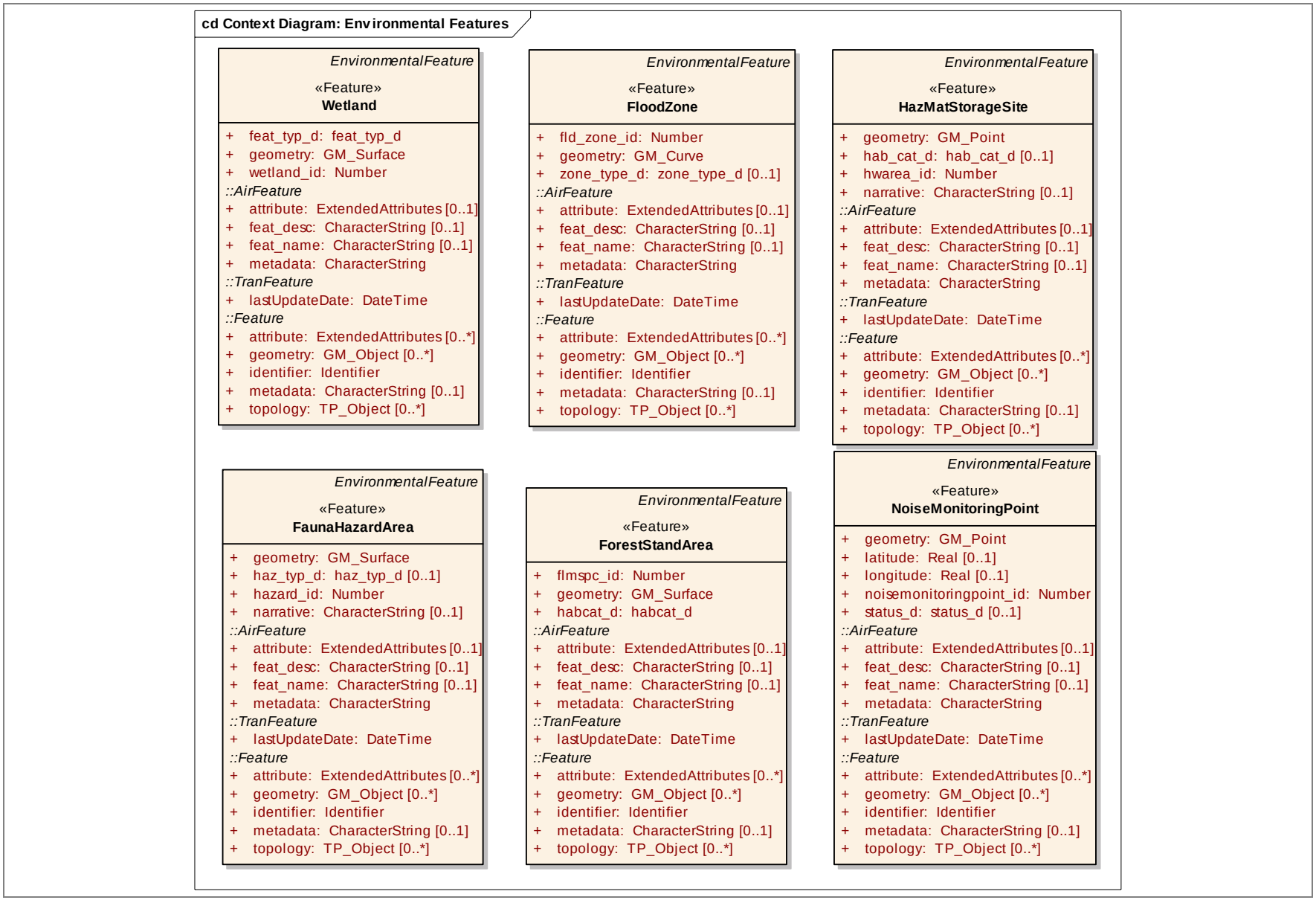
Airspace Feature (1 of 2)



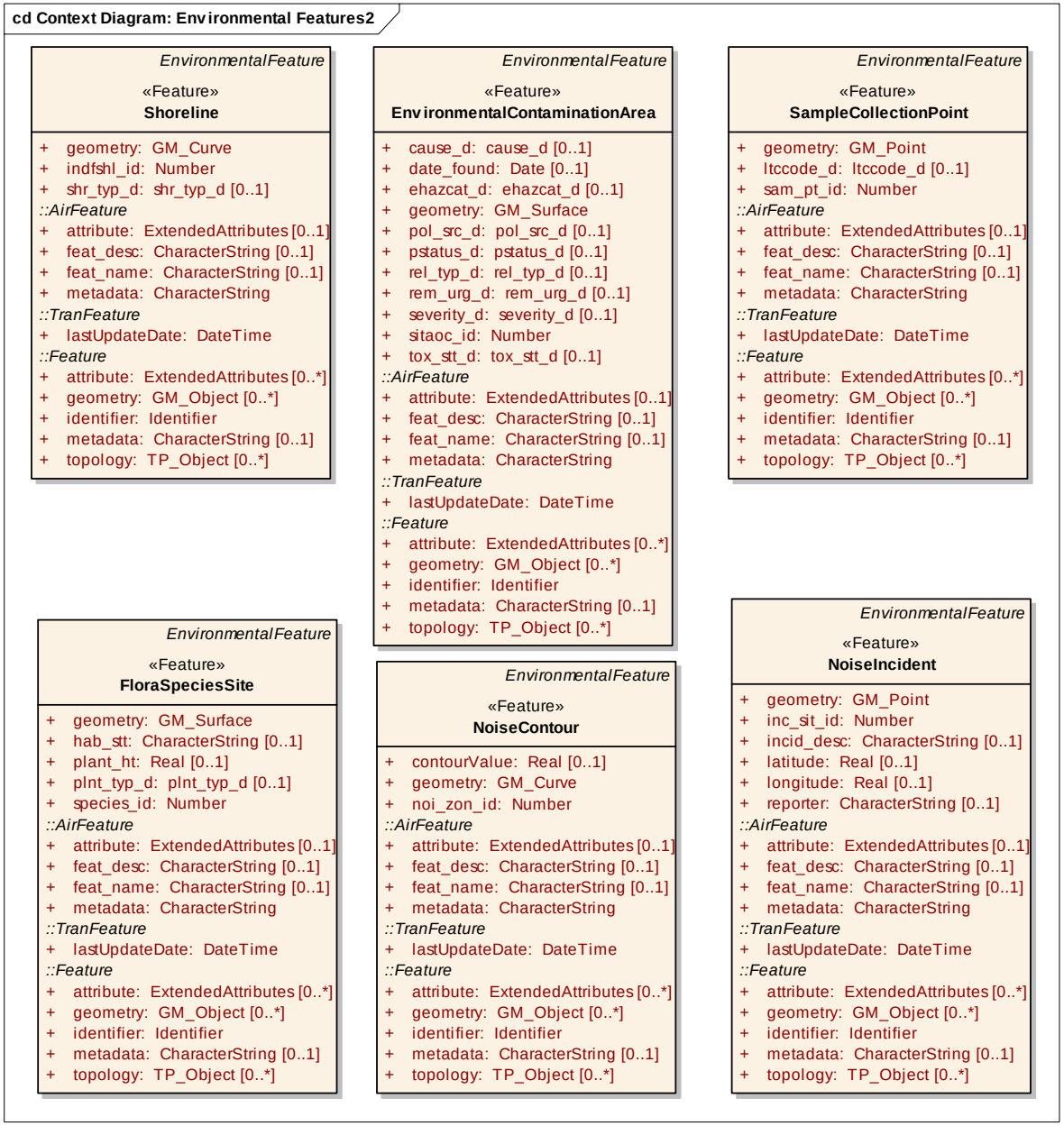
Airspace Feature (2 of 2)

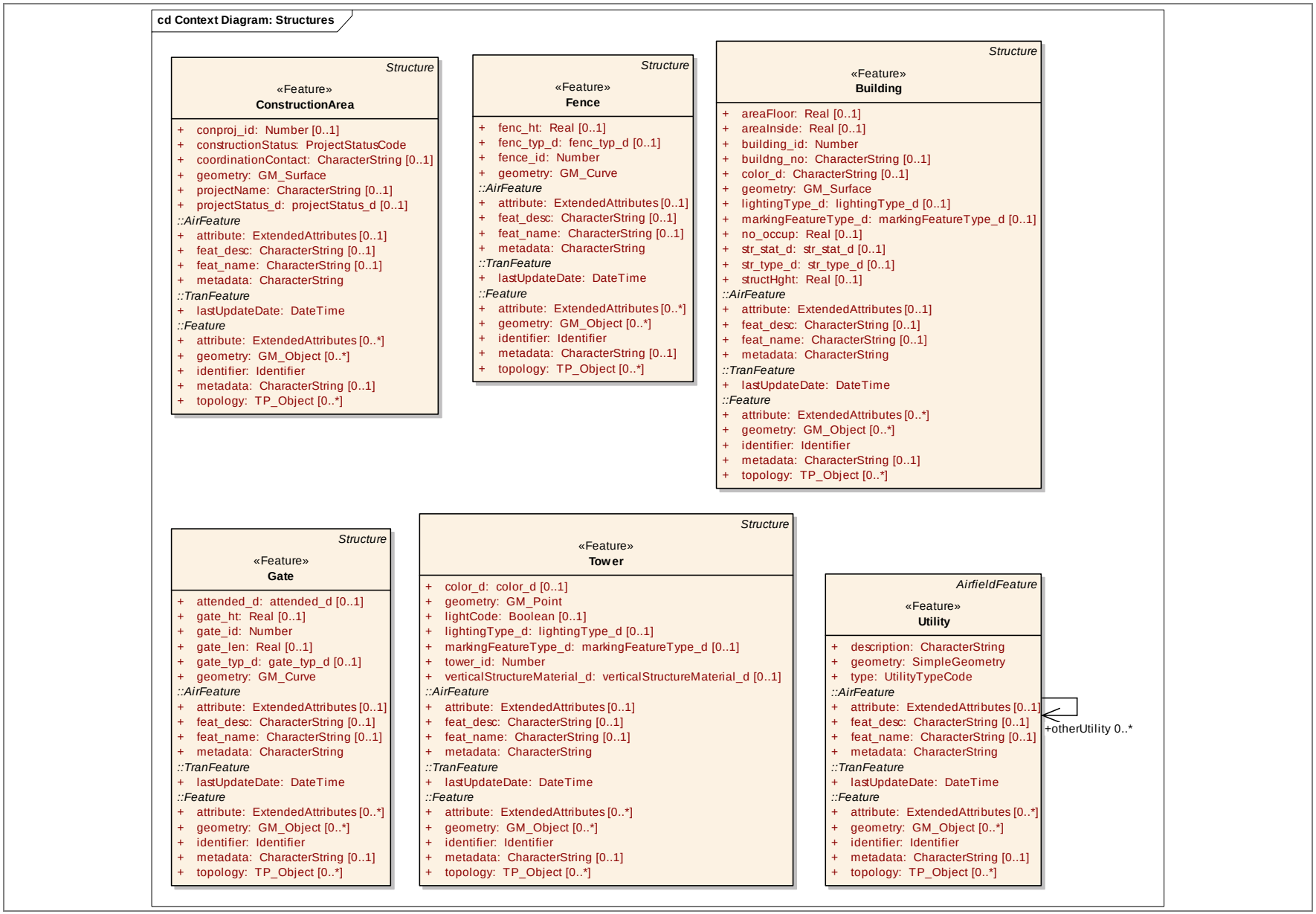


Environmental Feature (1 of 2)



Environmental Feature (2 of 2)

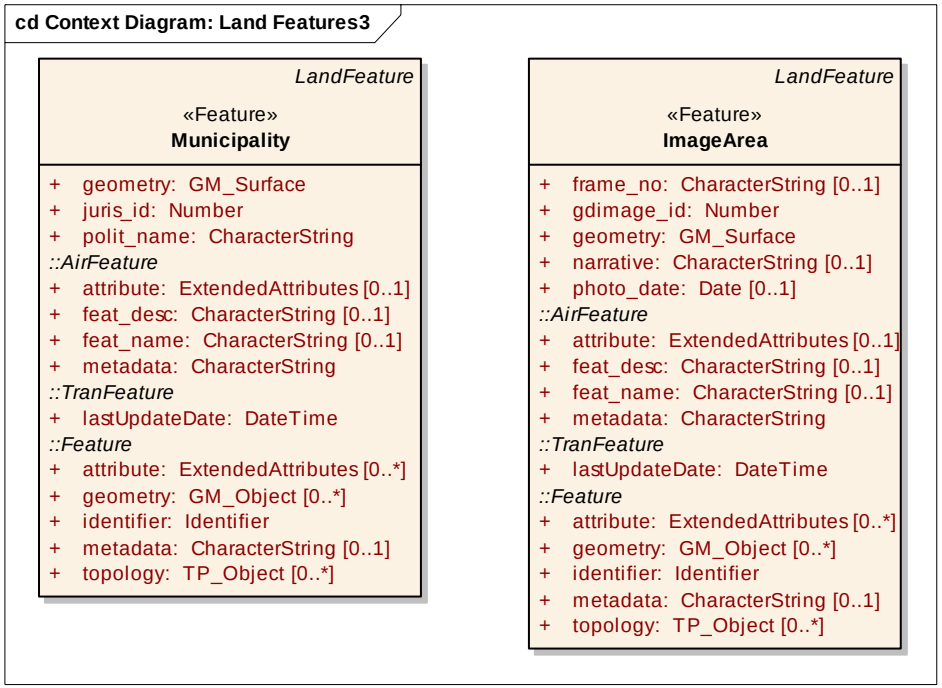



cd Context Diagram: Structures
Structure
«Feature»
ConstructionArea
+ conproj_id: Number [0..1]
+ constructionStatus: ProjectStatusCode
+ coordinationContact: CharacterString [0..1]
+ geometry: GM_Surface
+ projectName: CharacterString [0..1]
+ projectStatus_d: projectStatus_d [0..1]
::AirFeature
+ attribute: ExtendedAttributes [0..1]
+ feat_desc: CharacterString [0..1]
+ feat_name: CharacterString [0..1]
+ metadata: CharacterString
::TranFeature
+ lastUpdateDate: DateTime
::Feature
+ attribute: ExtendedAttributes [0..*]
+ geometry: GM_Object [0..*]
+ identifier: Identifier
+ metadata: CharacterString [0..1]
+ topology: TP_Object [0..*]
Structure
«Feature»
Fence
+ fenc_ht: Real [0..1]
+ fenc_typ_d: fenc_typ_d [0..1]
+ fence_id: Number
+ geometry: GM_Curve
::AirFeature
+ attribute: ExtendedAttributes [0..1]
+ feat_desc: CharacterString [0..1]
+ feat_name: CharacterString [0..1]
+ metadata: CharacterString
::TranFeature
+ lastUpdateDate: DateTime
::Feature
+ attribute: ExtendedAttributes [0..*]
+ geometry: GM_Object [0..*]
+ identifier: Identifier
+ metadata: CharacterString [0..1]
+ topology: TP_Object [0..*]
Structure
«Feature»
Building
+ areaFloor: Real [0..1]
+ areaInside: Real [0..1]
+ building_id: Number
+ buildng_no: CharacterString [0..1]
+ color_d: CharacterString [0..1]
+ geometry: GM_Surface
+ lightingType_d: lightingType_d [0..1]
+ markingFeatureType_d: markingFeatureType_d [0..1]
+ no_occup: Real [0..1]
+ str_stat_d: str_stat_d [0..1]
+ str_type_d: str_type_d [0..1]
+ structHght: Real [0..1]
::AirFeature
+ attribute: ExtendedAttributes [0..1]
+ feat_desc: CharacterString [0..1]
+ feat_name: CharacterString [0..1]
+ metadata: CharacterString
::TranFeature
+ lastUpdateDate: DateTime
::Feature
+ attribute: ExtendedAttributes [0..*]
+ geometry: GM_Object [0..*]
+ identifier: Identifier
+ metadata: CharacterString [0..1]
+ topology: TP_Object [0..*]
Structure
«Feature»
Gate
+ attended_d: attended_d [0..1]
+ gate_ht: Real [0..1]
+ gate_id: Number
+ gate_len: Real [0..1]
+ gate_typ_d: gate_typ_d [0..1]
+ geometry: GM_Curve
::AirFeature
+ attribute: ExtendedAttributes [0..1]
+ feat_desc: CharacterString [0..1]
+ feat_name: CharacterString [0..1]
+ metadata: CharacterString
::TranFeature
+ lastUpdateDate: DateTime
::Feature
+ attribute: ExtendedAttributes [0..*]
+ geometry: GM_Object [0..*]
+ identifier: Identifier
+ metadata: CharacterString [0..1]
+ topology: TP_Object [0..*]
Structure
«Feature»
Tower
+ color_d: color_d [0..1]
+ geometry: GM_Point
+ lightCode: Boolean [0..1]
+ lightingType_d: lightingType_d [0..1]
+ markingFeatureType_d: markingFeatureType_d [0..1]
+ tower_id: Number
+ verticalStructureMaterial_d: verticalStructureMaterial_d [0..1]
::AirFeature
+ attribute: ExtendedAttributes [0..1]
+ feat_desc: CharacterString [0..1]
+ feat_name: CharacterString [0..1]
+ metadata: CharacterString
::TranFeature
+ lastUpdateDate: DateTime
::Feature
+ attribute: ExtendedAttributes [0..*]
+ geometry: GM_Object [0..*]
+ identifier: Identifier
+ metadata: CharacterString [0..1]
+ topology: TP_Object [0..*]
AirfieldFeature
«Feature»
Utility
+ description: CharacterString
+ geometry: SimpleGeometry
+ type: UtilityTypeCode
::AirFeature
+ attribute: ExtendedAttributes [0..1]
+ feat_desc: CharacterString [0..1]
+ feat_name: CharacterString [0..1]
+ metadata: CharacterString
::TranFeature
+ lastUpdateDate: DateTime
::Feature
+ attribute: ExtendedAttributes [0..*]
+ geometry: GM_Object [0..*]
+ identifier: Identifier
+ metadata: CharacterString [0..1]
+ topology: TP_Object [0..*]
+otherUtility 0..*

Land Feature (1 of 3)

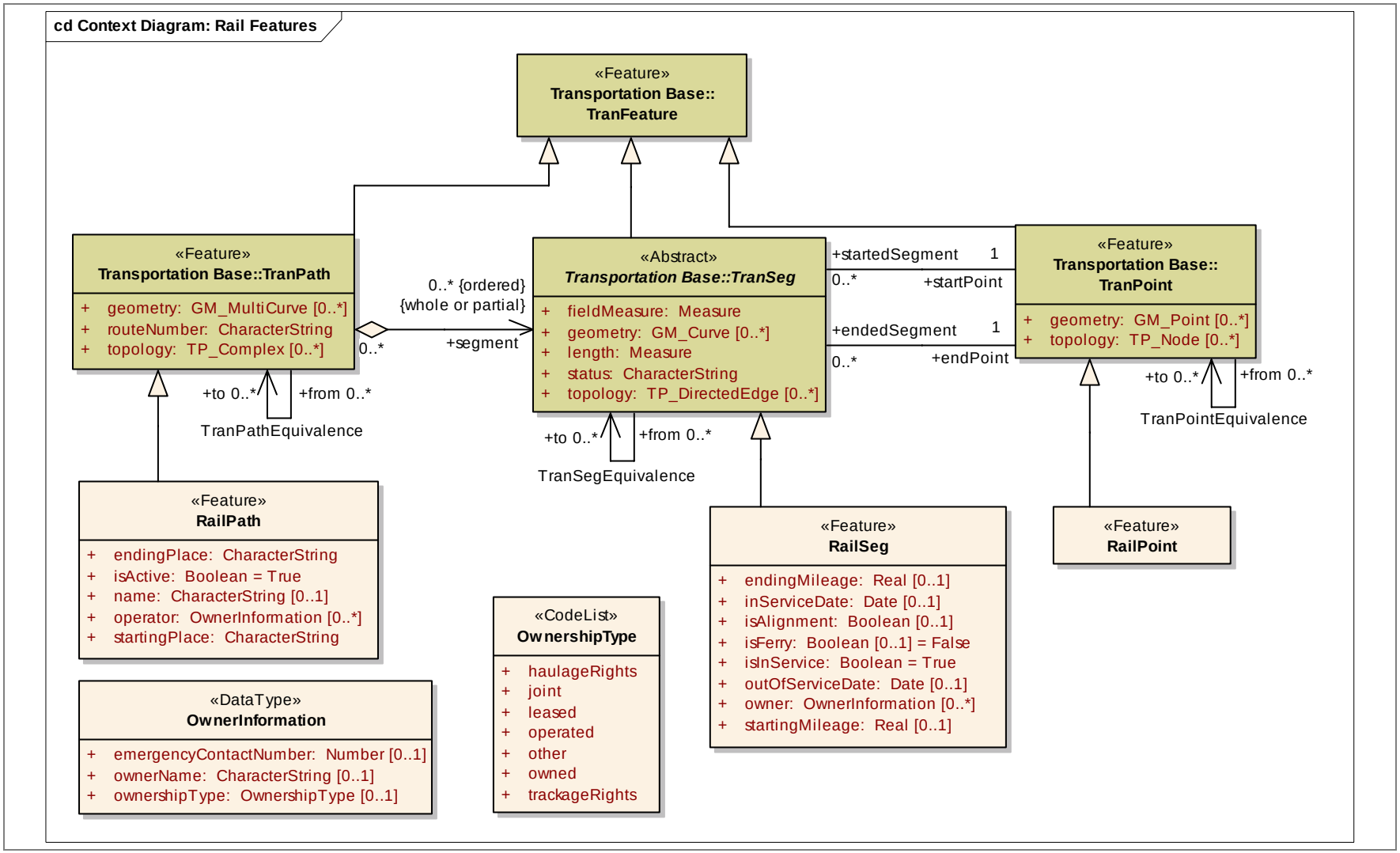
Land Feature (2 of 3)

Land Feature (3 of 3)



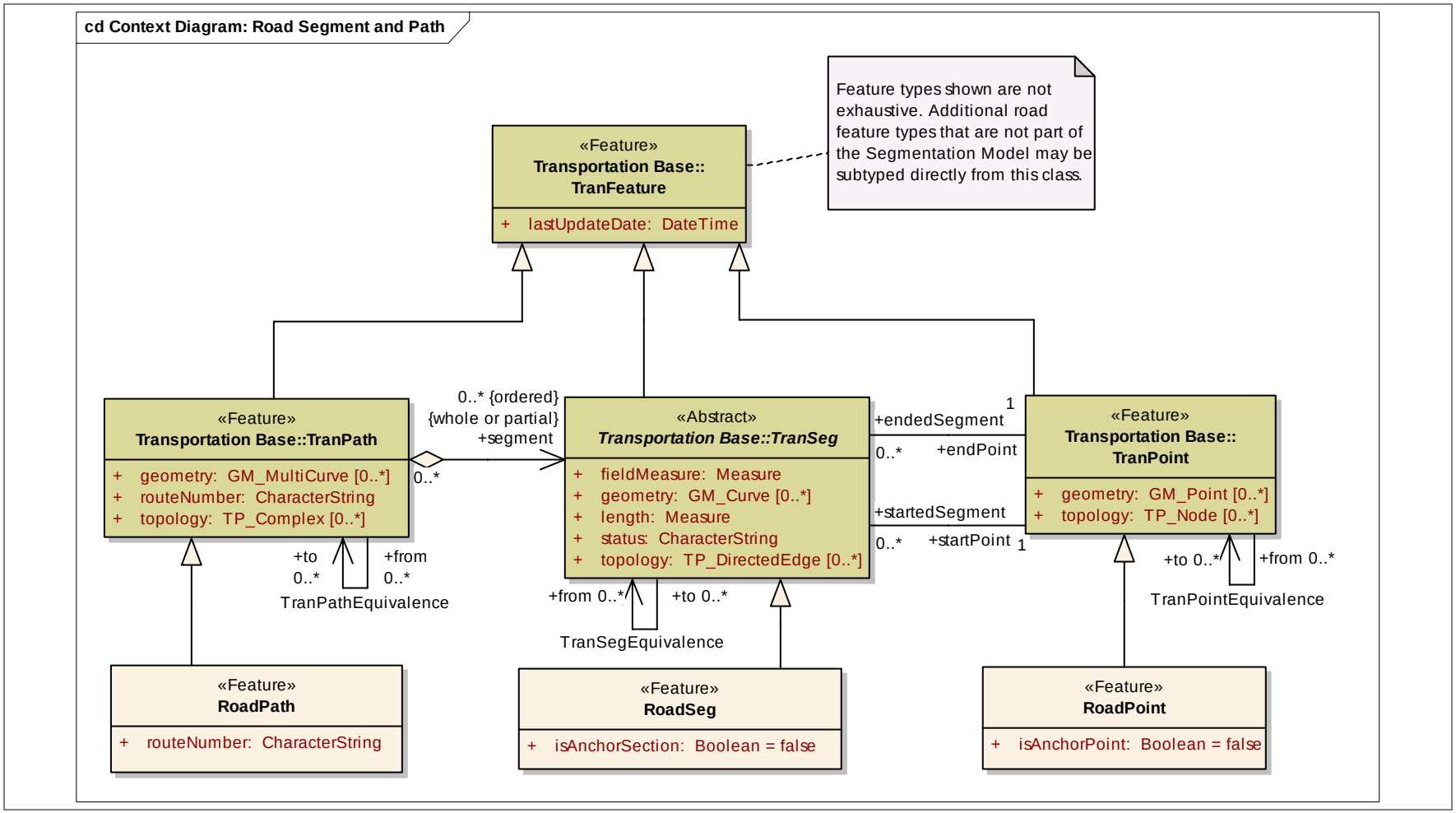
Rail

(NOTE: Not all objects in the Rail package are elaborated in this document, please obtain the model itself for more information)

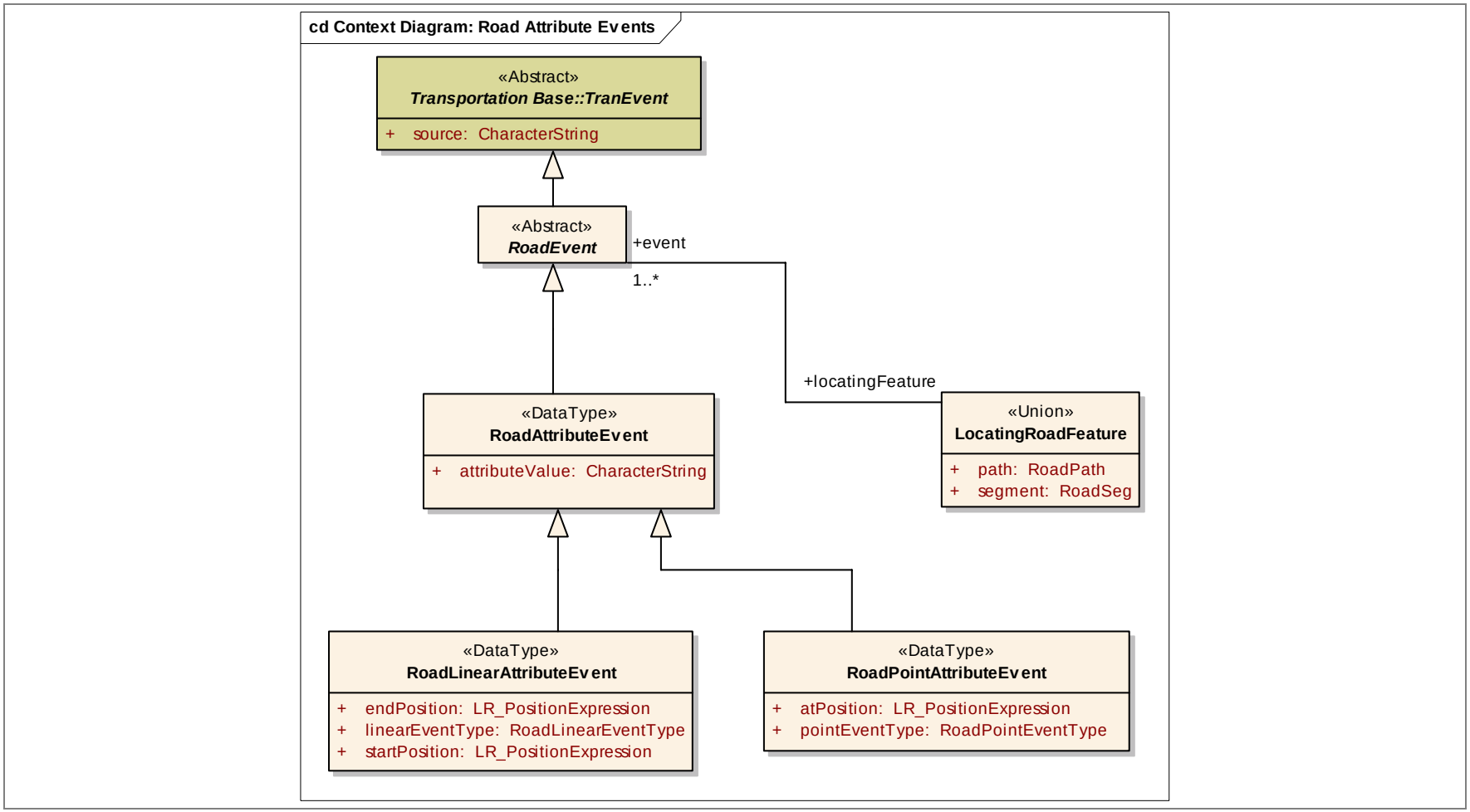


Roads

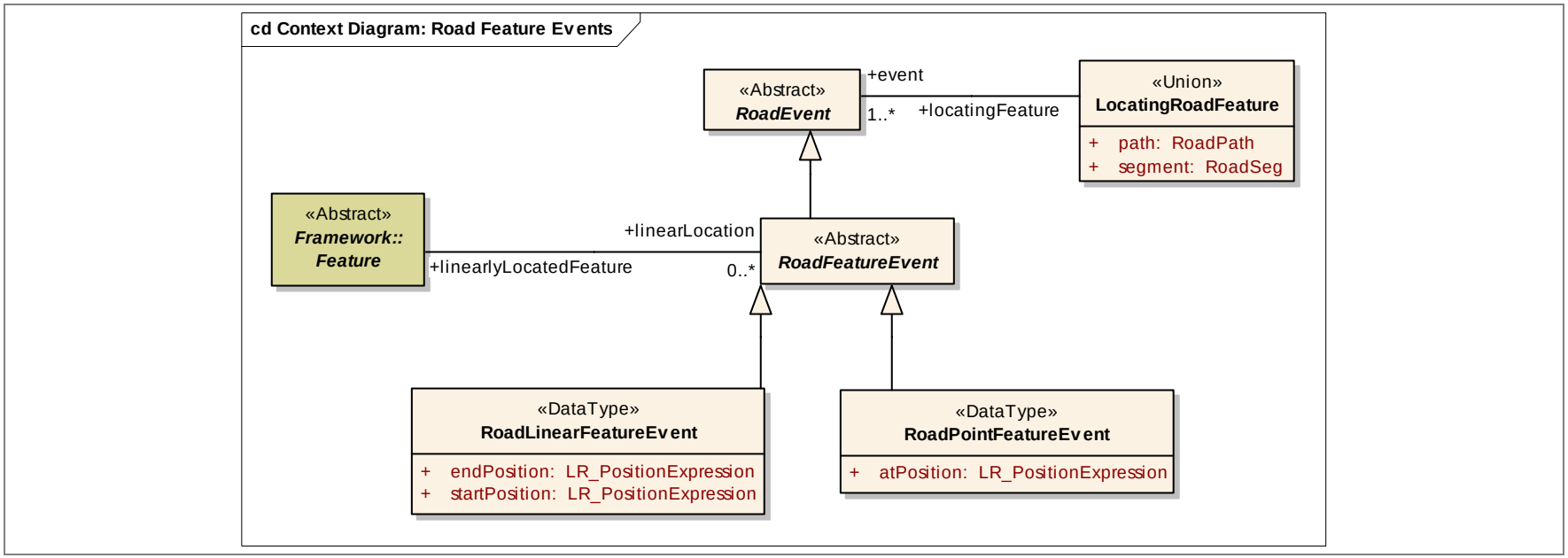
(NOTE: Not all objects in the Roads package are elaborated in this document, please obtain the model itself for more information)



Roads Attribute Events



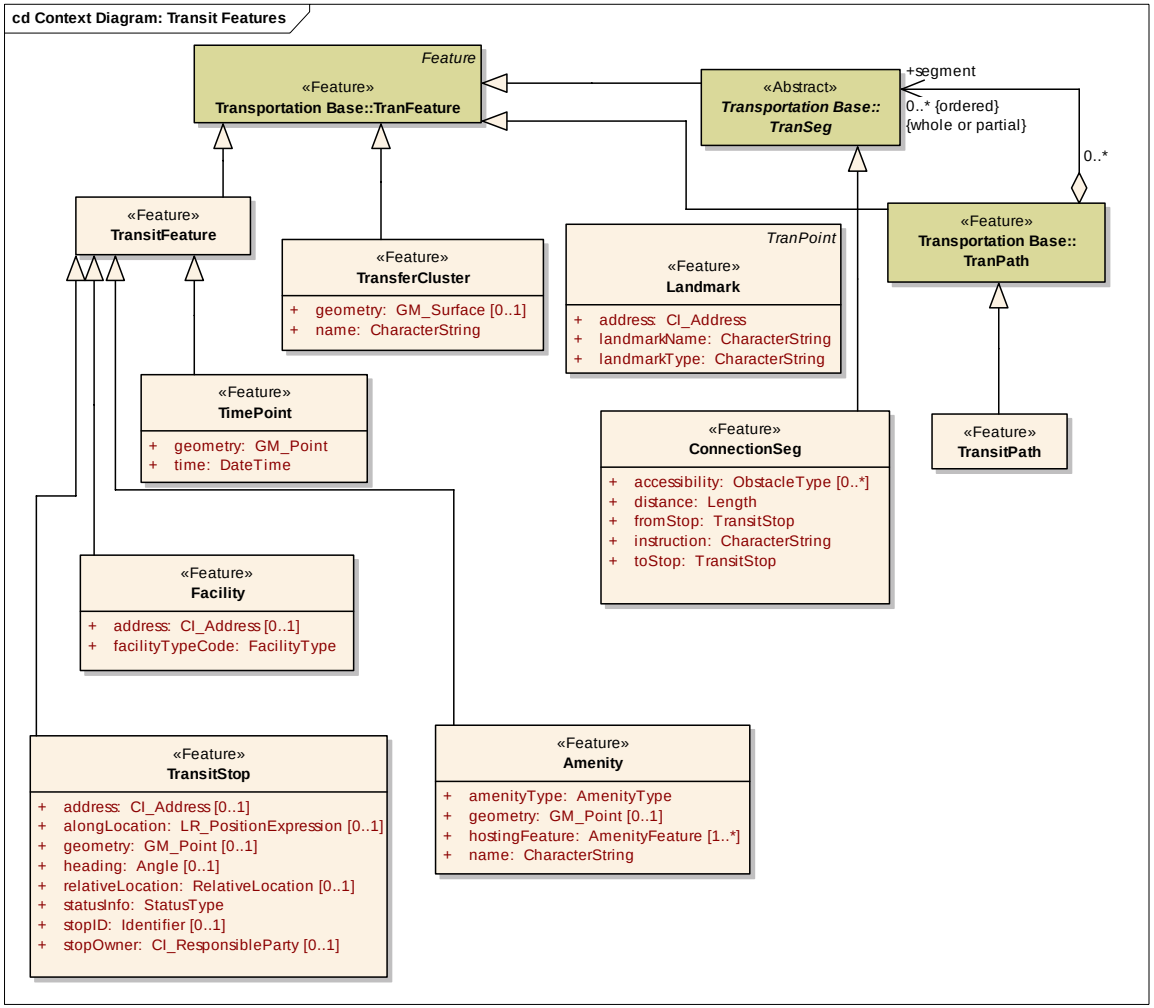
Roads Feature Events

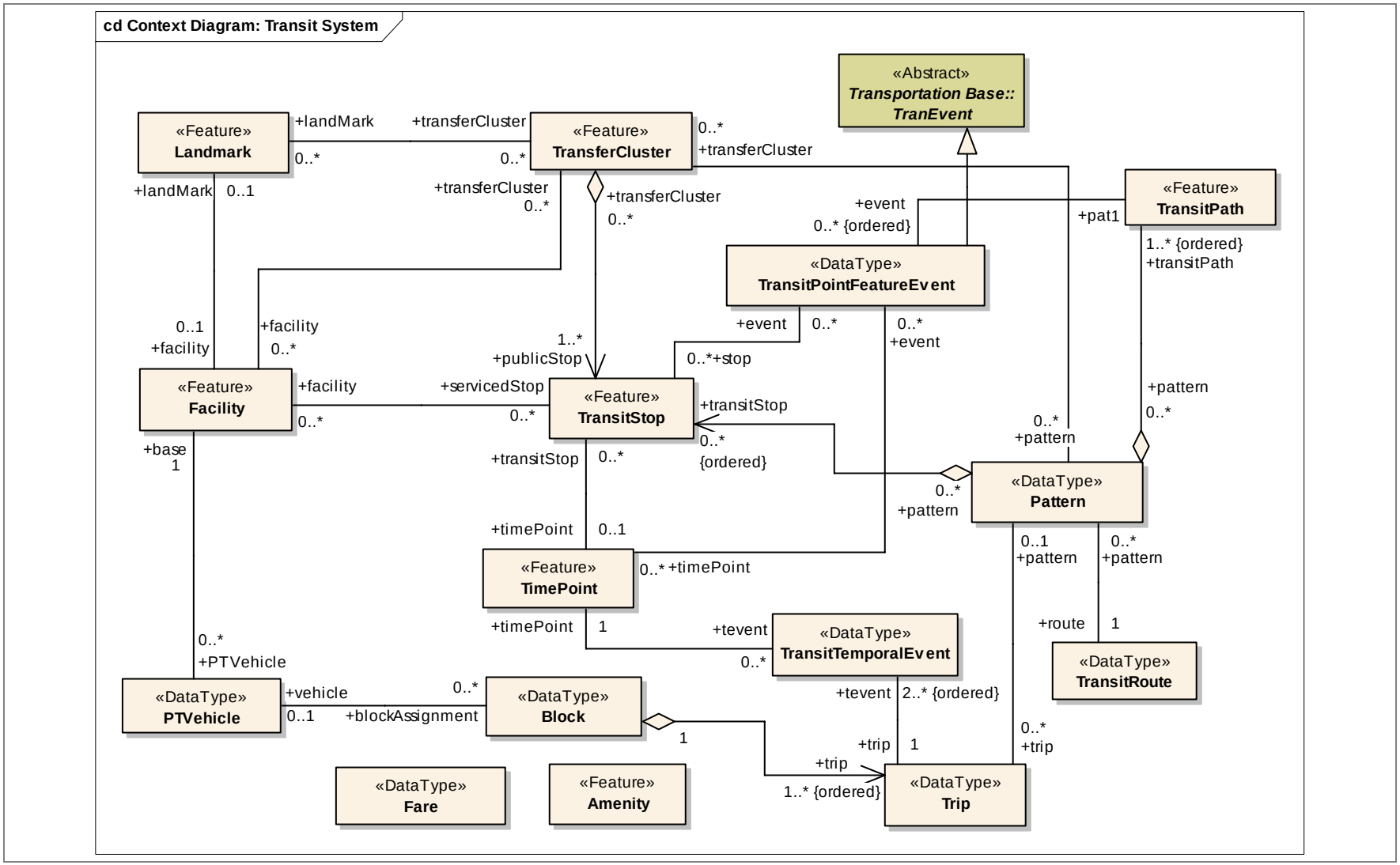


Roads Event Codelist

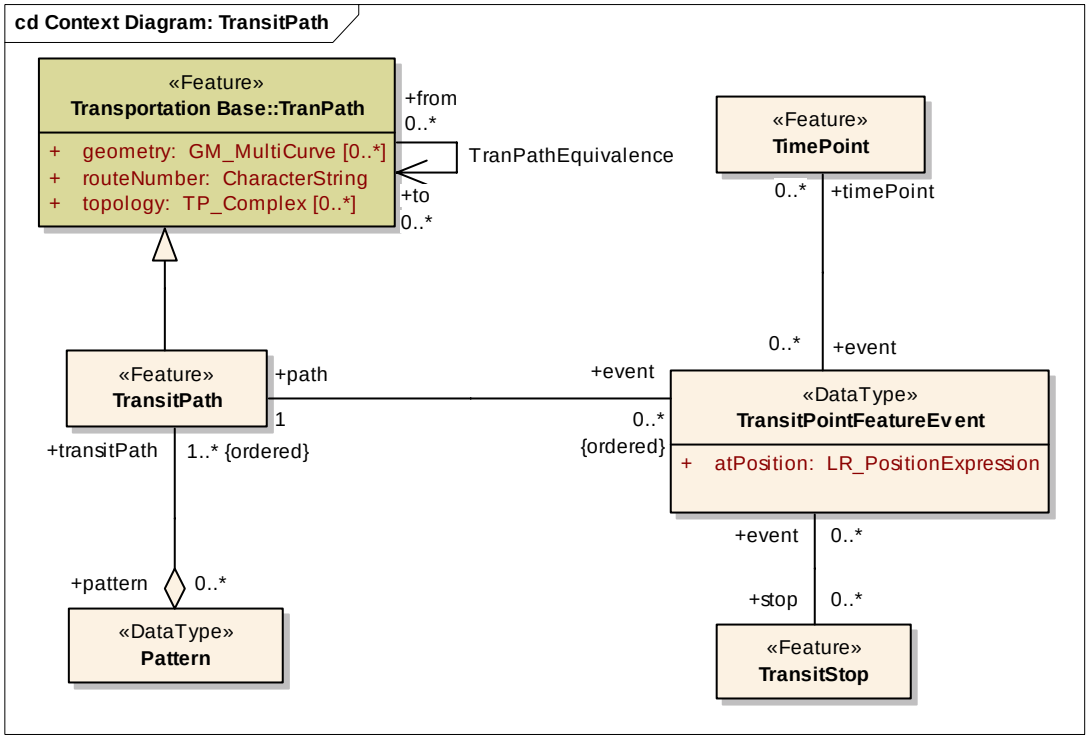
Transit

(NOTE: Not all objects in the Transit package are elaborated in this document, please obtain the model itself for more information)

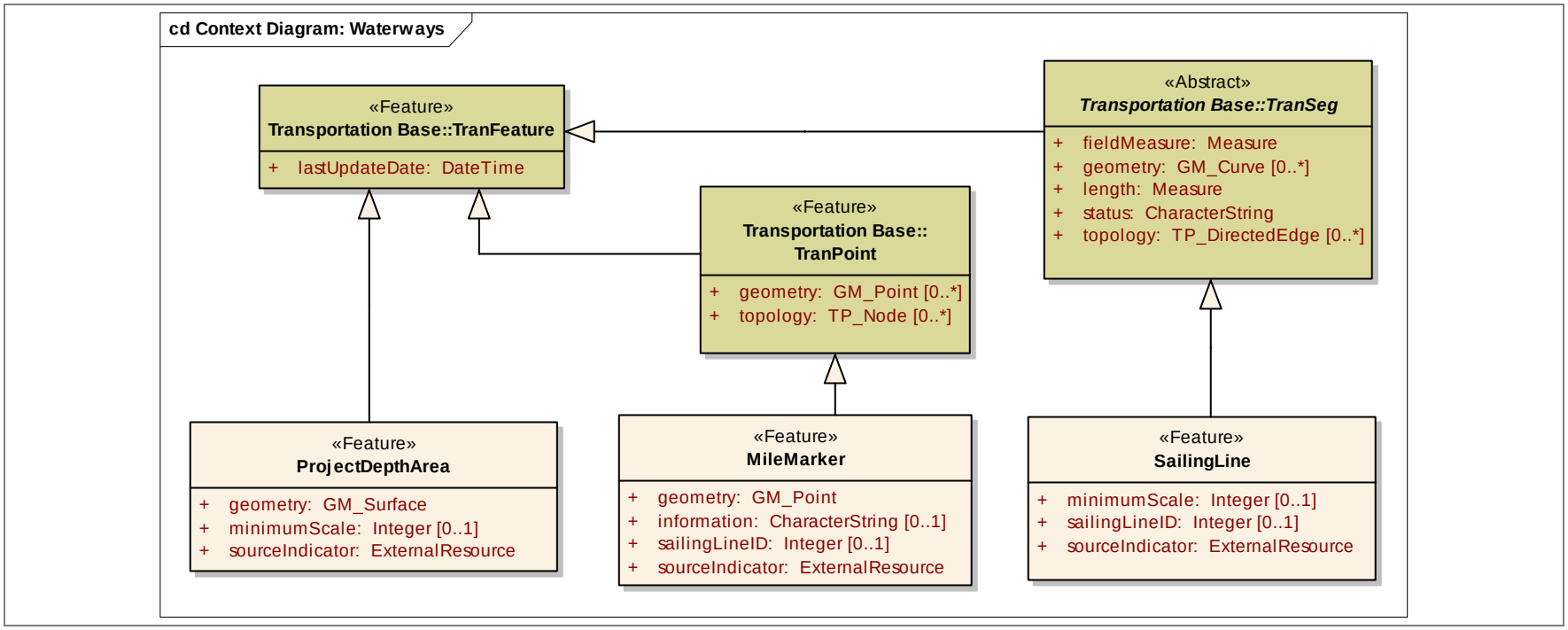



cd Context Diagram: Transit System
«Abstract»
Transportation Base::
TranEvent
«Feature»
Landmark
«Feature»
TransferCluster
«Feature»
TransitPath
«DataType»
TransitPointFeatureEvent
«Feature»
Facility
«Feature»
TransitStop
«DataType»
Pattern
«Feature»
TimePoint
«DataType»
TransitTemporalEvent
«DataType»
TransitRoute
«DataType»
PTVehicle
«DataType»
Block
«DataType»
Fare
«Feature»
Amenity
«DataType»
Trip
+landMark
+transferCluster
0..*
+landMark
0..1
+transferCluster
0..*
+transferCluster
0..*
+event
0..* {ordered}
+pat1
1..* {ordered}
+transitPath
0..1
+facility
+facility
0..*
1..*
+publicStop
+event
0..*
0..*
+event
0..*+stop
+facility
0..*
+servicedStop
0..*
+transitStop
0..*
{ordered}
+pattern
0..*
0..*
+pattern
+base
1
+transitStop
0..*
0..*
+pattern
+timePoint
0..1
0..1
+pattern
0..*
+pattern
0..* +timePoint
+timePoint
1
+tevent
0..*
+route
1
0..*
+PTVehicle
+vehicle
0..1
0..*
+blockAssignment
+tevent
2..* {ordered}
1
+trip
1
0..*
+trip
+trip
1..* {ordered}

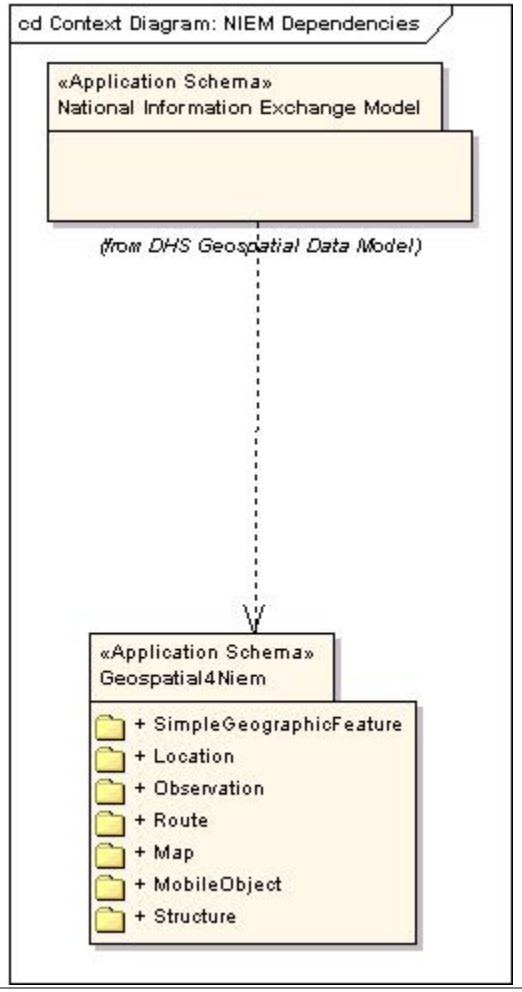
Transit Path



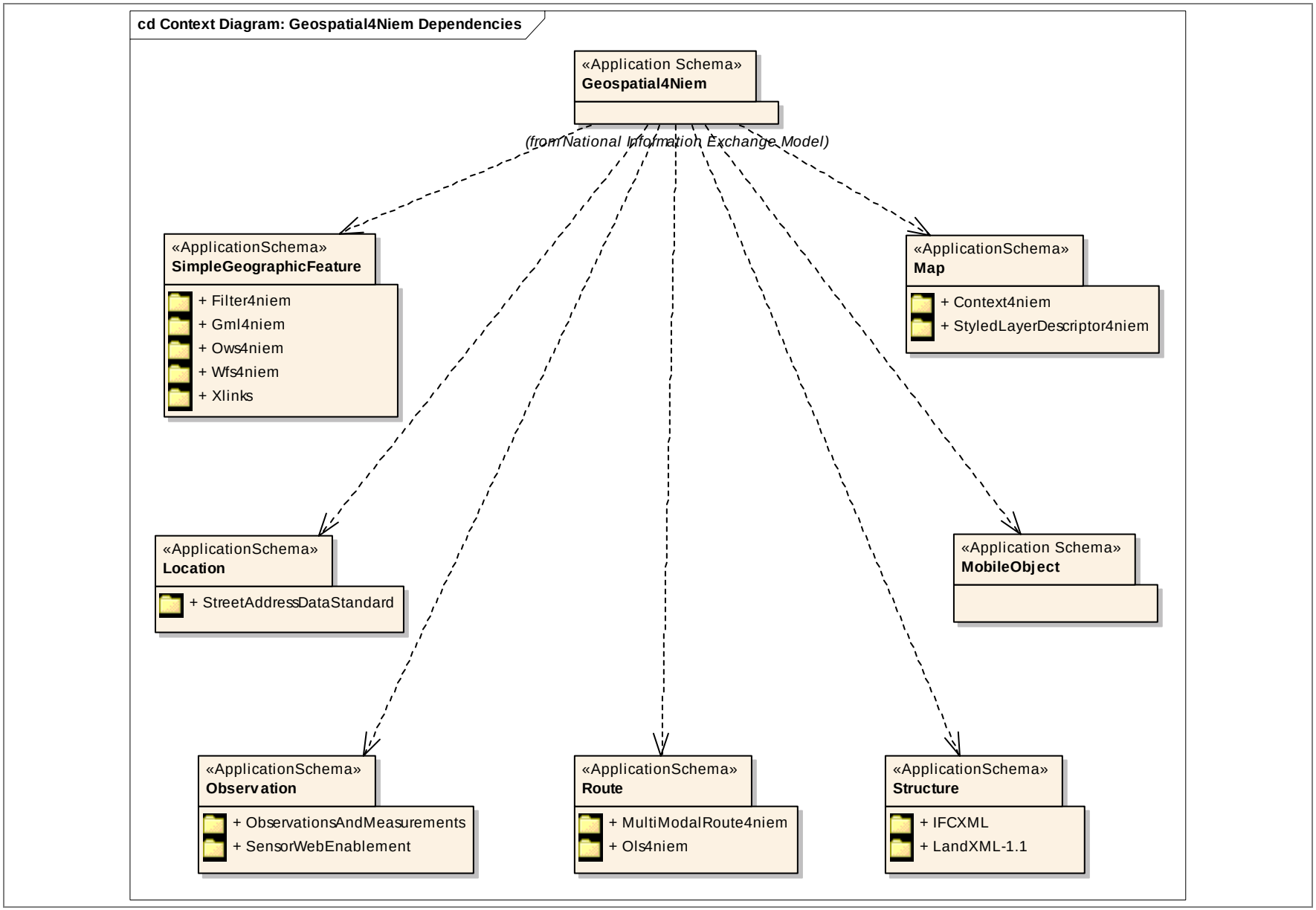
Waterways


cd Context Diagram: Waterways
«Feature»
Transportation Base::TranFeature
+ lastUpdateDate: DateTime
«Abstract»
Transportation Base::TranSeg
+ fieldMeasure: Measure
+ geometry: GM_Curve [0..*]
+ length: Measure
+ status: CharacterString
+ topology: TP_DirectedEdge [0..*]
«Feature»
Transportation Base::
TranPoint
+ geometry: GM_Point [0..*]
+ topology: TP_Node [0..*]
«Feature»
ProjectDepthArea
+ geometry: GM_Surface
+ minimumScale: Integer [0..1]
+ sourceIndicator: ExternalResource
«Feature»
MileMarker
+ geometry: GM_Point
+ information: CharacterString [0..1]
+ sailingLineID: Integer [0..1]
+ sourceIndicator: ExternalResource
«Feature»
SailingLine
+ minimumScale: Integer [0..1]
+ sailingLineID: Integer [0..1]
+ sourceIndicator: ExternalResource

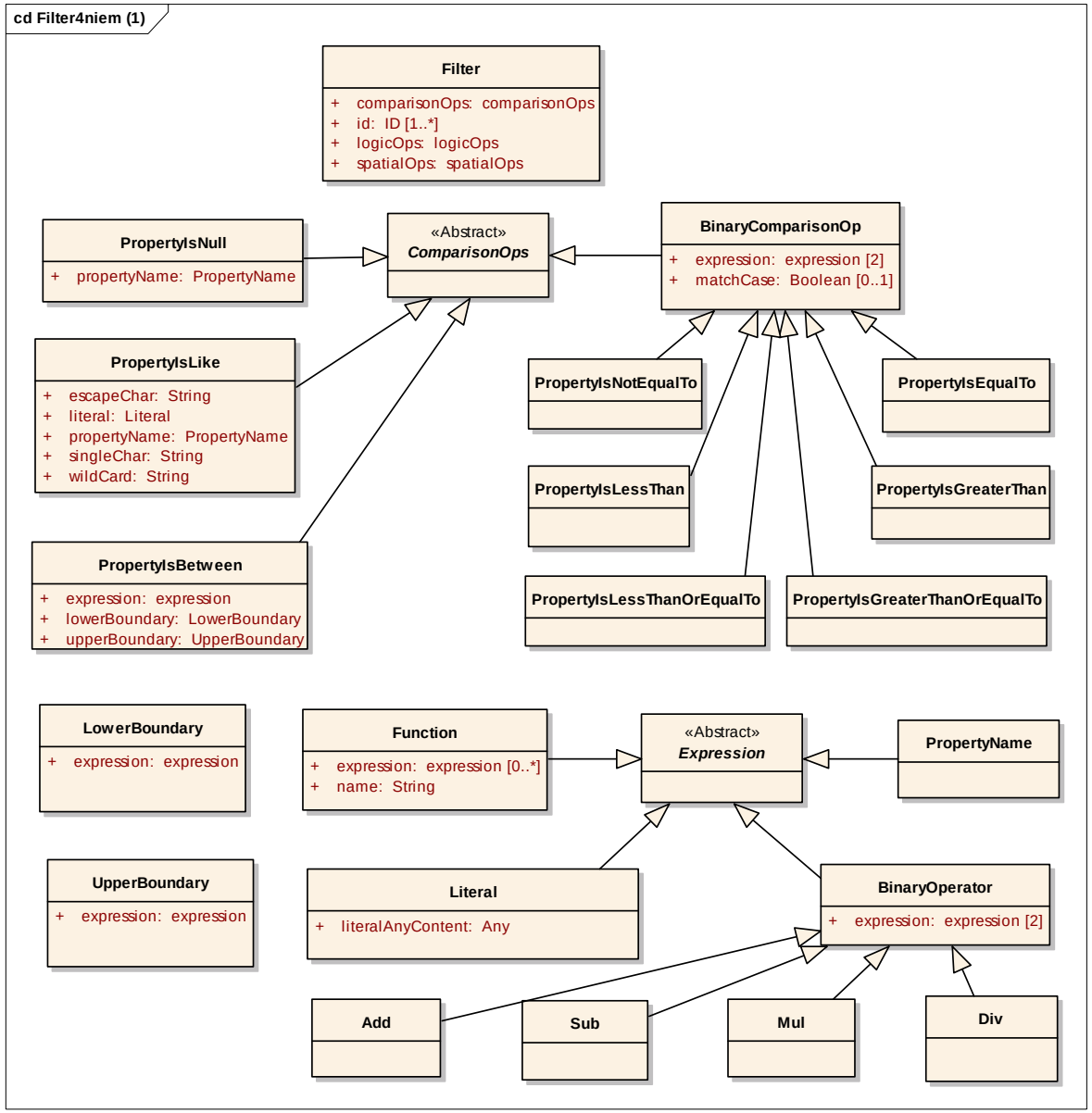
Packages and Dependencies



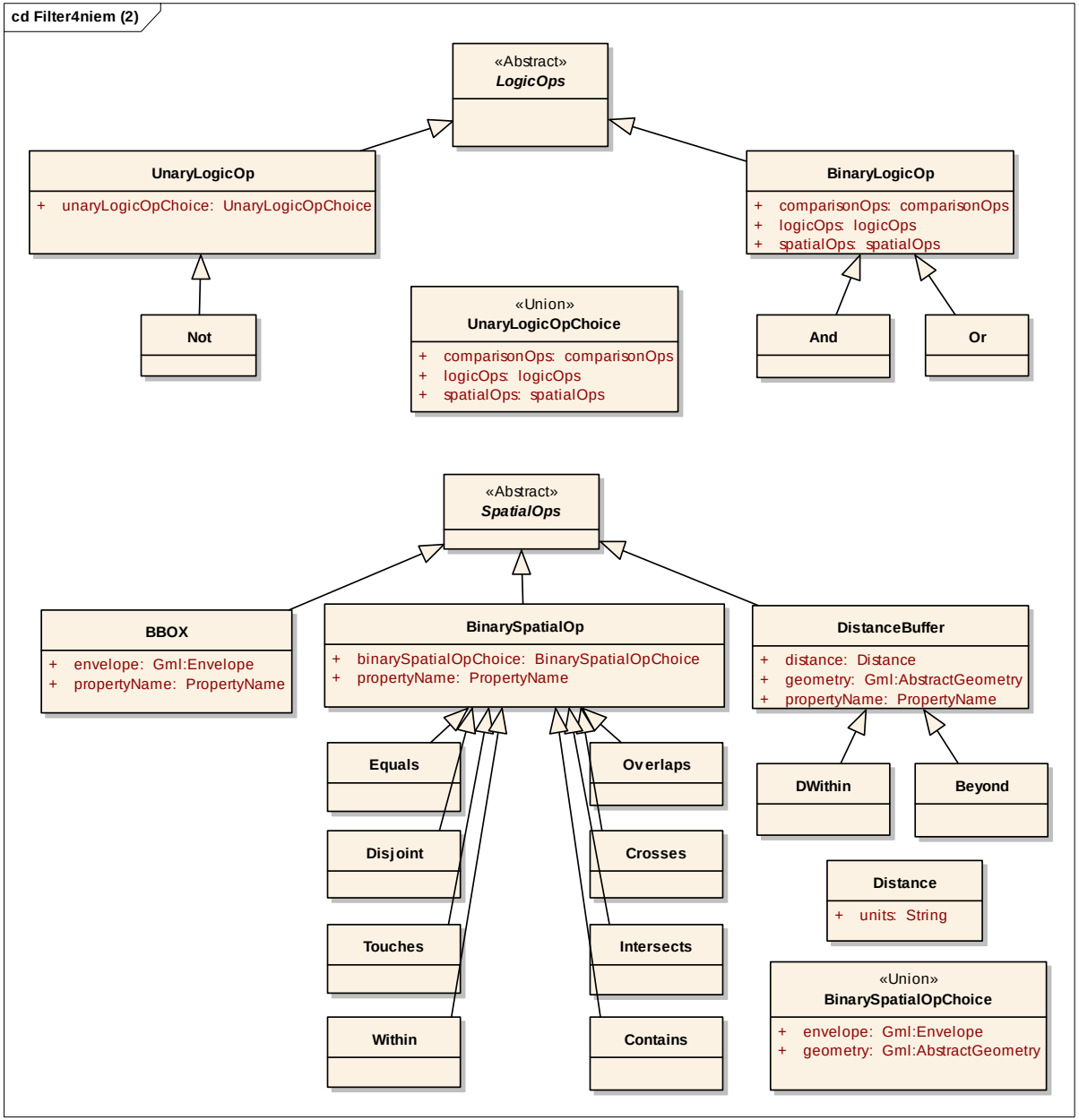
NIEM Geospatial for NIEM



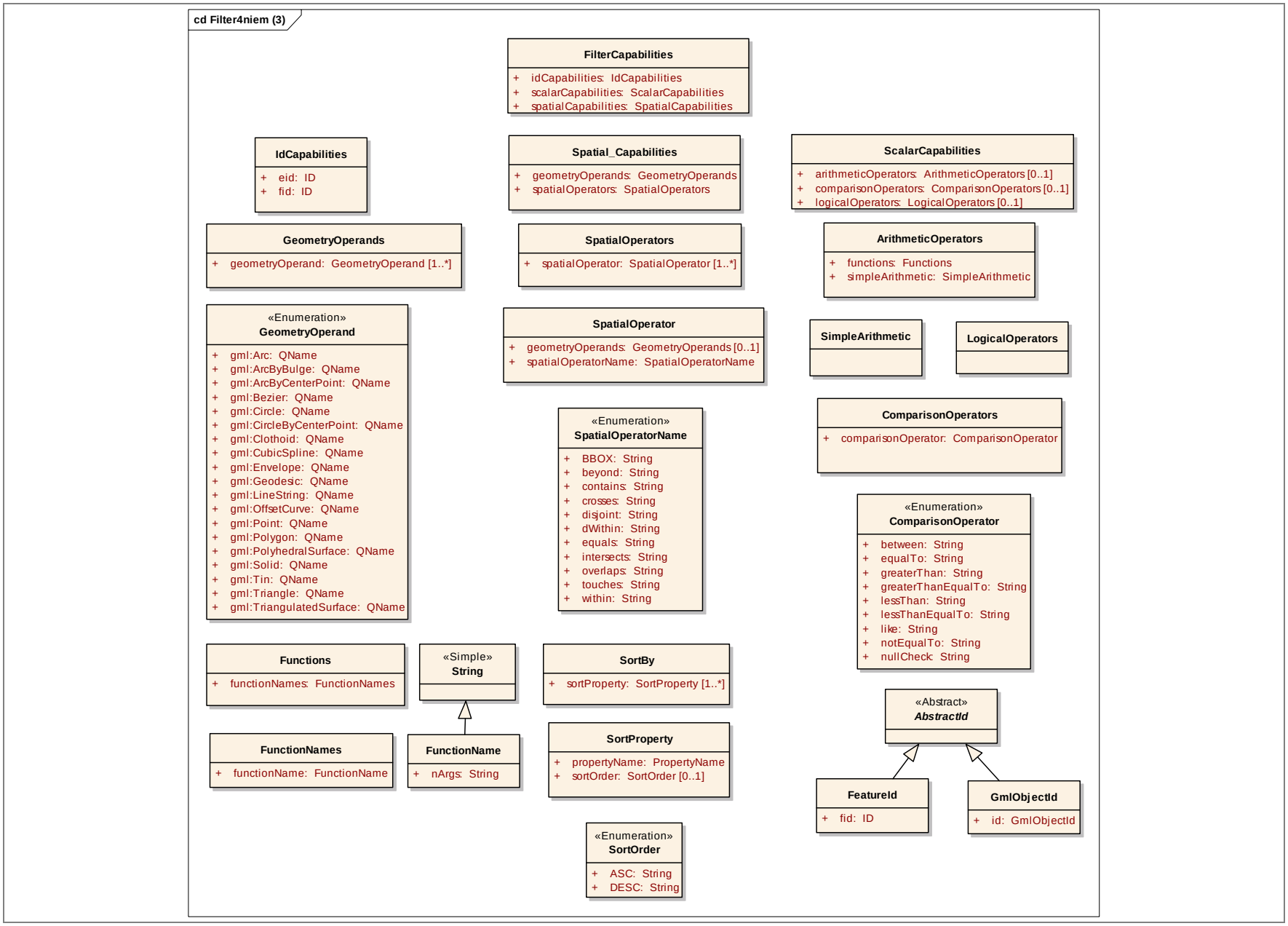
Filter4NIEM (1 of 3)



Filter4NIEM (2 of 3)



Filter4NIEM (3 of 3)



Filter4niem						
Line	**Name/RoleName**	**Definition**	**Obligation / Condition**	**Maximum Occurrence**	**Data Type**	**Domain**
1	AbstractId	Abstract class used for identifiers.			<<Abstract>>	
2	Add	Addition operator			<<Simple>>	
3	And	And logical operator			<<Simple>>	
4	ArithmeticOperators	Indicates what arithmetic operators the service can support.				Lines 5 - 6
5	functions	List of the function names that are supported and the number of arguments each function requires	M	1	Functions	Unrestricted
6	simpleArithmetic	Indicate that the service can support addition, subtraction, multiplication and division.	M	1	SimpleArithmetic	Unrestricted
7	BBOX	Specialization of SpatialOp for bounding box comparisons of geometry.				Lines 8 - 9
8	envelope	Geometry of bounding boxValue of Envelope	M	1	Gml:Envelope	Unrestricted
9	propertyName	The name of any property of an object.The name of any property of an object. The name of any property of an object.	M	1	PropertyName	Unrestricted
10	Beyond	Binary spatial operator to test for beyond relationship			<<Simple>>	
11	BinaryComparisonOp	A standard set of comparison operators (=,<,>,>=,<=,<>)				Lines 12 - 13
12	expression	a combination of one or more symbols that evaluate to single boolean value of true or false.A valid expressionThe expression of the lower boundary value.The expression arguments of the binary operator.The expression of the function.The expression of the upper boundary value.	M	2	Expression	Unrestricted
13	matchCase	Controls whether string comparisons are caseless or not. A value of true means that string comparisons also match case. This is the default value. A value of false means that string comparisons are performed caselessly.	O	1	Boolean	Unrestricted
14	BinaryLogicOp	Used to form expressions that evaluate the logical comparison between two arguments.				Lines 15 - 17
15	comparisonOps	A comparison operator.	M	1	comparisonOps	Unrestricted
16	logicOps	A logical operator.	M	1	logicOps	Unrestricted
17	spatialOps	A spatial operator.	M	1	spatialOps	Unrestricted
18	BinaryOperator	An expression that accepts two arguments and evaluates to a single result.				Lines 19 - 19
19	expression	The expression arguments of the binary operator.The expression of the function.The expression of the upper boundary value.	M	2	expression	Unrestricted
20	BinarySpatialOp	Specialization of SpatialOp for binary comparisons of geometry.			SpatialOp	Lines 21 - 22

21	binarySpatialOpChoice	An Envelope or a Geometry	M	1	BinarySpatialOpChoice	Unrestricted
22	propertyName	The name of any property of an object.The name of any property of an object.The name of any property of an object. The name of any property of an object.	M	1	PropertyName	Unrestricted
23	BinarySpatialOpChoice	An Envelope or a Geometry			<<Union>>	Lines 24 - 25
24	envelope	Value of Envelope	M	1	Gml:Envelope	Unrestricted
25	geometry	Value of Geometry	M	1	Gml:AbstractGeometry	Unrestricted
26	ComparisonOperator	Used to indicate a type of comparison operator supported by a service.			<<Enumeration>>	Lines 27 - 35
27	between	Indicates service supports the 'between' operator	M	1	String	Unrestricted
28	equalTo	Indicates service supports the 'equal to' operator	M	1	String	Unrestricted
29	greaterThan	Indicates service supports the 'greater than' operator	M	1	String	Unrestricted
30	greaterThanEqualTo	Indicates service supports the 'greater than or equal to' operator	M	1	String	Unrestricted
31	lessThan	Indicates service supports the 'less than' operator	M	1	String	Unrestricted
32	lessThanEqualTo	Indicates service supports the 'less than or equal to' operator	M	1	String	Unrestricted
33	like	Indicates service supports the 'like' operator	M	1	String	Unrestricted
34	notEqualTo	Indicates service supports the 'not equal to' operator	M	1	String	Unrestricted
35	nullCheck	Indicates service supports the 'null check' operator	M	1	String	Unrestricted
36	ComparisonOperators	Used to indicate what types of comparison operators are supported by a service				Lines 37 - 37
37	comparisonOperator	Name of comparison operatgor.	M	1	ComparisonOperator	Unrestricted
38	ComparisonOps	Used to form expressions that evaluate the mathematical comparison between two arguments. If the arguments satisfy the comparison then the expression evaluates to TRUE. Otherwise the expression evaluates to FALSE.			<<Abstract>>	
39	Contains	Binary spatial operator to test for containment.			<<Simple>>	
40	Crosses	Binary spatial operator to test for crossing.			<<Simple>>	
41	Disjoint	Test whether a geometry is ‘spatially disjoint’ from another geometry.			<<Simple>>	
42	Distance	Representation of a distance value				Lines 43 - 43
43	units	Units of distance value.	M	1	String	Unrestricted
44	DistanceBuffer	Specialization of SpatialOp for comparing distance within and beyond.				Lines 45 - 47
45	distance	Value of distance.	M	1	Distance	Unrestricted
46	geometry	Geometry to compare.Value of Geometry	M	1	Gml:AbstractGeometry	Unrestricted

47	propertyName	The name of any property of an object.The name of any property of an object.The name of any property of an object.The name of any property of an object. The name of any property of an object.	M	1	PropertyName	Unrestricted
48	Div	Division Operator			<<Simple>>	
49	DWithin	Test whether the value of a geometric property is within a specified distance of a specified literal geometric value.			<<Simple>>	
50	Equals	Equality operator			<<Simple>>	
51	Expression	A combination of one or more symbols that evaluate to single boolean value of true or false. An expression can be formed using the elements: Add, Sub, Mul, Div, PropertyName, Literal and Function.			<<Abstract>>	
52	FeatureId	Identifies a feature instance				Lines 53 - 53
53	fid	The value of the identifier	M	1	ID	Unrestricted
54	Filter	A predicate expression that can be formed by combining the elements defined in this specification.				Lines 55 - 58
55	comparisonOps	A collection of comparison operators of the Filter expression.A comparison operator.A comparison operator.	M	1	comparisonOps	Unrestricted
56	id	A collection of object identifiers of the Filter expression.Identifier of object.	M	*	ID	Unrestricted
57	logicOps	A collection of logical operators of the Filter expression.A logical operator.A logical operator.	M	1	logicOps	Unrestricted
58	spatialOps	A collection of spatial operators of the Filter expression.A spatial operator.A spatial operator.	M	1	spatialOps	Unrestricted
59	FilterCapabilities	Describes what specific filter capabilities are supported by a service. Filter capabilities are divided into three categories: spatial capabilities, scalar capabilities and id capabilities.				Lines 60 - 62
60	idCapabilities	List the ability to refer to elements in a GML version 3 data source using an ogc:GmlObjectId with a gml:id attribute. Any elements with a gml:id attribute, including features, geometries, topologies, and complex attributes, may be so referenced.	M	1	IdCapabilities	Unrestricted
61	scalarCapabilities	Scalar capabilities include the ability to process logical expressions, comparisons and arithmetic operations including the ability to process a list of named functions	M	1	ScalarCapabilities	Unrestricted
62	spatialCapabilities	A list of the supported spatial operators and geometry operand types.	M	1	SpatialCapabilities	Unrestricted
63	Function	A named procedure that performs a distinct computation				Lines 64 - 65
64	expression	The expression of the function.The expression of the upper boundary value.	O	*	expression	Unrestricted
65	name	The name of the function.	M	1	String	Unrestricted

66	FunctionName	Description of a supported function.				Lines 67 - 67
67	nArgs	Number of arguments required of function.	M	1	String	Unrestricted
68	FunctionNames	A list of FunctionName elements.				Lines 69 - 69
69	functionName	Name of a function.	M	1	FunctionName	Unrestricted
70	Functions	Named procedure that performs a distinct computation. A function may accept zero or more arguments as input and generates a single result.				Lines 71 - 71
71	functionNames	A list of FunctionName elements.	M	1	FunctionNames	Unrestricted
72	GeometryOperand	List of geometries supported spatial operators.			<<Enumeration>>	Lines 73 - 91
73	gml:Arc	Arc curve.	M	1	QName	Unrestricted
74	gml:ArcByBulge	ArcByBulge curve.	M	1	QName	Unrestricted
75	gml:ArcByCenterPoint	ArcByCenterPoint curve.	M	1	QName	Unrestricted
76	gml:Bezier	Bezier curve.	M	1	QName	Unrestricted
77	gml:Circle	Circle curve.	M	1	QName	Unrestricted
78	gml:CircleByCenterPoint	CircleByCenterPoint curve.	M	1	QName	Unrestricted
79	gml:Clothoid	Clothoid curve.	M	1	QName	Unrestricted
80	gml:CubicSpline	CubicSpline curve.	M	1	QName	Unrestricted
81	gml:Envelope	Envelope polygon.	M	1	QName	Unrestricted
82	gml:Geodesic	Geodesic line.	M	1	QName	Unrestricted
83	gml:LineString	LineString line.	M	1	QName	Unrestricted
84	gml:OffsetCurve	OffsetCurve curve.	M	1	QName	Unrestricted
85	gml:Point	Point.	M	1	QName	Unrestricted
86	gml:Polygon	Polygon.	M	1	QName	Unrestricted
87	gml:PolyhedralSurface	Polyhedral surface.	M	1	QName	Unrestricted
88	gml:Solid	Solid.	M	1	QName	Unrestricted
89	gml:Tin	Triangulated Integrated Network surface.	M	1	QName	Unrestricted
90	gml:Triangle	Triangle polygon.	M	1	QName	Unrestricted
91	gml:TriangulatedSurface	Triangulated surfce.	M	1	QName	Unrestricted
92	GeometryOperands	List of Geometry operands supported by service.				Lines 93 - 93
93	geometryOperand	A supported Geometry operand.	M	*	GeometryOperand	Unrestricted
94	GmlObjectId	References features instances or component elements of feature instances.				Lines 95 - 95

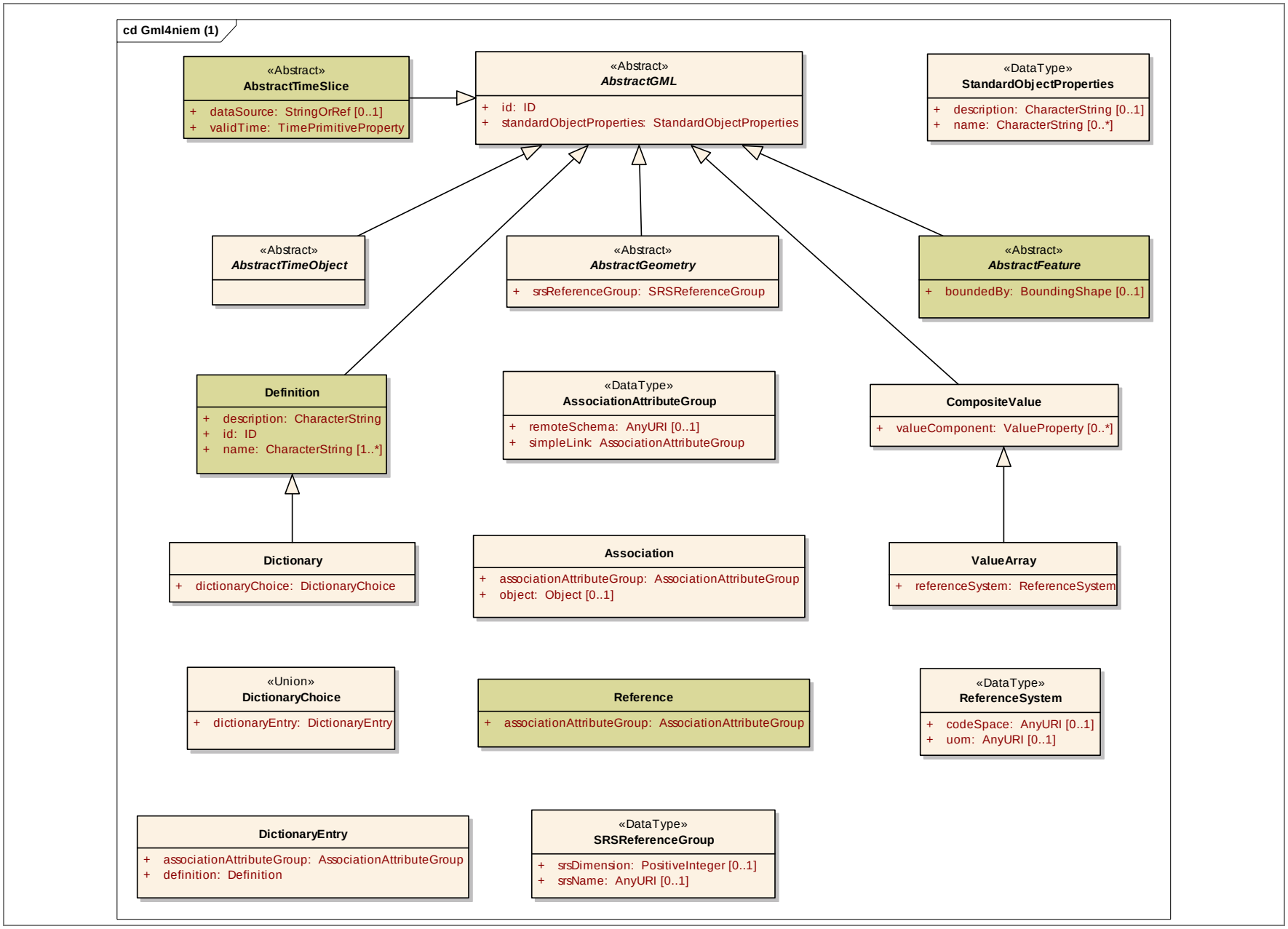
95	id	Identifier of object.	M	1	GmlObjectId	Unrestricted
96	IdCapabilities	List the ability to refer to elements in a GML version 3 data source using an ogc:GmlObjectId with a gml:id attribute. Any elements with a gml:id attribute, including features, geometries, topologies, and complex attributes, may be so referenced.				Lines 97 - 98
97	eid	Can refer to elements by ID	M	1	ID	Unrestricted
98	fid	Can refer to features by ID	M	1	ID	Unrestricted
99	Intersects	Binary spatial operator to test for intersection.			<<Simple>>	
100	Literal	Used to encode literal scalar and geometric values				Lines 101 - 101
101	literalAnyContent		M	1	Any	Unrestricted
102	LogicalOperators	Used to indicate that the filter can process And, Or and Not operators.			<<Simple>>	
103	LogicOps	Logical comparison operator.			<<Abstract>>	
104	LowerBoundary	An expression of the lower boundary of the 'between' operator.			<<Simple>>	Lines 105 - 105
105	expression	The expression of the lower boundary value.The expression arguments of the binary operator.The expression of the function.The expression of the upper boundary value.	M	1	Expression	Unrestricted
106	Mul	Multiplication operator			<<Simple>>	
107	Not	Uninary negation operator.			<<Simple>>	
108	Or	Or logical operator			<<Simple>>	
109	Overlaps	Binary spatial operator to test for overlap.			<<Simple>>	
110	PropertyIsBetween	A range check function. The lower and upper boundary values are inclusive.				Lines 111 - 113
111	expression	A valid expressionThe expression of the lower boundary value.The expression arguments of the binary operator.The expression of the function.The expression of the upper boundary value.	M	1	Expression	Unrestricted
112	lowerBoundary	Value of lower boundary.	M	1	LowerBoundary	Unrestricted
113	upperBoundary	Value of upper boundary.	M	1	UpperBoundary	Unrestricted
114	PropertyIsEqualTo	Equality Operator			<<Simple>>	
115	PropertyIsGreaterThan	Binary comparison operator >			<<Simple>>	
116	PropertyIsGreaterThanOrEqualTo	Binary comparison operator >=			<<Simple>>	
117	PropertyIsLessThan	Binary comparison operator <			<<Simple>>	
118	PropertyIsLessThanOrEqualTo	Binary comparison operator <=			<<Simple>>	
119	PropertyIsLike	A character string comparison operator with pattern matching				Lines 120 - 124

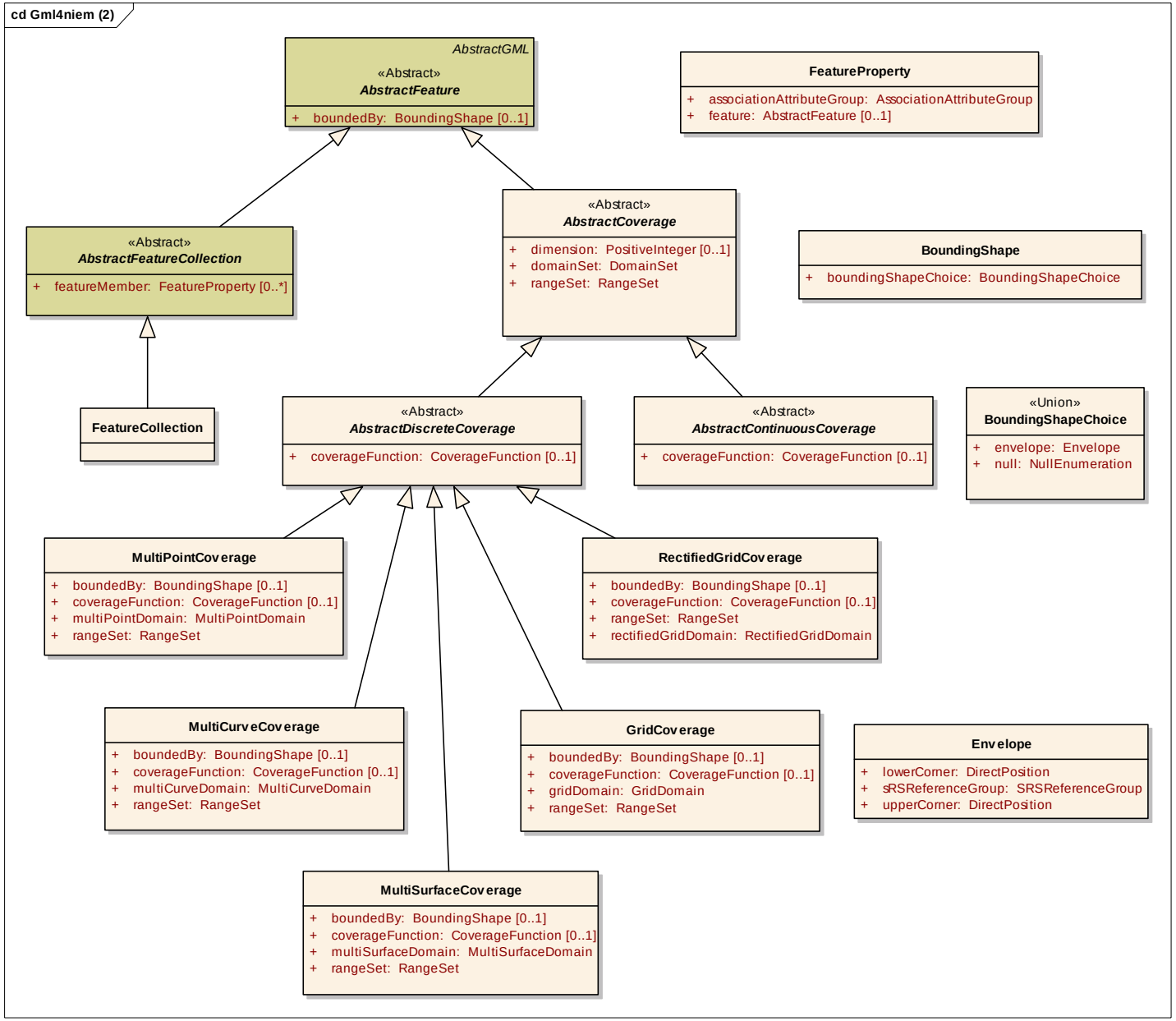
120	escapeChar	The character used to escape the meaning of the wildCard, singleChar and escapeChar itself	M	1	String	Unrestricted
121	literal	The literal value to compare.	M	1	Literal	Unrestricted
122	propertyName	The name of any property of an object.	M	1	PropertyName	Unrestricted
123	singleChar	The character used to match exactly one character in the comparison.	M	1	String	Unrestricted
124	wildCard	The character used to match more than one characters in the comparison.	M	1	String	Unrestricted
125	PropertyIsNotEqualTo	Indquality operator.			<<Simple>>	
126	PropertyIsNull	An operator that checks to see if the value of its content is NULL. A NULL is equivalent to no value present. The value 0 is a valid value and is not considered NULL				Lines 127 - 127
127	propertyName	the name of any property of an object. The property name can be used in scalar or spatial expressions to represent the value of that property for a particular instance of an object. The name of any property of an object.The name of any property of an object.The name of any property of an object.The name of any property of an object. The name of any property of an object.	M	1	PropertyName	Unrestricted
128	PropertyName	The name of any property of an object. The property name can be used in scalar or spatial expressions to represent the value of that property for a particular instance of an object.			<<Simple>>	
129	ScalarCapabilities	Scalar capabilities include the ability to process logical expressions, comparisons and arithmetic operations including the ability to process a list of named functions			<<Simple>>	Lines 130 - 132
130	arithmeticOperators	List of the arithmetic operators supported.	O	1	ArithmeticOperators	Unrestricted
131	comparisonOperators	List of the comparison operators supported.	O	1	ComparisonOperators	Unrestricted
132	logicalOperators	List of the logical operators supported.	O	1	LogicalOperators	Unrestricted
133	SimpleArithmetic	Indicates that the service can support addition, subtraction, multiplication and division.			<<Simple>>	
134	SortBy	Indicates the property to sort results by.				Lines 135 - 135
135	sortProperty	The property name and order to sort.	M	*	SortProperty	Unrestricted
136	SortOrder	Order to sort results of a filter object.			<<Enumeration>>	Lines 137 - 138
137	ASC	Ascending Sort	M	1	String	Unrestricted
138	DESC	Descending Sort	M	1	String	Unrestricted
139	SortProperty	Used to sort results.				Lines 140 - 141
140	propertyName	The name of any property of an object. The name of any property of an	M	1	PropertyName	Unrestricted

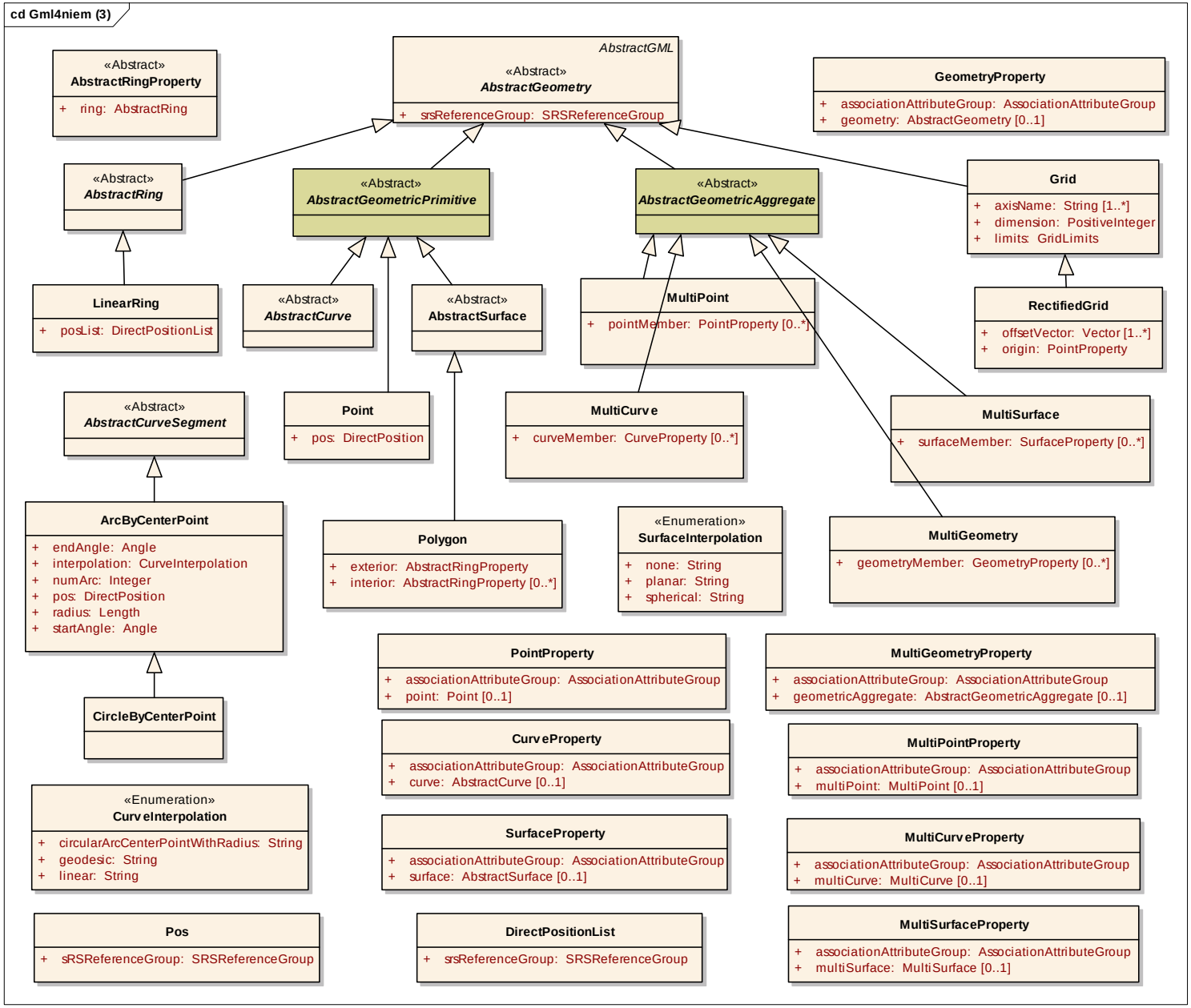
		object.				
141	sortOrder	Sort order: ascending or descending	O	1	SortOrder	Unrestricted
142	Spatial_Capabilities	Describes the ability to filter spatial data of specified geometry types based on the definition of a bounding box (BBOX) as well as the ability to process the spatial operators: Equals, Disjoint, Touches, Within, Overlaps, Crosses, Intersects, Contains, DWithin and Beyond.				Lines 143 - 144
143	geometryOperands	List of the supported geometry operands.	M	1	GeometryOperands	Unrestricted
144	spatialOperators	List of the supported spatial operators.	M	1	SpatialOperators	Unrestricted
145	SpatialOperator	A spatial operator supported by service.				Lines 146 - 147
146	geometryOperands	Geometry operandsList of the supported geometry operands.	O	1	GeometryOperands	Unrestricted
147	spatialOperatorName	Name of spatial operator.	M	1	SpatialOperatorName	Unrestricted
148	SpatialOperatorName	An enumerated list of spatial operator names.			<<Enumeration>>	Lines 149 - 159
149	BBOX		M	1	String	Unrestricted
150	beyond	Test whether the value of a geometric property is beyond a specified distance of a specified literal geometric value.	M	1	String	Unrestricted
151	contains	Test whether a geometry ‘spatially contains' another geometry.	M	1	String	Unrestricted
152	crosses	Test whether a geometry ‘spatially crosses' another geometry.	M	1	String	Unrestricted
153	disjoint	Test whether a geometry is ‘spatially disjoint’ from another geometry.	M	1	String	Unrestricted
154	dWithin	Test whether the value of a geometric property is within a specified distance of a specified literal geometric value.	M	1	String	Unrestricted
155	equals	Test whether a geometry is ‘spatially equal’ to another geometry.	M	1	String	Unrestricted
156	intersects	Test whether a geometry ‘spatially intersects' another geometry.	M	1	String	Unrestricted
157	overlaps	Test whether a geometry ‘spatially overlaps' another geometry.	M	1	String	Unrestricted
158	touches	Test whether a geometry ‘spatially touches' another geometry.	M	1	String	Unrestricted
159	within	Test whether a geometry is ‘spatially within’ another geometry.	M	1	String	Unrestricted
160	SpatialOperators	List of spatial operators supported.				Lines 161 - 161
161	spatialOperator	A spatial operator.	M	*	SpatialOperator	Unrestricted
162	SpatialOps	Used to form expressions that evaluate spatial arguments.			<<Abstract>>	
163	String	Character string.			<<Simple>>	
164	Sub	Subtraction operator			<<Simple>>	
165	Touches	Binary spatial comparison operator for touch relationship.			<<Simple>>	
166	UnaryLogicOp	Used to form expressions that evaluate the logical argument.				Lines 167 -

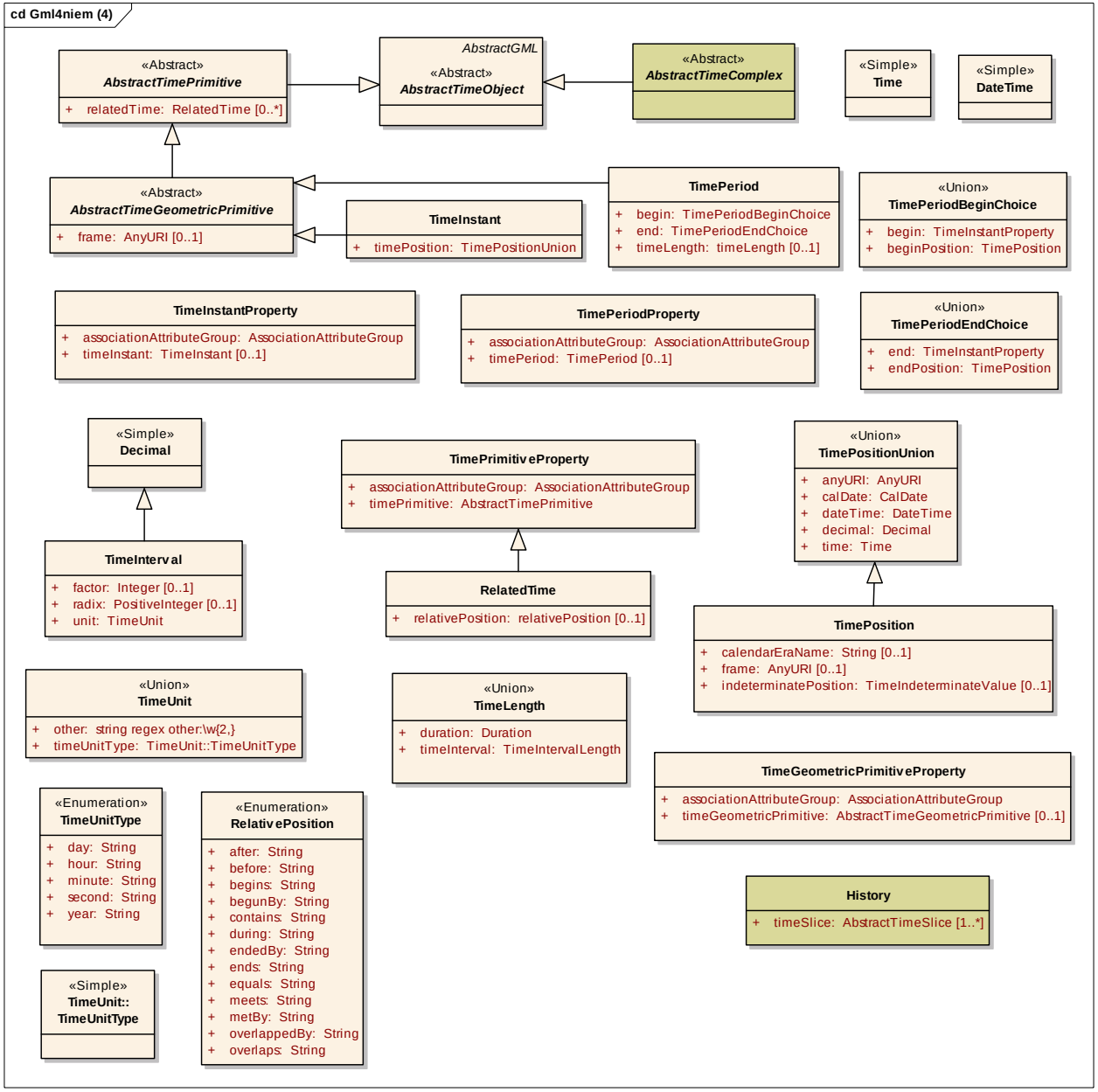
						167
167	unaryLogicOpChoice	Union of and choice among comparison, spatial and logical operations.	M	1	UnaryLogicOpChoice	Unrestricted
168	UnaryLogicOpChoice	Union of and choice among comparison, spatial and logical operations.			<<Union>>	Lines 169 - 171
169	comparisonOps	A comparison operator.	M	1	comparisonOps	Unrestricted
170	logicOps	A logical operator.	M	1	logicOps	Unrestricted
171	spatialOps	A spatial operator.	M	1	spatialOps	Unrestricted
172	UpperBoundary	An expression of the upper boundary of the 'between' operator.				Lines 173 - 173
173	expression	The expression of the upper boundary value.	M	1	expression	Unrestricted
174	Within	Binary spatial operator to test within relationship			<<Simple>>	

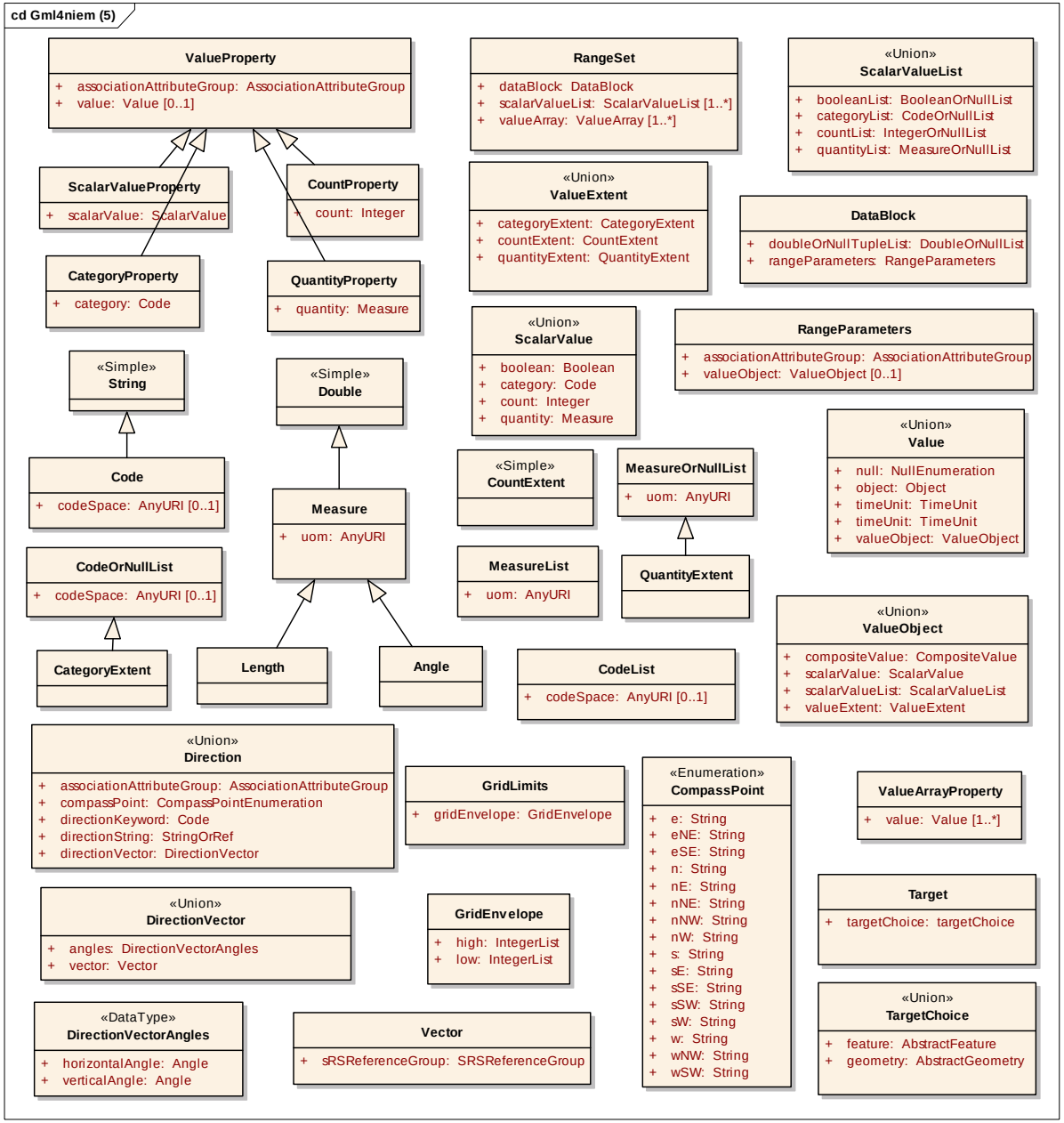
GML4NIEM (1 of 7)

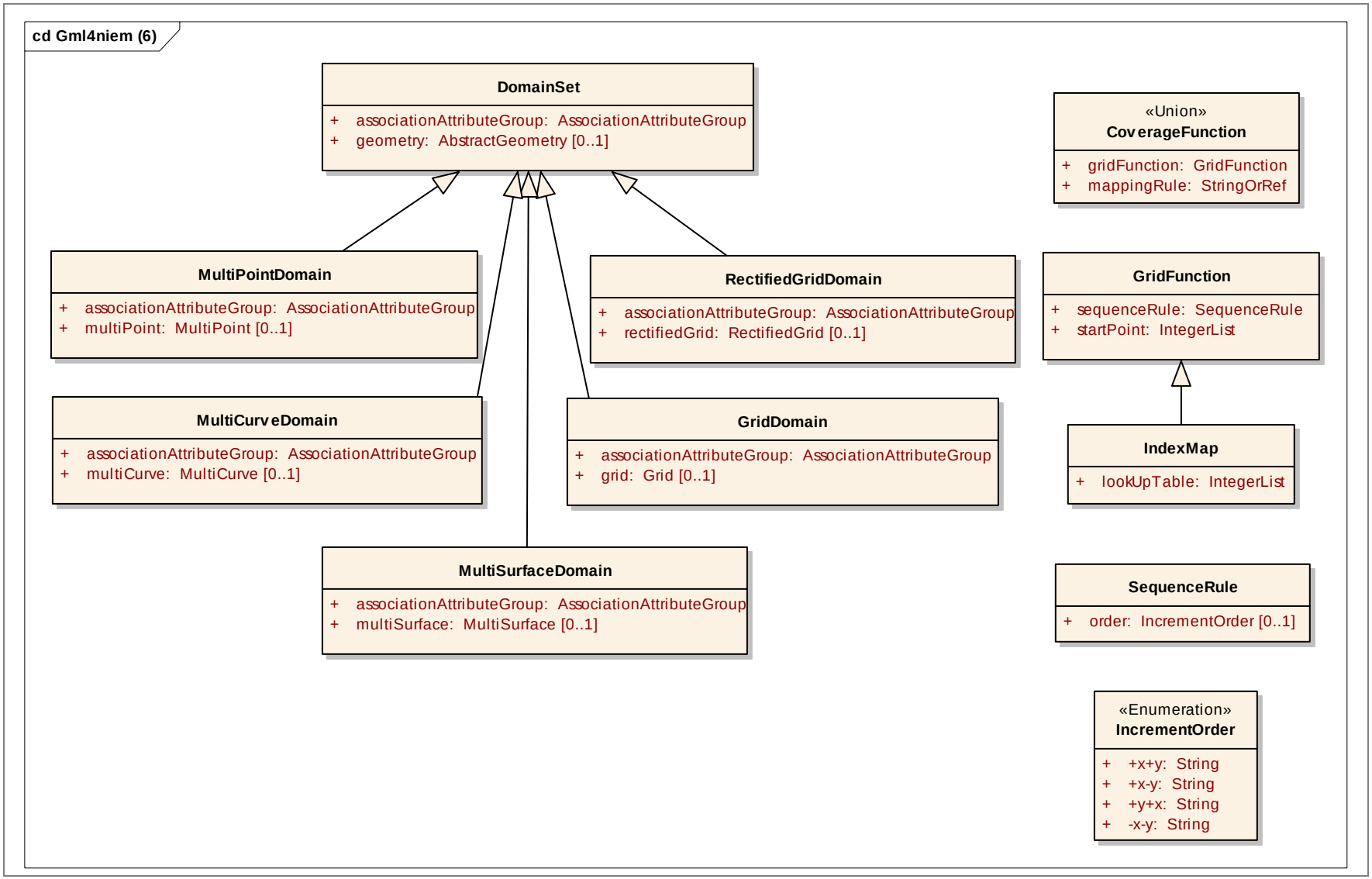



cd Gml4niem (2)
AbstractGML
«Abstract»
AbstractFeature
+ boundedBy: BoundingShape [0..1]
FeatureProperty
+ associationAttributeGroup: AssociationAttributeGroup
+ feature: AbstractFeature [0..1]
«Abstract»
AbstractFeatureCollection
+ featureMember: FeatureProperty [0..*]
«Abstract»
AbstractCoverage
+ dimension: PositiveInteger [0..1]
+ domainSet: DomainSet
+ rangeSet: RangeSet
BoundingShape
+ boundingShapeChoice: BoundingShapeChoice
FeatureCollection
«Abstract»
AbstractDiscreteCoverage
+ coverageFunction: CoverageFunction [0..1]
«Abstract»
AbstractContinuousCoverage
+ coverageFunction: CoverageFunction [0..1]
«Union»
BoundingShapeChoice
+ envelope: Envelope
+ null: NullEnumeration
MultiPointCoverage
+ boundedBy: BoundingShape [0..1]
+ coverageFunction: CoverageFunction [0..1]
+ multiPointDomain: MultiPointDomain
+ rangeSet: RangeSet
RectifiedGridCoverage
+ boundedBy: BoundingShape [0..1]
+ coverageFunction: CoverageFunction [0..1]
+ rangeSet: RangeSet
+ rectifiedGridDomain: RectifiedGridDomain
MultiCurveCoverage
+ boundedBy: BoundingShape [0..1]
+ coverageFunction: CoverageFunction [0..1]
+ multiCurveDomain: MultiCurveDomain
+ rangeSet: RangeSet
GridCoverage
+ boundedBy: BoundingShape [0..1]
+ coverageFunction: CoverageFunction [0..1]
+ gridDomain: GridDomain
+ rangeSet: RangeSet
Envelope
+ lowerCorner: DirectPosition
+ sRSReferenceGroup: SRSReferenceGroup
+ upperCorner: DirectPosition
MultiSurfaceCoverage
+ boundedBy: BoundingShape [0..1]
+ coverageFunction: CoverageFunction [0..1]
+ multiSurfaceDomain: MultiSurfaceDomain
+ rangeSet: RangeSet

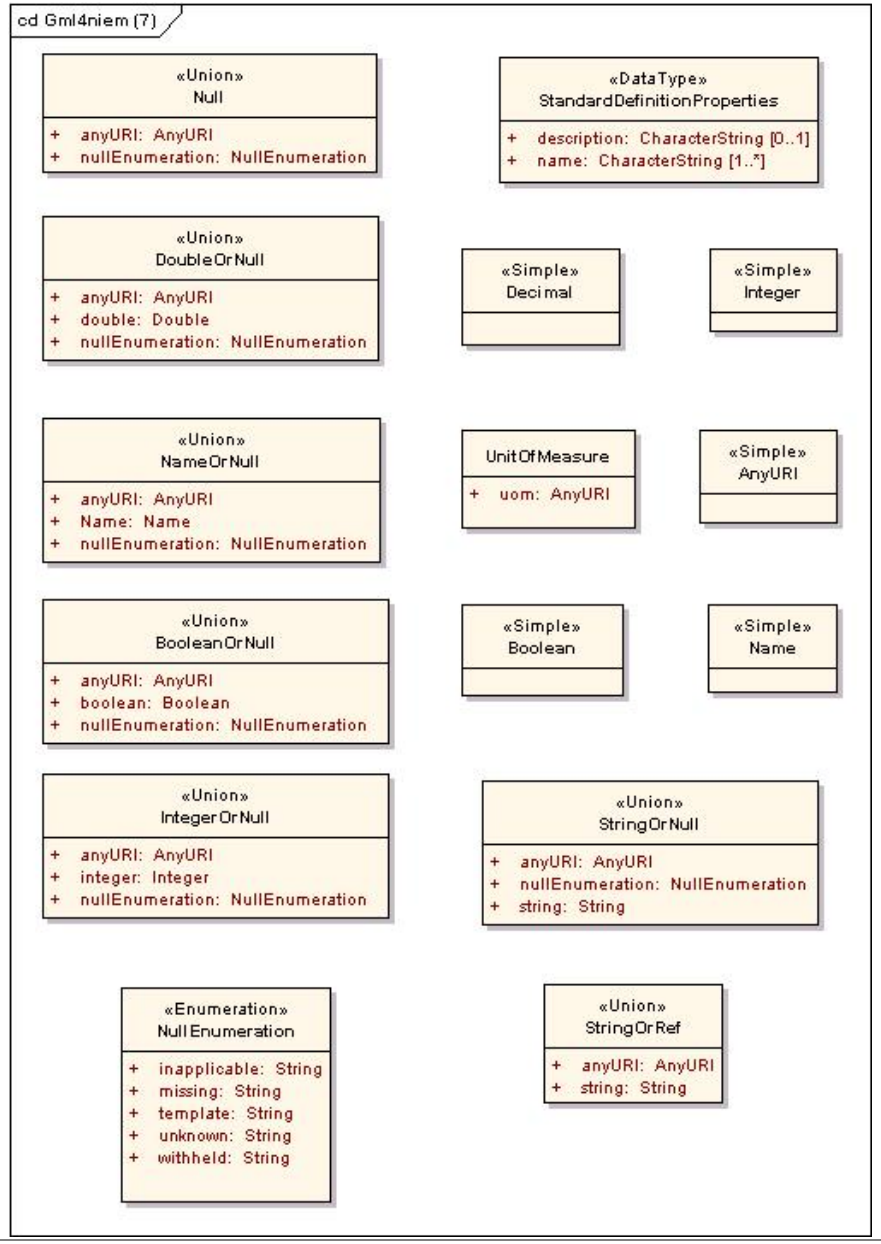

cd Gml4niem (3)
«Abstract»
AbstractRingProperty
+ ring: AbstractRing
AbstractGML
«Abstract»
AbstractGeometry
+ srsReferenceGroup: SRSReferenceGroup
GeometryProperty
+ associationAttributeGroup: AssociationAttributeGroup
+ geometry: AbstractGeometry [0..1]
«Abstract»
AbstractRing
«Abstract»
AbstractGeometricPrimitive
«Abstract»
AbstractGeometricAggregate
Grid
+ axisName: String [1..*]
+ dimension: PositiveInteger
+ limits: GridLimits
LinearRing
+ posList: DirectPositionList
«Abstract»
AbstractCurve
«Abstract»
AbstractSurface
MultiPoint
+ pointMember: PointProperty [0..*]
RectifiedGrid
+ offsetVector: Vector [1..*]
+ origin: PointProperty
«Abstract»
AbstractCurveSegment
Point
+ pos: DirectPosition
MultiCurve
+ curveMember: CurveProperty [0..*]
MultiSurface
+ surfaceMember: SurfaceProperty [0..*]
ArcByCenterPoint
+ endAngle: Angle
+ interpolation: CurveInterpolation
+ numArc: Integer
+ pos: DirectPosition
+ radius: Length
+ startAngle: Angle
Polygon
+ exterior: AbstractRingProperty
+ interior: AbstractRingProperty [0..*]
«Enumeration»
SurfaceInterpolation
+ none: String
+ planar: String
+ spherical: String
MultiGeometry
+ geometryMember: GeometryProperty [0..*]
PointProperty
+ associationAttributeGroup: AssociationAttributeGroup
+ point: Point [0..1]
MultiGeometryProperty
+ associationAttributeGroup: AssociationAttributeGroup
+ geometricAggregate: AbstractGeometricAggregate [0..1]
CircleByCenterPoint
CurveProperty
+ associationAttributeGroup: AssociationAttributeGroup
+ curve: AbstractCurve [0..1]
MultiPointProperty
+ associationAttributeGroup: AssociationAttributeGroup
+ multiPoint: MultiPoint [0..1]
«Enumeration»
CurveInterpolation
+ circularArcCenterPointWithRadius: String
+ geodesic: String
+ linear: String
SurfaceProperty
+ associationAttributeGroup: AssociationAttributeGroup
+ surface: AbstractSurface [0..1]
MultiCurveProperty
+ associationAttributeGroup: AssociationAttributeGroup
+ multiCurve: MultiCurve [0..1]
Pos
+ sRSReferenceGroup: SRSReferenceGroup
DirectPositionList
+ srsReferenceGroup: SRSReferenceGroup
MultiSurfaceProperty
+ associationAttributeGroup: AssociationAttributeGroup
+ multiSurface: MultiSurface [0..1]


cd Gml4niem (4)
«Abstract»
AbstractTimePrimitive
+ relatedTime: RelatedTime [0..*]
AbstractGML
«Abstract»
AbstractTimeObject
«Abstract»
AbstractTimeComplex
«Simple»
Time
«Simple»
DateTime
«Abstract»
AbstractTimeGeometricPrimitive
+ frame: AnyURI [0..1]
TimeInstant
+ timePosition: TimePositionUnion
TimePeriod
+ begin: TimePeriodBeginChoice
+ end: TimePeriodEndChoice
+ timeLength: timeLength [0..1]
«Union»
TimePeriodBeginChoice
+ begin: TimeInstantProperty
+ beginPosition: TimePosition
TimeInstantProperty
+ associationAttributeGroup: AssociationAttributeGroup
+ timeInstant: TimeInstant [0..1]
TimePeriodProperty
+ associationAttributeGroup: AssociationAttributeGroup
+ timePeriod: TimePeriod [0..1]
«Union»
TimePeriodEndChoice
+ end: TimeInstantProperty
+ endPosition: TimePosition
«Simple»
Decimal
TimePrimitiveProperty
+ associationAttributeGroup: AssociationAttributeGroup
+ timePrimitive: AbstractTimePrimitive
«Union»
TimePositionUnion
+ anyURI: AnyURI
+ calDate: CalDate
+ dateTime: DateTime
+ decimal: Decimal
+ time: Time
TimeInterval
+ factor: Integer [0..1]
+ radix: PositiveInteger [0..1]
+ unit: TimeUnit
RelatedTime
+ relativePosition: relativePosition [0..1]
TimePosition
+ calendarEraName: String [0..1]
+ frame: AnyURI [0..1]
+ indeterminatePosition: TimeIndeterminateValue [0..1]
«Union»
TimeUnit
+ other: string regex other:\w{2,}
+ timeUnitType: TimeUnit::TimeUnitType
«Union»
TimeLength
+ duration: Duration
+ timeInterval: TimeIntervalLength
TimeGeometricPrimitiveProperty
+ associationAttributeGroup: AssociationAttributeGroup
+ timeGeometricPrimitive: AbstractTimeGeometricPrimitive [0..1]
«Enumeration»
TimeUnitType
+ day: String
+ hour: String
+ minute: String
+ second: String
+ year: String
«Enumeration»
RelativePosition
+ after: String
+ before: String
+ begins: String
+ begunBy: String
+ contains: String
+ during: String
+ endedBy: String
+ ends: String
+ equals: String
+ meets: String
+ metBy: String
+ overlappedBy: String
+ overlaps: String
History
+ timeSlice: AbstractTimeSlice [1..*]
«Simple»
TimeUnit::
TimeUnitType


cd Gml4niem (5)
ValueProperty
+ associationAttributeGroup: AssociationAttributeGroup
+ value: Value [0..1]
RangeSet
+ dataBlock: DataBlock
+ scalarValueList: ScalarValueList [1..*]
+ valueArray: ValueArray [1..*]
«Union»
ScalarValueList
+ booleanList: BooleanOrNullList
+ categoryList: CodeOrNullList
+ countList: IntegerOrNullList
+ quantityList: MeasureOrNullList
ScalarValueProperty
+ scalarValue: ScalarValue
CountProperty
+ count: Integer
«Union»
ValueExtent
+ categoryExtent: CategoryExtent
+ countExtent: CountExtent
+ quantityExtent: QuantityExtent
DataBlock
+ doubleOrNullTupleList: DoubleOrNullList
+ rangeParameters: RangeParameters
CategoryProperty
+ category: Code
QuantityProperty
+ quantity: Measure
«Union»
ScalarValue
+ boolean: Boolean
+ category: Code
+ count: Integer
+ quantity: Measure
RangeParameters
+ associationAttributeGroup: AssociationAttributeGroup
+ valueObject: ValueObject [0..1]
«Simple»
String
«Simple»
Double
«Union»
Value
+ null: NullEnumeration
+ object: Object
+ timeUnit: TimeUnit
+ timeUnit: TimeUnit
+ valueObject: ValueObject
Code
+ codeSpace: AnyURI [0..1]
Measure
+ uom: AnyURI
«Simple»
CountExtent
MeasureOrNullList
+ uom: AnyURI
CodeOrNullList
+ codeSpace: AnyURI [0..1]
MeasureList
+ uom: AnyURI
QuantityExtent
«Union»
ValueObject
+ compositeValue: CompositeValue
+ scalarValue: ScalarValue
+ scalarValueList: ScalarValueList
+ valueExtent: ValueExtent
CategoryExtent
Length
Angle
CodeList
+ codeSpace: AnyURI [0..1]
«Union»
Direction
+ associationAttributeGroup: AssociationAttributeGroup
+ compassPoint: CompassPointEnumeration
+ directionKeyword: Code
+ directionString: StringOrRef
+ directionVector: DirectionVector
GridLimits
+ gridEnvelope: GridEnvelope
«Enumeration»
CompassPoint
+ e: String
+ eNE: String
+ eSE: String
+ n: String
+ nE: String
+ nNE: String
+ nNW: String
+ nW: String
+ s: String
+ sE: String
+ sSE: String
+ sSW: String
+ sW: String
+ w: String
+ wNW: String
+ wSW: String
ValueArrayProperty
+ value: Value [1..*]
«Union»
DirectionVector
+ angles: DirectionVectorAngles
+ vector: Vector
GridEnvelope
+ high: IntegerList
+ low: IntegerList
Target
+ targetChoice: targetChoice
«Union»
TargetChoice
+ feature: AbstractFeature
+ geometry: AbstractGeometry
«DataType»
DirectionVectorAngles
+ horizontalAngle: Angle
+ verticalAngle: Angle
Vector
+ sRSReferenceGroup: SRSReferenceGroup


cd Gml4niem (6)
DomainSet
+ associationAttributeGroup: AssociationAttributeGroup
+ geometry: AbstractGeometry [0..1]
«Union»
CoverageFunction
+ gridFunction: GridFunction
+ mappingRule: StringOrRef
MultiPointDomain
+ associationAttributeGroup: AssociationAttributeGroup
+ multiPoint: MultiPoint [0..1]
RectifiedGridDomain
+ associationAttributeGroup: AssociationAttributeGroup
+ rectifiedGrid: RectifiedGrid [0..1]
GridFunction
+ sequenceRule: SequenceRule
+ startPoint: IntegerList
MultiCurveDomain
+ associationAttributeGroup: AssociationAttributeGroup
+ multiCurve: MultiCurve [0..1]
GridDomain
+ associationAttributeGroup: AssociationAttributeGroup
+ grid: Grid [0..1]
IndexMap
+ lookUpTable: IntegerList
MultiSurfaceDomain
+ associationAttributeGroup: AssociationAttributeGroup
+ multiSurface: MultiSurface [0..1]
SequenceRule
+ order: IncrementOrder [0..1]
«Enumeration»
IncrementOrder
+ +x+y: String
+ +x-y: String
+ +y+x: String
+ -x-y: String

GML4NIEM (7 of 7)



Gml4niem						
Line	**Name/RoleName**	**Definition**	**Obligation / Condition**	**Maximum Occurrence**	**Data Type**	**Domain**
1	AbstractContinuousCoverage	A continuous coverage as defined in ISO 19123 is a coverage that can return different values for the same feature attribute at different direct positions within a single spatiotemporal object in its spatiotemporal domain			<<Abstract>>	Lines 2 - 2
2	coverageFunction	Describes the mapping function of coverage domain to range.	M	1	CoverageFunction	Unrestricted
3	AbstractCoverage	Abstract element which acts as the head of a substitution group for coverages. Note that a coverage is a GML feature.			<<Abstract>>	Lines 4 - 6
4	dimension	the number of axes	O	1	PositiveInteger	Unrestricted
5	domainSet	describes the domain of the coverage	M	1	DomainSet	Unrestricted
6	rangeSet	describes the range of the coverage	M	1	RangeSet	Unrestricted
7	AbstractCurve	An abstraction of a curve to support the different levels of complexity. The curve can always be viewed as a geometric primitive, i.e. is continuous.			<<Abstract>>	
8	AbstractCurveSegment	Curve segment defines a homogeneous segment of a curve.			<<Abstract>>	
9	AbstractDiscreteCoverage	A discrete coverage consists of a domain set, range set and optionally a coverage function. The domain set consists of either geometry or temporal objects, finite in number. The range set is comprised of a finite number of attribute values each of which is associated to every direct position within any single spatiotemporal object in the domain. In other words, the range values are constant on each spatiotemporal object in the domain. This coverage function maps each element from the coverage domain to an element in its range. This definition conforms to ISO 19123.			<<Abstract>>	Lines 10 - 10
10	coverageFunction	Describes the mapping function of coverage domain to range.	M	1	CoverageFunction	Unrestricted
11	AbstractFeature	An abstract feature provides a set of common properties, including id, metaDataProperty, name and description inherited from AbstractGMLType, plus boundedBy. A concrete feature type must derive from this type and specify additional properties in an application schema. A feature must possess an identifying attribute ('id' - 'fid' has been deprecated).			<<Abstract>>	Lines 12 - 12
12	boundedBy	Minimum bounding shape that encloses a feature instance.	M	1	BoundingShape	Unrestricted
13	AbstractFeatureCollection	A feature collection contains zero or more features.			<<Abstract>>	Lines 14 - 14
14	featureMember	Defines membership associations between features.	O	*	FeatureProperty	Unrestricted

15	AbstractGeometricAggregate	This is the abstract root type of the geometric aggregates.			<<Abstract>>	
16	AbstractGeometricPrimitive	This is the abstract root type of the geometric primitives. A geometric primitive is a geometric object that is not decomposed further into other primitives in the system. All primitives are oriented in the direction implied by the sequence of their coordinate tuples.			<<Abstract>>	
17	AbstractGeometry	All geometry elements are derived directly or indirectly from this abstract supertype. A geometry element may have an identifying attribute ("gml:id"), a name (attribute "name") and a description (attribute "description"). It may be associated with a spatial reference system (attribute "srsName"). The following rules shall be adhered: - Every geometry type shall derive from this abstract type. - Every geometry element (i.e. an element of a geometry type) shall be directly or indirectly in the substitution group of _Geometry.			<<Abstract>>	Lines 18 - 18
18	sRSReferenceGroup	The SRS.	M	1	SRSReferenceGroup	Unrestricted
19	AbstractGML	All complexContent GML elements are directly or indirectly derived from this abstract supertype to establish a hierarchy of GML types that may be distinguished from other XML types by their ancestry. Elements in this hierarchy may have an ID and are thus referenceable.			<<Abstract>>	Lines 20 - 21
20	id	The identity of the object	M	1	ID	Unrestricted
21	standardObjectProperties	The name, description and metadata of the object.	M	1	StandardObjectProperties	Unrestricted
22	AbstractRing	An abstraction of a ring to support surface boundaries of different complexity.			<<Abstract>>	
23	AbstractRingProperty	Encapsulates a ring to represent the surface boundary property of a surface.			<<Abstract>>	Lines 24 - 24
24	ring	represents the surface boundary property of a surface.	M	1	AbstractRing	Unrestricted
25	AbstractSurface	An abstraction of a surface to support the different levels of complexity. A surface is always a continuous region of a plane.			<<Abstract>>	
26	AbstractTimeComplex	The abstract supertype for temporal complexes.			<<Abstract>>	
27	AbstractTimeGeometricPrimitive	The abstract supertype for temporal geometric primitives. A temporal geometry must be associated with a temporal reference system via URI. The Gregorian calendar with UTC is the default reference system, following ISO 8601. Other reference systems in common use include the GPS calendar and the Julian calendar.			<<Abstract>>	Lines 28 - 28
28	frame	Associates a temporal geometry with a temporal reference system.	O	1	AnyURI	Unrestricted
29	AbstractTimeObject	The abstract supertype for temporal objects.			<<Abstract>>	
30	AbstractTimePrimitive	The abstract supertype for temporal primitives.			<<Abstract>>	Lines 31 - 31

31	relatedTime	Temporal "position" from the set of 13 temporal relationships.	O	*	RelatedTime	Unrestricted
32	Angle	Value of an angle quantity recorded as a single number, with its units. Uses the MeasureType with the restriction that the unit of measure referenced by uom must be suitable for an angle, such as degrees or radians.			<<Data Type>>	
33	AnyURI	A reference to a resource.			<<Simple>>	
34	AnyURI	A reference to a resource.			<<Simple>>	
35	ArcByCenterPoint	This variant of the arc requires that the points on the arc have to be computed instead of storing the coordinates directly. The control point is the center point of the arc plus the radius and the bearing at start and end. This represenation can be used only in 2D.			<<Data Type>>	Lines 36 - 41
36	endAngle	The bearing of the arc at the end.	M	1	Angle	Unrestricted
37	interpolation	The attribute "interpolation" specifies the curve interpolation mechanism used for this segment. This mechanism uses the control points and control parameters to determine the position of this curve segment. For an ArcByCenterPoint the interpolation is fixed as "circularArcCenterPointWithRadius".	M	1	CurveInterpolation	Unrestricted
38	numArc	Since this type describes always a single arc, the attribute is fixed to "1".	M	1	Integer	Unrestricted
39	pos	Position of the center point of the arc.	M	1	DirectPosition	Unrestricted
40	radius	The radius of the arc.	M	1	Length	Unrestricted
41	startAngle	The bearing of the arc at the start.	M	1	Angle	Unrestricted
42	Association	A pattern or base for derived types used to specify complex types corresponding to an unspecified UML association - either composition or aggregation. Restricts the cardinality of Objects contained in the association to a maximum of one. An instance of this type can contain an element representing an Object, or reference one remotely via an xlink:href, but may not do both. Descendents of this type can be restricted in an application schema to allow only specified classes as valid participants in the aggregation			<<Data Type>>	Lines 43 - 44
43	associationAttributeGroup	Indicates the value of a property by reference.	M	1	AssociationAttributeGroup	Unrestricted
44	object	An object with complex content.	M	1	Object	Unrestricted
45	AssociationAttributeGroup	Attribute group used to enable property elements to refer to their value remotely. It contains the simple link components from xlinks.xsd, with all members optional, and the remoteSchema attribute, which is also optional. These attributes can be attached to any element, thus allowing it to act as a pointer. The			<<Data Type>>	Lines 46 - 47

		'remoteSchema' attribute allows an element that carries link attributes to indicate that the element is declared in a remote schema rather than by the schema that constrains the current document instance.				
46	remoteSchema	indicates a schema which constrains the description of the remote resource	M	1	AnyURI	Unrestricted
47	simpleLink	indicates the value of a property by reference in a uniform manner	M	1	AssociationAttributeGroup	Unrestricted
48	Boolean	Describes a simple Boolean value.			<<Simple>>	
49	BooleanOrNull	Union of the XML Schema boolean type and the GML Nulltype. An element which uses this type may have content which is either a boolean {0,1,true,false} or a value from Nulltype			<<Union>>	Lines 50 - 52
50	anyURI	A reference to the resource.	M	1	AnyURI	Unrestricted
51	boolean	Boolean value	M	1	Boolean	Unrestricted
52	nullEnumeration	Indicates common reasons for a null value	M	1	NullEnumeration	Unrestricted
53	BoundingShape	Bounding shape (box or rectangle).			<<DataType>>	Lines 54 - 54
54	BoundingShapeChoice	one of Envelope or Null	M	1	BoundingShapeChoice	Unrestricted
55	BoundingShapeChoice	Describes the bounds of the grid.			<<Union>>	Lines 56 - 57
56	envelope	the extent using a pair of positions defining opposite corners in arbitrary dimensions	M	1	Envelope	Unrestricted
57	null	explanation for null value.	M	1	NullEnumeration	Unrestricted
58	CategoryExtent	Restriction of list type to store a 2-point range of ordinal values. If one member is a null, then this is a single ended interval.				
59	CategoryProperty	Property whose content is a Category.			<<Data Type>>	Lines 60 - 60
60	category	A category value.	M	1	Code	Unrestricted
61	CircleByCenterPoint	A CircleByCenterPoint is an ArcByCenterPoint with identical start and end angle to form a full circle. Again, this represenation can be used only in 2D.			<<Data Type>>	
62	Code	Name or code with an (optional) authority. Text token. If the codeSpace attribute is present, then its value should identify a dictionary, thesaurus or authority for the term, such as the organisation who assigned the value, or the dictionary from which it is taken. A text string with an optional codeSpace attribute.			<<DataType>>	Lines 63 - 63
63	codeSpace	Rule or authority for a code, name, term or category	O	1	AnyURI	Unrestricted
64	CodeList	List of values on a uniform nominal scale. List of text tokens. In a list context a token should not include any spaces, so xsd:Name is used instead of xsd:string. If a codeSpace attribute is present, then its value is a reference to a Reference System for the value, a			<<Data Type>>	Lines 65 - 65

		dictionary or code list.				
65	codeSpace	Rule or authority for a code, name, term or category.	O	1	AnyURI	Unrestricted
66	CodeOrNullList	List of values on a uniform nominal scale. List of text tokens. In a list context a token should not include any spaces, so xsd:Name is used instead of xsd:string. A member of the list may be a typed null. If a codeSpace attribute is present, then its value is a reference to a Reference System for the value, a dictionary or code list.				Lines 67 - 67
67	codeSpace	Rule or authority for a code, name, term or category	O	1	AnyURI	Unrestricted
68	CompassPoint	Enumeration of compass directions			<<Enumeration>>	Lines 69 - 84
69	E	East	M	1	String	Unrestricted
70	ENE	East North East	M	1	String	Unrestricted
71	ESE	East South East	M	1	String	Unrestricted
72	N	North	M	1	String	Unrestricted
73	NE	North East	M	1	String	Unrestricted
74	NNE	North North East	M	1	String	Unrestricted
75	NNW	North North West	M	1	String	Unrestricted
76	NW	North West	M	1	String	Unrestricted
77	S	South	M	1	String	Unrestricted
78	SE	South East	M	1	String	Unrestricted
79	SSE	South South East	M	1	String	Unrestricted
80	SSW	South South West	M	1	String	Unrestricted
81	SW	South West	M	1	String	Unrestricted
82	W	West	M	1	String	Unrestricted
83	WNW	West North West	M	1	String	Unrestricted
84	WSW	West South West	M	1	String	Unrestricted
85	CompositeValue	Aggregate value built from other Values using the Composite pattern. It contains zero or an arbitrary number of valueComponent elements, and zero or one valueComponents elements. It may be used for strongly coupled aggregates (vectors, tensors) or for arbitrary collections of values.			<<Data Type>>	Lines 86 - 86
86	valueComponent	A value.	O	*	ValueProperty	Unrestricted
87	CountExtent	Restriction of list type to store a 2-point range of frequency values. If one member is a null, then this is a single ended interval.			<<Simple>>	
88	CountProperty	Property whose content is a Count.			<<Data Type>>	Lines 89 - 89
89	count	The count value.	M	1	Integer	Unrestricted

90	CoverageFunction	The function or rule which defines the map from members of the domainSet to the range. More functions will be added to this list			<<Data Type>>	Lines 91 - 92
91	gridFunction	describes the mapping of grid posts (discrete point grid coverage) or grid cells (discrete surface coverage) to the values in the RangeSet	M	1	GridFunction	Unrestricted
92	mappingRule		M	1	StringOrRef	Unrestricted
93	CurveInterpolation	CurveInterpolationType is a list of codes that may be used to identify the interpolation mechanisms specified by an application schema. "linear" and "geodesic" were the only enumerations in the origial geometry.xsd for XLS. But this was insufficient to pass Xerces schema validation because ArcByCenterPointType uses circularArcCenterPointWithRadius as a fixed interpolation type. So it has been added here.			<<Enumeration>>	Lines 94 - 96
94	circularArcCenterPointWithRadius	Curve interpolation type	M	1	String	Unrestricted
95	geodesic	Curve interpolation type	M	1	String	Unrestricted
96	linear	Curve interpolation type	M	1	String	Unrestricted
97	CurveProperty	A property that has a curve as its value domain as an appropriate geometry element encapsulated in an element of this type.			<<Data Type>>	Lines 98 - 99
98	associationAttributeGroup	Indicates the value of a property by reference.	M	1	AssociationAttributeGroup	Unrestricted
99	curve	A Curve value.	M	1	AbstractCurve	Unrestricted
100	DataBlock	Describes the Range as a block of text encoded values similar to a Common Separated Value (CSV) representation.			<<Data Type>>	Lines 101 - 102
101	doubleOrNullTupleList	A list of doubleOrNull values, each separated by a whitespace. The doubleOrNull values are grouped into tuples where the dimension of each tuple in the list is equal to the number of range parameters.	M	1	DoubleOrNullList	Unrestricted
102	rangeParameters	A range set parameterization	M	1	RangeParameters	Unrestricted
103	DateTime	Describes a date and time.			<<Simple>>	
104	Decimal	A double precision number			<<Simple>>	
105	Decimal	Simple decimal number.			<<Simple>>	
106	Definition	A definition, which can be included in or referenced by a dictionary. In this extended type, the inherited "description" optional element can hold the definition whenever only text is needed. The inherited "name" elements can provide one or more brief terms for which this is the definition. The gml:id attribute is required - it must be possible to reference this definition using this handle.			<<DataType>>	Lines 107 - 109
107	description	Indicates property name, description and metadata.	M	1	CharacterString	Unrestricted
108	id	Identifier of the defininition.	M	1	ID	Unrestricted
109	name	Name of the definition.	M	*	CharacterString	Unrestricted

110	Dictionary	A non-abstract bag that is specialized for use as a dictionary which contains a set of definitions. These definitions are referenced from other places, in the same and different XML documents. In this restricted type, the inherited optional "description" element can be used for a description of this dictionary. The inherited optional "name" element can be used for the name(s) of this dictionary. The inherited "metaDataProperty" elements can be used to reference or contain more information about this dictionary. The inherited required gml:id attribute allows the dictionary to be referenced using this handle.			<<Data Type>>	Lines 111 - 111
111	dictionaryChoice1	a set of of direct or indirect definition entries	M	1	DictionaryChoice1	Unrestricted
112	DictionaryChoice	Allows a set of definitions or references to definitions to be collected.			<<Union>>	Lines 113 - 113
113	dictionaryEntry	An entry in this dictionary. The content of an entry can itself be a lower level dictionary or definition collection. This element follows the standard GML property model, so the value may be provided directly or by reference. Note that if the value is provided by reference, this definition does not carry a handle (gml:id) in this context, so does not allow external references to this specific entry in this context. When used in this way the referenced definition will usually be in a dictionary in the same XML document.	M	1	DictionaryEntry	Unrestricted
114	DictionaryEntry	An entry in a dictionary of definitions. An instance of this type contains or refers to a definition object. The number of definitions contained in this dictionaryEntry is restricted to one, but a DefinitionCollection or Dictionary that contains multiple definitions can be substituted if needed. Specialized descendents of this dictionaryEntry might be restricted in an application schema to allow only including specified types of definitions as valid entries in a dictionary.			<<Data Type>>	Lines 115 - 116
115	associationAttributeGroup	Indicates the value of a property by reference.	M	1	AssociationAttributeGroup	Unrestricted
116	definition	This element in a dictionary entry contains the actual definition.	M	1	Definition	Unrestricted
117	Direction	Used to express orientation, direction, heading, bearing or other directional aspects of geographic features.			<<Data Type>>	Lines 118 - 122
118	associationAttributeGroup	Indicates the value of a property by reference.	M	1	AssociationAttributeGroup	Unrestricted
119	compassPoint	Bearing expressed as cardinal direction	M	1	CompassPointEnumeration	Unrestricted
120	directionKeyword	Describes direction using a term from a list.	M	1	Code	Unrestricted
121	directionString	Describes direction using prose.	M	1	StringOrRef	Unrestricted
122	directionVector	A director vector expressed as components of a vector or two	M	1	DirectionVector	Unrestricted

		angles.				
123	DirectionVector	Direction expressed as a vector, either using components, or using angles.			<<Data Type>>	Lines 124 - 125
124	DirectionVectorAngles	Describes direction.	M	1	DirectionVectorAngles	Unrestricted
125	vector	A vector is an ordered set of numbers called coordinate that represent a position in space that is defined by a coordinate reference system (CRS).	M	1	Vector	Unrestricted
126	DirectionVectorAngles	Describes direction.			<<Data Type>>	Lines 127 - 128
127	horizontalAngle	Horizontal angle.	M	1	Angle	Unrestricted
128	verticalAngle	Vertical angle.	M	1	Angle	Unrestricted
129	DirectPositionList	DirectPositionList instances hold the coordinates for a sequence of direct positions within the same coordinate reference system (CRS).			<<Data Type>>	Lines 130 - 130
130	sRSReferenceGroup	The SRS.	M	1	SRSReferenceGroup	Unrestricted
131	DomainSet	The spatiotemporal domain of a coverage. Typically * a geometry collection, * an implicit geometry (e.g. a grid), * an explicit or implicit collection of time instances or periods has been removed as an option here N.B. Temporal geometric complexes and temporal grids are not yet implemented in GML.			<<Data Type>>	Lines 132 - 133
132	associationAttributeGroup	Indicates the value of a property by reference.	M	1	AssociationAttributeGroup	Unrestricted
133	geometry	a geometry complex to represent spatial coverages	M	1	AbstractGeometry	Unrestricted
134	Double	A double precision numeric value.			<<Simple>>	
135	DoubleOrNull	Union of the XML Schema double type and the GML Nulltype. An element which uses this type may have content which is either a double or a value from Nulltype			<<Union>>	Lines 136 - 138
136	anyURI	A reference to the resource.	M	1	AnyURI	Unrestricted
137	double	A double precision value.	M	1	Double	Unrestricted
138	nullEnumeration	Indicates common reasons for a null value	M	1	NullEnumeration	Unrestricted
139	Envelope	Envelope defines an extent using a pair of positions defining opposite corners in arbitrary dimensions. The first direct position is the "lower corner" (a coordinate position consisting of all the minimal ordinates for each dimension for all points within the envelope), the second one the "upper corner" (a coordinate position consisting of all the maximal ordinates for each dimension for all points within the envelope).			<<DataType>>	Lines 140 - 142
140	lowerCorner	a coordinate position consisting of all the minimal ordinates for each dimension for all points within the envelop	M	1	DirectPosition	Unrestricted

141	sRSReferenceGroup	The SRS.	M	1	SRSReferenceGroup	Unrestricted
142	upperCorner	coordinate position consisting of all the maximal ordinates for each dimension for all points within the envelop	M	1	DirectPosition	Unrestricted
143	FeatureCollection	Concrete generic feature collection.			<<Data Type>>	
144	FeatureProperty	Container for a feature - follow gml:AssociationType pattern.			<<Data Type>>	Lines 145 - 146
145	associationAttributeGroup	Indicates the value of a property by reference.	M	1	AssociationAttributeGroup	Unrestricted
146	feature	A feature value.	M	1	AbstractFeature	Unrestricted
147	GeometryProperty	A geometric property is any geometry element encapsulated in an element of this type. 2006-01-07 PwD derive from AssociationType to fix om:geometryResult membership in gml:resultOf substituion group			<<Data Type>>	Lines 148 - 149
148	associationAttributeGroup	Indicates the value of a property by reference.	M	1	AssociationAttributeGroup	Unrestricted
149	geometry	Describes the Geometry value.	M	1	AbstractGeometry	Unrestricted
150	Grid	An unrectified grid, which is a network composed of two or more sets of equally spaced parallel lines in which the members of each set intersect the members of the other sets at right angles.			<<Data Type>>	Lines 151 - 153
151	axisName	The name by which this coordinate system axis is identified.	M	*	String	Unrestricted
152	dimension	the number of axes	M	1	PositiveInteger	Unrestricted
153	limits	the grid coordinates of diagonally opposed corners of a rectangular region.	M	1	GridLimits	Unrestricted
154	GridCoverage	A gridded coverage is a discrete point coverage in which the domain set is a geometric grid of points			<<Data Type>>	Lines 155 - 158
155	boundedBy	Bounding geometry.	M	1	BoundingShape	Unrestricted
156	coverageFunction	Describes the mapping function of coverage domain to range.	M	1	CoverageFunction	Unrestricted
157	gridDomain	The domain of the coverage	M	1	GridDomain	Unrestricted
158	rangeSet	The range of the coverage.	M	1	RangeSet	Unrestricted
159	GridDomain	The domain of a gridded coverage.			<<Data Type>>	Lines 160 - 161
160	associationAttributeGroup	Indicates the value of a property by reference.	M	1	AssociationAttributeGroup	Unrestricted
161	grid	The domain.	M	1	Grid	Unrestricted
162	GridEnvelope	Provides grid coordinate values for the diametrically opposed corners of an envelope that bounds a section of grid. The value of a single coordinate is the number of offsets from the origin of the grid in the direction of a specific axis.			<<Data Type>>	Lines 163 - 164
163	high	coordinate tuples, the coordinates being measured as offsets from	M	1	IntegerList	Unrestricted

		the origin of the grid along each axis of the diagonally opposing corners of a “rectangular” region of interest				
164	low	coordinate tuples, the coordinates being measured as offsets from the origin of the grid along each axis of the diagonally opposing corners of a “rectangular” region of interest	M	1	IntegerList	Unrestricted
165	GridFunction	Defines how values in the domain are mapped to the range set. The start point and the sequencing rule are specified here.			<<Data Type>>	Lines 166 - 167
166	sequenceRule	If absent, the implied value is "Linear".	M	1	SequenceRule	Unrestricted
167	startPoint	Index position of the first grid post, which must lie somwhere in the GridEnvelope. If absent, the startPoint is equal to the value of gridEnvelope::low from the grid definition.	M	1	IntegerList	Unrestricted
168	GridLimits	The region of interest within a grid is given in terms of its limits, being the grid coordinates of diagonally opposed corners of a rectangular region.			<<DataType>>	Lines 169 - 169
169	gridEnvelope	The diagonally opposed corners of a rectangular reguib.	M	1	GridEnvelope	Unrestricted
170	History	The history relationship associates a feature with a sequence of TimeSlice instances.			<<Data Type>>	Lines 171 - 171
171	timeSlice	object that encapsulates updates of the dynamic—or volatile—properties that reflect some change event; it thus includes only those feature properties that have actually changed due to some process.	M	*	AbstractTimeSlice	Unrestricted
172	IncrementOrder	The enumeration value here indicates the incrementation order to be used on the first 2 axes, i.e. "+x-y" means that the points on the first axis are to be traversed from lowest to highest and the points on the second axis are to be traversed from highest to lowest. The points on all other axes (if any) beyond the first 2 are assumed to increment from lowest to highest.			<<Enumeration>>	Lines 173 - 176
173	+x+y	Describes increment order for each axis	M	1	String	Unrestricted
174	+x-y	Describes increment order for each axis	M	1	String	Unrestricted
175	+y+x	Describes increment order for each axis	M	1	String	Unrestricted
176	-x-y	Describes increment order for each axis	M	1	String	Unrestricted
177	IndexMap	Exends GridFunctionType with a lookUpTable. This contains a list of indexes of members within the rangeSet corresponding with the members of the domainSet. The domainSet is traversed in list order if it is enumerated explicitly, or in the order specified by a SequenceRule if the domain is an implicit set. The length of the lookUpTable corresponds with the length of the subset of the domainSet for which the coverage is defined.				Lines 178 - 178

178	lookUpTable	A list of indexes of members within the rangeSet corresponding with the members of the domainSet.	M	1	IntegerList	Unrestricted
179	Integer	Simple integer numeric value.			<<Simple>>	
180	IntegerOrNull	Union of the XML Schema integer type and the GML Nulltype. An element which uses this type may have content which is either an integer or a value from Nulltype			<<Union>>	Lines 181 - 183
181	anyURI	A reference to the resource.	M	1	AnyURI	Unrestricted
182	integer	Integer value.	M	1	Integer	Unrestricted
183	nullEnumeration	Indicates common reasons for a null value	M	1	NullEnumeration	Unrestricted
184	Length	Value of a length (or distance) quantity, with its units. Uses the MeasureType with the restriction that the unit of measure referenced by uom must be suitable for a length, such as metres or feet.			<<Data Type>>	
185	LinearRing	A LinearRing is defined by four or more coordinate tuples, with linear interpolation between them; the first and last coordinates must be coincident.			<<DataType>>	Lines 186 - 186
186	posList	A set of point coordinates.	M	1	DirectPositionList	Unrestricted
187	Measure	Number with a scale.			<<Data Type>>	Lines 188 - 188
188	uom	Units of measure. A reference to a Reference System for the amount, either a ratio or position scale.	M	1	AnyURI	Unrestricted
189	MeasureList	List of numbers with a uniform scale. The value of uom (Units Of Measure) attribute is a reference to a Reference System for the amount, either a ratio or position scale.			<<DataType>>	Lines 190 - 190
190	uom	Units of measure	M	1	AnyURI	Unrestricted
191	MeasureOrNullList	List of numbers with a uniform scale. A member of the list may be a typed null. The value of uom (Units Of Measure) attribute is a reference to a Reference System for the amount, either a ratio or position scale.			<<Data Type>>	Lines 192 - 192
192	uom	description of units of measure	M	1	AnyURI	Unrestricted
193	MultiCurve	A MultiCurve is defined by one or more Curves, referenced through curveMember elements.			<<Data Type>>	Lines 194 - 194
194	curveMember	a member of a set of Curve-valued properties	O	*	CurveProperty	Unrestricted
195	MultiCurveCoverage	A discrete coverage type whose domain is defined by a collection of curves.			<<Abstract Type>>	Lines 196 - 199
196	boundedBy	describes the minimum bounding box or rectangle that encloses the entire feature.	M	1	BoundingShape	Unrestricted

197	coverageFunction	Describes the mapping function of coverage domain to range.	M	1	CoverageFunction	Unrestricted
198	multiCurveDomain	the domain of a MultiCurve Coverage	M	1	MultiCurveDomain	Unrestricted
199	rangeSet	the set of ranges in a MultiCurve Coverage	M	1	RangeSet	Unrestricted
200	MultiCurveDomain	The domain of a MultiCurve coverage			<<Abstract Type>>	Lines 201 - 202
201	associationAttributeGroup	Indicates the value of a property by reference.	M	1	AssociationAttributeGroup	Unrestricted
202	multiCurve	One or more Curves referenced through curveMember elements.	M	1	MultiCurve	Unrestricted
203	MultiCurveProperty	A property that has a collection of curves as its value domain as an appropriate geometry element encapsulated in an element of this type.			<<Data Type>>	Lines 204 - 205
204	associationAttributeGroup	Indicates the value of a property by reference.	M	1	AssociationAttributeGroup	Unrestricted
205	multiCurve	One or more Curves referenced through curveMember elements.	M	1	MultiCurve	Unrestricted
206	MultiGeometry	A geometry collection must include one or more geometries, referenced through geometryMember elements.			<<Data Type>>	Lines 207 - 207
207	geometryMember	A geometry member.	O	*	GeometryProperty	Unrestricted
208	MultiGeometryProperty	A property that has a geometric aggregate as its value domain an appropriate geometry element encapsulated in an element of this type.			<<Data Type>>	Lines 209 - 210
209	associationAttributeGroup	Indicates the value of a property by reference.	M	1	AssociationAttributeGroup	Unrestricted
210	geometricAggregate	arbitrary aggregations of geometry elements	M	1	AbstractGeometricAggregate	Unrestricted
211	MultiPoint	A MultiPoint is defined by one or more Points, referenced through pointMember elements.			<<Data Type>>	Lines 212 - 212
212	pointMember	a member of a set of Point-valued properties	O	*	PointProperty	Unrestricted
213	MultiPointCoverage	A discrete coverage type whose domain is defined by a collection of point			<<DataType>>	Lines 214 - 217
214	boundedBy	describes the minimum bounding box or rectangle that encloses the entire feature.	M	1	BoundingShape	Unrestricted
215	coverageFunction	Describes the mapping function of coverage domain to range.	M	1	CoverageFunction	Unrestricted
216	multiPointDomain	the domain of the MultiPoint coverage	M	1	MultiPointDomain	Unrestricted
217	rangeSet	the ranges of the MultiPoint coverage	M	1	RangeSet	Unrestricted
218	MultiPointDomain	Describes the domain of a MultiPoint coverage.			<<DataType>>	Lines 219 - 220
219	associationAttributeGroup	Indicates the value of a property by reference.	M	1	AssociationAttributeGroup	Unrestricted
220	multiPoint	Set of Points defining the domain.	M	1	MultiPoint	Unrestricted
221	MultiPointProperty	A property that has a collection of points as its value domain an appropriate geometry element encapsulated in an element of this			<<Data Type>>	Lines 222 - 223

		type.				
222	associationAttributeGroup	Indicates the value of a property by reference.	M	1	AssociationAttributeGroup	Unrestricted
223	multiPoint	Multipoint geometry value.	M	1	MultiPoint	Unrestricted
224	MultiSurface	A MultiSurface is defined by one or more Surfaces, referenced through surfaceMember elements.			<<Data Type>>	Lines 225 - 225
225	surfaceMember	A Surface instance	O	*	SurfaceProperty	Unrestricted
226	MultiSurfaceCoverage	A discrete coverage type whose domain is defined by a collection of surface patches (includes polygons, triangles, rectangles, etc).			<<Abstract Type>>	Lines 227 - 230
227	boundedBy	describes the minimum bounding box or rectangle that encloses the entire feature.	M	1	BoundingShape	Unrestricted
228	coverageFunction	Describes the mapping function of coverage domain to range.	M	1	CoverageFunction	Unrestricted
229	multiSurfaceDomain	the domain of a MultiSurface coverage	M	1	MultiSurfaceDomain	Unrestricted
230	rangeSet	the ranges of a MultiSurface coverage	M	1	RangeSet	Unrestricted
231	MultiSurfaceDomain	Domain of a MultiSurface geometry.			<<DataType>>	Lines 232 - 233
232	associationAttributeGroup	Indicates the value of a property by reference.	M	1	AssociationAttributeGroup	Unrestricted
233	multiSurface	one or more Surfaces, referenced through surfaceMember elements.	M	1	MultiSurface	Unrestricted
234	MultiSurfaceProperty	A property that has a collection of surfaces as its value domain as an appropriate geometry element encapsulated in an element of this type.			<<Data Type>>	Lines 235 - 236
235	associationAttributeGroup	Indicates the value of a property by reference.	M	1	AssociationAttributeGroup	Unrestricted
236	multiSurface	Multiple surfaces	M	1	MultiSurface	Unrestricted
237	Name	The name of the object			<<Simple>>	
238	NameOrNull	Union of the XML Schema Name type and the GML Nulltype. An element which uses this type may have content which is either a Name or a value from Nulltype. Note that a "Name" may not contain whitespace.			<<Union>>	Lines 239 - 241
239	anyURI	A reference to the resource.	M	1	AnyURI	Unrestricted
240	Name	The name.	M	1	Name	Unrestricted
241	nullEnumeration	Indicates common reasons for a null value	M	1	NullEnumeration	Inapplicable, missing, template, unknown, withheld
242	Null	Utility type for null elements. The value may be selected from one of			<<Union>>	Lines 243 -

		the enumerated tokens, or may be a URI in which case this should identify a resource which describes the reason for the null.				244
243	anyURI	A reference to the resource.	M	1	AnyURI	Unrestricted
244	nullEnumeration	Indicates common reasons for a null value	M	1	NullEnumeration	Inapplicable, missing, template, unknown, withheld
245	NullEnumeration				<<Enumeration>>	Lines 246 - 250
246	inapplicable	Value is Null because it is inapplicable.	M	1	String	Unrestricted
247	missing	Value is Null because it is missing.	M	1	String	Unrestricted
248	template	Value is Null because it is supplied by a template.	M	1	String	Unrestricted
249	unknown	Value is Null because it is unknown.	M	1	String	Unrestricted
250	withheld	Value is Null because it has been withheld.	M	1	String	Unrestricted
251	Point	A Point is defined by a single coordinate tuple.			<<Data Type>>	Lines 252 - 252
252	pos	Direct position coordinates within some coordinate reference system.	M	1	DirectPosition	Unrestricted
253	PointProperty	A property that has a point as its value domain can be an appropriate geometry element encapsulated in an element of this type			<<Data Type>>	Lines 254 - 255
254	associationAttributeGroup	Indicates the value of a property by reference.	M	1	AssociationAttributeGroup	Unrestricted
255	point	A Point geometry.	M	1	Point	Unrestricted
256	Polygon	A Polygon is a special surface that is defined by a single surface patch. The boundary of this patch is coplanar and the polygon uses planar interpolation in its interior. It is backwards compatible with the Polygon of GML 2, GM_Polygon of ISO 19107 is implemented by PolygonPatch.			<<Data Type>>	Lines 257 - 258
257	exterior	Exterior ring of polygon	M	1	AbstractRingProperty	Unrestricted
258	interior	Interior ring(s) of polygon.	O	*	AbstractRingProperty	Unrestricted
259	Pos	DirectPosition instances hold the coordinates for a position within some coordinate reference system (CRS). Since DirectPositions, as data types, will often be included in larger objects (such as geometry elements) that have references to CRS, the "srsName" attribute will in general be missing, if this particular DirectPosition is included in a larger element with such a reference to a CRS. In this			<<Data Type>>	Lines 260 - 260

		case, the CRS is implicitly assumed to take on the value of the containing object's CRS.				
260	sRSReferenceGroup	The SRS.	M	1	SRSReferenceGroup	Unrestricted
261	QuantityExtent	Restriction of list type to store a 2-point range of numeric values. If one member is a null, then this is a single ended interval.			<<Data Type>>	
262	QuantityProperty	Property whose content is a Quantity.			<<Data Type>>	Lines 263 - 263
263	quantity	A numerical quantity with a unit of measure (UOM)	M	1	Measure	Unrestricted
264	RangeParameters	Metadata about the rangeSet. Definition of record structure. This is required if the rangeSet is encoded in a DataBlock. We use a gml:_Value with empty values as a map of the composite value structure.			<<Data Type>>	Lines 265 - 266
265	associationAttributeGroup	Indicates the value of a property by reference.	M	1	AssociationAttributeGroup	Unrestricted
266	valueObject	The value representation.	M	1	ValueObject	Unrestricted
267	RangeSet	Describes the range of a Coverage.			<<Data Type>>	Lines 268 - 270
268	dataBlock	Its tuple list holds the values as space-separated tuples each of which contains comma-separated components, and the tuple structure is specified using the rangeParameters property.	M	1	DataBlock	Unrestricted
269	scalarValueList	One of BooleanList, CategoryList, CountList and QuantityList, and (transitively) the elements in their substitution groups.	M	*	ScalarValueList	Unrestricted
270	valueArray	each member _Value holds a tuple or "row" from the equivalent table	M	*	ValueArray	Unrestricted
271	RectifiedGrid	A kind of grid in which the points of the grid have geometric locations. It is defined by specifying the position (in some geometric space) of the grid “origin” and of the vectors that define its post locations.			<<DataType>>	Lines 272 - 273
272	offsetVector	Vectors that define the post locations of the Grid	M	*	Vector	Unrestricted
273	origin	The origin of the Grid	M	1	PointProperty	Unrestricted
274	RectifiedGridCoverage	Similar to grid coverage except that the points of the grid are geometrically referenced. The rectified grid coverage has a domain that is a RectifiedGrid geometry.			<<DataType>>	Lines 275 - 278
275	boundedBy	describes the minimum bounding box or rectangle that encloses the entire feature.	M	1	BoundingShape	Unrestricted
276	coverageFunction	Describes the mapping function of coverage domain to range.	M	1	CoverageFunction	Unrestricted
277	rangeSet	Ranges for coverage.	M	1	RangeSet	Unrestricted
278	rectifiedGridDomain	Domain of coverage.	M	1	RectifiedGridDomain	Unrestricted

279	RectifiedGridDomain	The domain of a discrete point coverage based on a rectified grid (RectifiedGrid)			<<Data Type>>	Lines 280 - 281
280	associationAttributeGroup	Indicates the value of a property by reference.	M	1	AssociationAttributeGroup	Unrestricted
281	rectifiedGrid	The rectified grid of post locations.	M	1	RectifiedGrid	Unrestricted
282	Reference	A pattern or base for derived types used to specify complex types corresponding to a UML aggregation association. An instance of this type serves as a pointer to a remote Object.			<<Data Type>>	Lines 283 - 283
283	associationAttributeGroup	Indicates the value of a property by reference.	M	1	AssociationAttributeGroup	Unrestricted
284	ReferenceSystem	Description of a spatial and/or temporal reference system used by a dataset.			<<Data Type>>	Lines 285 - 286
285	codeSpace	Rule or authority for a code, name, term or category	O	1	AnyURI	Unrestricted
286	uom	units of measure for the reference system	O	1	AnyURI	Unrestricted
287	RelatedTime	Indicates the relative position of an arbitrary time primitive (e.g., before, after, during, etc). It extends the gml:TimePrimitivePropertyType with an XML attribute “relativePosition”, whose value is selected from the set of 13 temporal relationships identified by Allen (1983) [ISO 19108:2002]			<<Data Type>>	Lines 288 - 288
288	relativePosition	Describes the relative position of the time primitive.	O	1	relativePosition	Unrestricted
289	RelativePosition	Describes the relative position of the time primitive.			<<Enumeration>>	Lines 290 - 302
290	after	After	M	1	String	Unrestricted
291	before	Before	M	1	String	Unrestricted
292	begins	Begins	M	1	String	Unrestricted
293	begunBy	Begun By	M	1	String	Unrestricted
294	contains	Contains	M	1	String	Unrestricted
295	during	During	M	1	String	Unrestricted
296	endedBy	Ended By	M	1	String	Unrestricted
297	ends	Ends	M	1	String	Unrestricted
298	equals	Equals	M	1	String	Unrestricted
299	meets	Meets	M	1	String	Unrestricted
300	metBy	Met By	M	1	String	Unrestricted
301	overlappedBy	Overlapped By	M	1	String	Unrestricted
302	overlaps	Overlaps	M	1	String	Unrestricted
303	ScalarValue	Contains Boolean, Category, Count and Quantity, and (transitively) the elements in their substitution groups.			<<DataType>>	Lines 304 - 307
304	boolean	A boolean value.	M	1	Boolean	Unrestricted

305	category	A category value.	M	1	Code	Unrestricted
306	count	A count value.	M	1	Integer	Unrestricted
307	quantity	A quantity value.	M	1	Measure	Unrestricted
308	ScalarValueList	An abstract element which acts as the head of a substitution group which contains BooleanList, CategoryList, CountList and QuantityList, and (transitively) the elements in their substitution groups.			<<DataType>>	Lines 309 - 312
309	booleanList	A list of Boolean values	M	1	BooleanOrNullList	Unrestricted
310	categoryList	A list of category values	M	1	CodeOrNullList	Unrestricted
311	countList	A list of count values	M	1	IntegerOrNullList	Unrestricted
312	quantityList	A list of quantity values	M	1	MeasureOrNullList	Unrestricted
313	ScalarValueProperty	Property whose content is a scalar value.			<<Data Type>>	Lines 314 - 314
314	scalarValue	One of: Boolean, Category, Count and Quantity, and (transitively) the elements in their substitution groups.	M	1	ScalarValue	Unrestricted
315	SequenceRule	Describes the order in which objects are sequenced			<<Data Type>>	Lines 316 - 316
316	order	Indicates the incrementing order.	O	1	IncrementOrder	Unrestricted
317	SRSReferenceGroup	Optional reference to the CRS used by this geometry, with optional additional information to simplify use when a more complete definition of the CRS is not needed.			<<Data Type>>	Lines 318 - 319
318	srsDimension	The "srsDimension" is the length of coordinate sequence (the number of entries in the list). This dimension is specified by the coordinate reference system. When the srsName attribute is omitted, this attribute shall be omitted.	O	1	PositiveInteger	Unrestricted
319	srsName	In general this reference points to a CRS instance of gml:CoordinateReferenceSystemType (see coordinateReferenceSystems.xsd). For well known references it is not required that the CRS description exists at the location the URI points to. If no srsName attribute is given, the CRS must be specified as part of the larger context this geometry element is part of, e.g. a geometric element like point, curve, etc. It is expected that this attribute will be specified at the direct position level only in rare cases.	O	1	AnyURI	Unrestricted
320	StandardDefinitionProperties	This content model group makes it easier to construct types that derive from DefinitionType and its descendents "by restriction". A reference to the group saves having to enumerate the standard definition properties. See definition of StandardObjectProperties for			<<Data Type>>	Lines 321 - 322

		more documentation				
321	description	Indicates property name, description and metadata.	M	1	CharacterString	Unrestricted
322	name	Name of the property.	M	*	CharacterString	Unrestricted
323	StandardObjectProperties	This content model group makes it easier to construct types that derive from AbstractGMLType and its descendents "by restriction". A reference to the group saves having to enumerate the standard object properties.			<<DataType>>	Lines 324 - 325
324	description	Indicates property name, description and metadata.	M	1	CharacterString	Unrestricted
325	name	Multiple names may be provided. These will often be distinguished by being assigned by different authorities, as indicated by the value of the codeSpace attribute. In an instance document there will usually only be one name per authority.	O	*	CharacterString	Unrestricted
326	String	Simple character string.			<<Simple>>	
327	StringOrNull	Union of the XML Schema string type and the GML Nulltype. An element which uses this type may have content which is either a string or a value from Nulltype. Note that a "string" may contain whitespace.			<<Union>>	Lines 328 - 330
328	anyURI	A reference to the resource.	M	1	AnyURI	Unrestricted
329	nullEnumeration	Indicates common reasons for a null value	M	1	NullEnumeration	Unrestricted
330	string	The string value of the object.	M	1	String	Unrestricted
331	SurfaceInterpolation	SurfaceInterpolationType is a list of codes that may be used to identify the interpolation mechanisms specified by an application schema.			<<Enumeration>>	Lines 332 - 334
332	none	No interpolation.	M	1	String	Unrestricted
333	planar	Planar interpolation	M	1	String	Unrestricted
334	spherical	Spherical interpolation	M	1	String	Unrestricted
335	SurfaceProperty	A property that has a surface as its value domain as an appropriate geometry element encapsulated in an element of this type.			<<DataType>>	Lines 336 - 337
336	associationAttributeGroup	Indicates the value of a property by reference.	M	1	AssociationAttributeGroup	Unrestricted
337	surface	The surface value.	M	1	AbstractSurface	Unrestricted
338	Target	Container for an object representing the target or subject of an observation.			<<Data Type>>	Lines 339 - 339
339	targetChoice	Either the target value or subject of observation.	M	1	targetChoice	Unrestricted
340	TargetChoice	One of a feature or a geometry.			<<Union>>	Lines 341 - 342
341	feature	A feature value.	M	1	AbstractFeature	Unrestricted

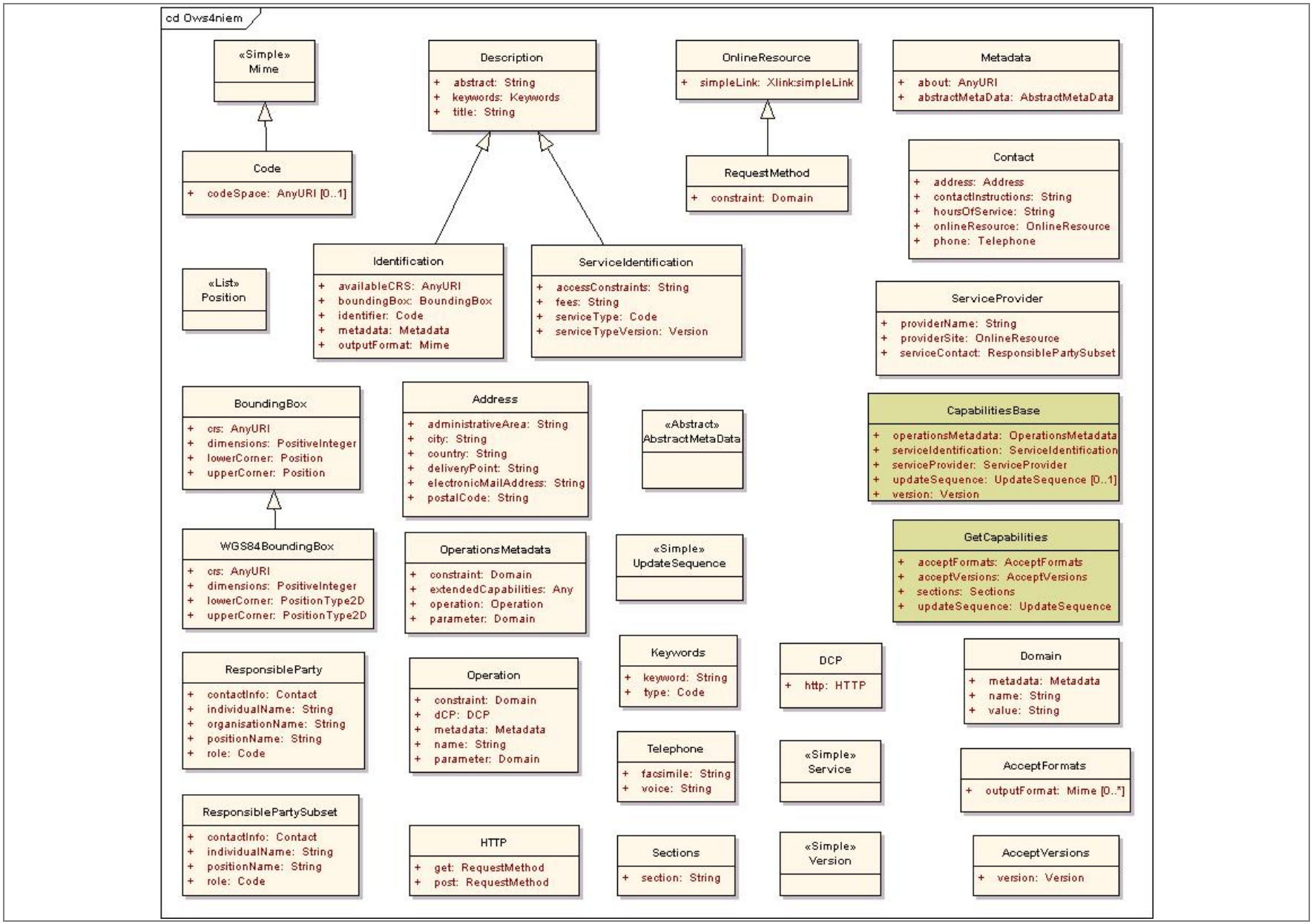
342	geometry	A geometry value.	M	1	AbstractGeometry	Unrestricted
343	Time	Basic type for Time.			<<Simple>>	
344	TimeGeometricPrimitiveProperty	the head of a substitution group for geometric temporal primitives.			<<Data Type>>	Lines 345 - 346
345	associationAttributeGroup	Indicates the value of a property by reference.	M	1	AssociationAttributeGroup	Unrestricted
346	timeGeometricPrimitive	acts as the head of a substitution group for geometric temporal primitives.	M	1	AbstractTimeGeometricPrimitive	Unrestricted
347	TimeInstant	A zero-dimensional geometric primitive that represents an identifiable position in time (it is equivalent to a point in space). In practice, an instant is an interval whose duration is less than a chronon—the resolution of the time scale			<<Data Type>>	Lines 348 - 348
348	timePosition	description of temporal position according to ISO 19108:2002.	M	1	TimePositionUnion	Unrestricted
349	TimeInstantProperty	A specialisation of gml:TimePrimitivePropertyType that provides for associating a gml:TimeInstant with an object.			<<Data Type>>	Lines 350 - 351
350	associationAttributeGroup	Indicates the value of a property by reference.	M	1	AssociationAttributeGroup	Unrestricted
351	timeInstant	the associated TimeInstant	M	1	TimeInstant	Unrestricted
352	TimeInterval	This type extends the built-in xsd:decimal simple type to allow floating-point values for temporal length. According to the ISO 11404 model you have to use positiveInteger together with appropriate values for radix and factor. The resolution of the time interval is to one radix ^(-factor) of the specified time unit (e.g. unit="second", radix="10", factor="3" specifies a resolution of milliseconds). It is a subtype of TimeDurationType.			<<Data Type>>	Lines 353 - 355
353	factor	Factor of the time interval	O	1	Integer	Unrestricted
354	radix	Radix of the time interval.	O	1	PositiveInteger	Unrestricted
355	unit	Unit of time interval.	M	1	TimeUnit	Unrestricted
356	TimeLength	This model group is provided as an alternative to the abstract susbstitutionGroup head _timeLength. ISO 19136 comment 411			<<DataType>>	Lines 357 - 358
357	duration	Duration length	M	1	Duration	Unrestricted
358	timeInterval	Interval length.	M	1	TimeIntervalLength	Unrestricted
359	TimePeriod	A period is a one-dimensional geometric primitive that represents an identifiable extent in time (it is equivalent to a curve or envelope in space). It is an open interval bounded by beginning and end points (i.e. instants), and has length (i.e. duration). Its location in time is described by the temporal positions of the instants at which it begins and ends. The length of the period is equal to the temporal distance between the two bounding temporal positions.			<<Abstract Type>>	Lines 360 - 362

360	timeLength	describes length of a time period	O	1	timeLength	Unrestricted
361	TimePeriodBeginChoice	begin described in terms of its direct position using gml:TimePositionType or by reference to an identifiable time instant using gml:TimeInstantPropertyType	M	1	TimePeriodBeginChoice	Unrestricted
362	TimePeriodEndChoice	end described in terms of its direct position using gml:TimePositionType or by reference to an identifiable time instant using gml:TimeInstantPropertyType	M	1	TimePeriodEndChoice	Unrestricted
363	TimePeriodBeginChoice	Describes the direct begin and end positions using gml:TimePositionType or by reference to an indentifiable time instant using gml:TimeInstantPropertyType			<<Union>>	Lines 364 - 367
364	begin	reference to the begin time	M	1	TimeInstantProperty	Unrestricted
365	beginPosition	the direct begin position	M	1	TimePosition	Unrestricted
366	end	reference to the end position	M	1	TimeInstantProperty	Unrestricted
367	endPosition	the direct end position	M	1	TimePosition	Unrestricted
368	TimePeriodEndChoice	End time described in terms of its direct position using gml:TimePositionType or by reference to an identifiable time instant using gml:TimeInstantPropertyType			<<Union>>	Lines 369 - 370
369	end	reference to the end time	M	1	TimeInstantProperty	Unrestricted
370	endPosition	direct end time position	M	1	TimePosition	Unrestricted
371	TimePeriodProperty	A specialisation of gml:TimePrimitivePropertyType that provides for associating a gml:TimePeriod with an object			<<DataType>>	Lines 372 - 373
372	associationAttributeGroup	Indicates the value of a property by reference.	M	1	AssociationAttributeGroup	Unrestricted
373	timePeriod	The timeperiod of interest.	M	1	TimePeriod	Unrestricted
374	TimePosition	Direct representation of a temporal position. Indeterminate time values are also allowed, as described in ISO 19108. The indeterminatePosition attribute can be used alone or it can qualify a specific value for temporal position (e.g. before 2002-12, after 1019624400). For time values that identify position within a calendar, the calendarEraName attribute provides the name of the calendar era to which the date is referenced (e.g. the Meiji era of the Japanese calendar).			<<Data Type>>	Lines 375 - 377
375	calendarEraName	provides the name of the calendar era to which the date is referenced (e.g. the Meiji era of the Japanese calenda).	O	1	String	Unrestricted
376	frame	Associates a temporal geometry with a temporal reference system.	O	1	AnyURI	Unrestricted
377	indeterminatePosition	Indeterminate temporal position value.	O	1	TimeIndeterminateValue	after, before, now, unknown
378	TimePositionUnion	The ISO 19108:2002 hierarchy of subtypes for temporal position are			<<Union>>	Lines 379 -

		collapsed by defining a union of XML Schema simple types for indicating temporal position relative to a specific reference system. Dates and dateTime may be indicated with varying degrees of precision. dateTime by itself does not allow right-truncation, except for fractions of seconds. When used with non-Gregorian calendars based on years, months, days, the same lexical representation should still be used, with leading zeros added if the year value would otherwise have fewer than four digits. An ordinal position may be referenced via URI identifying the definition of an ordinal era. A time coordinate value is indicated as a decimal (e.g. UNIX time, GPS calendar).				383
379	anyURI	A reference to the resource.	M	1	AnyURI	Unrestricted
380	CalDate	Carries attributes consisting of sequence of numbers for the calendar date, and an era name.	M	1	CalDate	Unrestricted
381	dateTime	Data and time value.	M	1	DateTime	Unrestricted
382	decimal	symbol used for a decimal point	M	1	Decimal	Unrestricted
383	time	Time value	M	1	Time	Unrestricted
384	TimePrimitiveProperty	2006-01-07 PwD derive from AssociationType to allow om:temporalResult as member of gml:resultOf substitutionGroup			<<Data Type>>	Lines 385 - 386
385	associationAttributeGroup	Indicates the value of a property by reference.	M	1	AssociationAttributeGroup	Unrestricted
386	timePrimitive	a temporal primitive	M	1	AbstractTimePrimitive	Unrestricted
387	TimeUnit	Units for time intervals from ISO 31-1:1992 or another suitable unit.			<<Union>>	Lines 388 - 389
388	timeUnitType	Time unit type	M	1	TimeUnit::TimeUnitType	Unrestricted
389	timeUnitType	Time unit type.	M	1	TimeUnit::TimeUnitType	Unrestricted
390	TimeUnit::TimeUnitType	Names the length of a time period.			<<Simple>>	
391	TimeUnitType	The value of the unit is either selected from the units for time intervals from ISO 31-1:1992, or is another suitable unit.			<<Enumeration>>	Lines 392 - 396
392	day	day time unit	M	1	String	Unrestricted
393	hour	hour time unit	M	1	String	Unrestricted
394	minute	minute time unit	M	1	String	Unrestricted
395	second	second time unit	M	1	String	Unrestricted
396	year	year time unit	M	1	String	Unrestricted
397	UnitOfMeasure	Reference to a unit of measure definition that applies to all the numerical values described by the element containing this element. Notice that a complexType which needs to include the uom attribute can do so by extending this complexType. Alternately, this			<<Data Type>>	Lines 398 - 398

		complexType can be used as a pattern for a new complexType.				
398	uom	Reference to a unit of measure definition, usually within the same XML document but possibly outside the XML document which contains this reference. For a reference within the same XML document, the "#" symbol should be used, followed by a text abbreviation of the unit name. However, the "#" symbol may be optional, and still may be interpreted as a reference.	M	1	AnyURI	Unrestricted
399	Value	Utility choice group which unifies generic Values defined in this schema document with Geometry and Temporal objects and the Measures described above, so that any of these may be used within aggregate Values.			<<Data Type>>	Lines 400 - 404
400	null	A null value.	M	1	NullEnumeration	Unrestricted
401	object	Object value.	M	1	Object	Unrestricted
402	timeUnit	Unit of time	M	1	TimeUnit	Unrestricted
403	timeUnit	Unit of time.	M	1	TimeUnit	Unrestricted
404	valueObject	Value	M	1	ValueObject	Unrestricted
405	ValueArray	A Value Array is used for homogeneous arrays of primitive and aggregate values. The member values may be scalars, composites, arrays or lists. ValueArray has the same content model as CompositeValue, but the member values must be homogeneous. The element declaration contains a Schematron constraint which expresses this restriction precisely. Since the members are homogeneous, the referenceSystem (uom, codeSpace) may be specified on the ValueArray itself and implicitly inherited by all the members if desired. Note that a_ScalarValueList is preferred for arrays of Scalar Values since this is a more efficient encoding.			<<Data Type>>	Lines 406 - 406
406	referenceSystem	Description of the spatial and/or temporal reference system used.	M	1	referenceSystem	Unrestricted
407	ValueArrayProperty	GML property which refers to, or contains, a set of homogeneously typed Values. PwD 2006-01-07 derive from gml:AssociationType			<<Data Type>>	Lines 408 - 408
408	value	The set of values.	M	*	Value	Unrestricted
409	ValueExtent	Value extents for category, count and quantity value objects.			<<DataType>>	Lines 410 - 412
410	categoryExtent	A value extent for Category values	M	1	CategoryExtent	Unrestricted
411	countExtent	A value extent for Count values	M	1	CountExtent	Unrestricted
412	quantityExtent	A value extent for Quantity values	M	1	QuantityExtent	Unrestricted
413	ValueObject	Representation of a data value.			<<Data Type>>	Lines 414 - 417

414	compositeValue	A composit set of value objects.	M	1	CompositeValue	Unrestricted
415	scalarValue	One of Boolean, Category, Count and Quantity, and (transitively) the elements in their substitution groups.	M	1	ScalarValue	Unrestricted
416	scalarValueList	One of BooleanList, CategoryList, CountList and QuantityList, and (transitively) the elements in their substitution groups.	M	1	ScalarValueList	Unrestricted
417	valueExtent	The extent of the values.	M	1	ValueExtent	Unrestricted
418	ValueProperty	GML property which refers to, or contains, a Value			<<DataType>>	Lines 419 - 420
419	associationAttributeGroup	Indicates the value of a property by reference.	M	1	AssociationAttributeGroup	Unrestricted
420	value	the value of the property by reference or value	M	1	Value	Unrestricted
421	Vector	Vector instances hold the compoents for a (usually spatial) vector within some coordinate reference system (CRS). Since Vectors will often be included in larger objects that have references to CRS, the "srsName" attribute may be missing. In this case, the CRS is implicitly assumed to take on the value of the containing object's CRS. Note that this content model is the same as DirectPositionType, but is defined separately to reflect the distinct semantics, and to avoid validation problems. SJDC 2004-12-02			<<Data Type>>	Lines 422 - 422
422	sRSReferenceGroup	The SRS.	M	1	SRSReferenceGroup	Unrestricted


cd Ows4niem
«Simple» Mime
Description
+ abstract: String
+ keywords: Keywords
+ title: String
OnlineResource
+ simpleLink: Xlink:simpleLink
Metadata
+ about: AnyURI
+ abstractMetaData: AbstractMetaData
Code
+ codeSpace: AnyURI [0..1]
RequestMethod
+ constraint: Domain
Contact
+ address: Address
+ contactInstructions: String
+ hoursOfService: String
+ onlineResource: OnlineResource
+ phone: Telephone
«List» Position
Identification
+ availableCRS: AnyURI
+ boundingBox: BoundingBox
+ identifier: Code
+ metadata: Metadata
+ outputFormat: Mime
ServiceIdentification
+ accessConstraints: String
+ fees: String
+ serviceType: Code
+ serviceTypeVersion: Version
ServiceProvider
+ providerName: String
+ providerSite: OnlineResource
+ serviceContact: ResponsiblePartySubset
BoundingBox
+ crs: AnyURI
+ dimensions: PositiveInteger
+ lowerCorner: Position
+ upperCorner: Position
Address
+ administrativeArea: String
+ city: String
+ country: String
+ deliveryPoint: String
+ electronicMailAddress: String
+ postalCode: String
«Abstract» AbstractMetaData
CapabilitiesBase
+ operationsMetadata: OperationsMetadata
+ serviceIdentification: ServiceIdentification
+ serviceProvider: ServiceProvider
+ updateSequence: UpdateSequence [0..1]
+ version: Version
WGS84BoundingBox
+ crs: AnyURI
+ dimensions: PositiveInteger
+ lowerCorner: PositionType2D
+ upperCorner: PositionType2D
OperationsMetadata
+ constraint: Domain
+ extendedCapabilities: Any
+ operation: Operation
+ parameter: Domain
«Simple» UpdateSequence
GetCapabilities
+ acceptFormats: AcceptFormats
+ acceptVersions: AcceptVersions
+ sections: Sections
+ updateSequence: UpdateSequence
Keywords
+ keyword: String
+ type: Code
DCP
+ http: HTTP
Domain
+ metadata: Metadata
+ name: String
+ value: String
ResponsibleParty
+ contactInfo: Contact
+ individualName: String
+ organisationName: String
+ positionName: String
+ role: Code
Operation
+ constraint: Domain
+ dCP: DCP
+ metadata: Metadata
+ name: String
+ parameter: Domain
Telephone
+ facsimile: String
+ voice: String
«Simple» Service
AcceptFormats
+ outputFormat: Mime [0..*]
ResponsiblePartySubset
+ contactInfo: Contact
+ individualName: String
+ positionName: String
+ role: Code
HTTP
+ get: RequestMethod
+ post: RequestMethod
Sections
+ section: String
«Simple» Version
AcceptVersions
+ version: Version

Ows4niem						
Line	**Name/RoleName**	**Definition**	**Obligation / Condition**	**Maximum Occurrence**	**Data Type**	**Domain**
1	AbstractMetaData	Abstract element containing more metadata about the element that includes the containing "metadata" element. A specific server implementation, or an Implementation Specification, can define concrete elements in the AbstractMetaData substitution group	M	1	<<Abstract>>	
2	AcceptFormats	Prioritized sequence of zero or more GetCapabilities operation response formats desired by client, with preferred formats listed first. Each response format shall be identified by its MIME type. See AcceptFormats parameter use subclause for more information.				Lines 3 - 3
3	outputFormat	MIME type(s) for response; text/xml if not specified.	O	*	Mime	Unrestricted
4	AcceptVersions	Prioritized sequence of one or more specification versions accepted by client, with preferred versions listed first. See Version negotiation subclause for more information.				Lines 5 - 5
5	version	Version for the Implementation Specification (document) and the associated XML Schemas to which requested operations will conform.	M	1	Version	Unrestricted
6	Address	Location of the responsible individual or organization.				Lines 7 - 12
7	administrativeArea	State or province of the location.	M	1	String	Unrestricted
8	city	City of the location.	M	1	String	Unrestricted
9	country	Country of the physical address.	M	1	String	Unrestricted
10	deliveryPoint	Address line for the location.	M	1	String	Unrestricted
11	electronicMailAddress	Address of the electronic mailbox of the responsible organization or individual.	M	1	String	Unrestricted
12	postalCode	ZIP or other postal code.	M	1	String	Unrestricted
13	BoundingBox	XML encoded minimum rectangular bounding box (or region) parameter, surrounding all the associated data.				Lines 14 - 17
14	crs	Usually references the definition of a CRS, as specified in [OGC Topic 2]. Such a CRS definition can be XML encoded using the gml:CoordinateReferenceSystemType in [GML 3.1]. For well known references, it is not required that a CRS definition exist at the location the URI points to. If no anyURI value is included, the applicable CRS must be either: a) Specified outside the bounding box, but inside a data structure that includes this bounding box, as specified for a specific OWS use of this bounding box type. b) Fixed and specified in the Implementation Specification for a specific OWS use of the bounding box type.	M	1	AnyURI	Unrestricted
15	dimensions	The number of dimensions in this CRS (the length of a coordinate sequence in this use of the PositionType). This number is specified by the CRS definition, but can also	M	1	PositiveInteger	Unrestricted

		be specified here.				
16	lowerCorner	Position of the bounding box corner at which the value of each coordinate normally is the algebraic minimum within this bounding box. In some cases, this position is normally displayed at the top, such as the top left for some image coordinates. For more information, see Subclauses 10.2.5 and C.13.	M	1	Position	Unrestricted
17	upperCorner	Position of the bounding box corner at which the value of each coordinate normally is the algebraic maximum within this bounding box. In some cases, this position is normally displayed at the bottom, such as the bottom right for some image coordinates. For more information, see Subclauses 10.2.5 and C.13.	M	1	Position	Unrestricted
18	CapabilitiesBase	XML encoded GetCapabilities operation response. This document provides clients with service metadata about a specific service instance, usually including metadata about the tightly-coupled data served. If the server does not implement the updateSequence parameter, the server shall always return the complete Capabilities document, without the updateSequence parameter. When the server implements the updateSequence parameter and the GetCapabilities operation request included the updateSequence parameter with the current value, the server shall return this element with only the "version" and "updateSequence" attributes. Otherwise, all optional elements shall be included or not depending on the actual value of the Contents parameter in the GetCapabilities operation request. This base type shall be extended by each specific OWS to include the additional contents needed.				Lines 19 - 23
19	operationsMetadata	Metadata about the operations and related abilities specified by this service and implemented by this server, including the URLs for operation requests. The basic contents of this section shall be the same for all OWS types, but individual services can add elements and/or change the optionality of optional elements.	M	1	OperationsMetadata	Unrestricted
20	serviceIdentification	General metadata for this specific server. This XML Schema of this section shall be the same for all OWS.	M	1	ServiceIdentification	Unrestricted
21	serviceProvider	Metadata about the organization that provides this specific service instance or server.	M	1	ServiceProvider	Unrestricted
22	updateSequence	When omitted or not supported by server, server shall return latest complete service metadata document.	O	1	UpdateSequence	Unrestricted
23	version	Specification version for OWS operation. The string value shall contain one x.y.z "version" value (e.g., "2.1.3"). A version number shall contain three non-negative integers separated by decimal points, in the form "x.y.z". The integers y and z shall not exceed 99. Each version shall be for the Implementation Specification (document) and the associated XML Schemas to which requested operations will conform. An Implementation Specification version normally specifies XML Schemas against which an XML encoded operation response must conform and should be validated. See Version negotiation subclause for more information.	M	1	Version	Unrestricted
24	Code	Name or code with an (optional) authority. If the codeSpace attribute is present, its value should reference a dictionary, thesaurus, or authority for the name or code,				Lines 25 - 25

		such as the organisation who assigned the value, or the dictionary from which it is taken.				
25	codeSpace	Reference the type name authority and/or thesaurus.	O	1	AnyURI	Unrestricted
26	Contact	Information required to enable contact with the responsible person and/or organization.				Lines 27 - 31
27	address	Physical and email address at which the organization or individual may be contacted.	M	1	Address	Unrestricted
28	contactInstructions	Supplemental instructions on how or when to contact the individual or organization.	M	1	String	Unrestricted
29	hoursOfService	Time period (including time zone) when individuals can contact the organization or individual.	M	1	String	Unrestricted
30	onlineResource	On-line information that can be used to contact the individual or organization. OWS specifics: The xlink:href attribute in the xlink:simpleLink attribute group shall be used to reference this resource. Whenever practical, the xlink:href attribute with type anyURI should be a URL from which more contact information can be electronically retrieved. The xlink:title attribute with type "string" can be used to name this set of information. The other attributes in the xlink:simpleLink attribute group should not be used.	M	1	OnlineResource	Unrestricted
31	phone	Telephone numbers at which the organization or individual may be contacted.	M	1	Telephone	Unrestricted
32	DCP	Distributed Computing Platform				Lines 33 - 33
33	http	HyperText Transport Protocol	M	1	HTTP	Unrestricted
34	Description	Human-readable descriptive information for the object it is included within. This type shall be extended if needed for specific OWS use to include additional metadata for each type of information. This type shall not be restricted for a specific OWS to change the multiplicity (or optionality) of some elements.				Lines 35 - 37
35	abstract	Brief narrative description of this resource, normally used for display to a human.	M	1	String	Unrestricted
36	keywords	Unordered list of one or more commonly used or formalised word(s) or phrase(s) used to describe the subject. When needed, the optional "type" can name the type of the associated list of keywords that shall all have the same type. Also when needed, the codeSpace attribute of that "type" can reference the type name authority and/or thesaurus. For OWS use, the optional thesaurusName element was omitted as being complex information that could be referenced by the codeSpace attribute of the Type element.	M	1	Keywords	Unrestricted
37	title	Title of this resource, normally used for display to a human.	M	1	String	Unrestricted
38	Domain	Valid domain (or set of values) of one parameter or other quantity used by this server. A non-parameter quantity may not be explicitly represented in the server software. (Informative: An example is the outputFormat parameter of a WFS. Each WFS server should provide a Parameter element for the outputFormat parameter that lists the supported output formats, such as GML2, GML3, etc. as the allowed "Value"				Lines 39 - 41

		elements.)				
39	metadata	Optional unordered list of additional metadata about this parameter. A list of required and optional metadata elements for this domain should be specified in the Implementation Specification for this service. (Informative: This metadata might specify the meanings of the valid values.)	M	1	Metadata	Unrestricted
40	name	Name or identifier of this parameter or other quantity.	M	1	String	Unrestricted
41	value	Unordered list of all the valid values for this parameter or other quantity. For those parameters that contain a list or sequence of values, these values shall be for individual values in the list. The allowed set of values and the allowed server restrictions on that set of values shall be specified in the Implementation Specification for this service.	M	1	String	Unrestricted
42	GetCapabilities	XML encoded GetCapabilities operation request. This operation allows clients to retrieve service metadata about a specific service instance. In this XML encoding, no "request" parameter is included, since the element name specifies the specific operation. This base type shall be extended by each specific OWS to include the additional required "service" attribute, with the correct value for that OWS.				Lines 43 - 46
43	acceptFormats	When omitted or not supported by server, server shall return service metadata document using the MIME type "text/xml".	M	1	AcceptFormats	Unrestricted
44	acceptVersions	When omitted, server shall return latest supported version.	M	1	AcceptVersions	Unrestricted
45	sections	When omitted or not supported by server, server shall return complete service metadata (Capabilities) document.	M	1	Sections	Unrestricted
46	updateSequence	When omitted or not supported by server, server shall return latest complete service metadata document.	M	1	UpdateSequence	Unrestricted
47	HTTP					Lines 48 - 49
48	get	Connect point URL prefix and any constraints for the HTTP "Get" request method for this operation request.	M	1	RequestMethod	Unrestricted
49	post	Connect point URL and any constraints for the HTTP "Post" request method for this operation request.	M	1	RequestMethod	Unrestricted
50	Identification	General metadata identifying and describing a set of data. This type shall be extended if needed for each specific OWS to include additional metadata for each type of dataset. If needed, this type should first be restricted for each specific OWS to change the multiplicity (or optionality) of some elements.				Lines 51 - 55
51	availableCRS	Unordered list of zero or more available coordinate reference systems.	M	1	AnyURI	Unrestricted
52	boundingBox	Unordered list of zero or more bounding boxes whose union describes the extent of this dataset.	M	1	BoundingBox	Unrestricted
53	identifier	Optional unique identifier or name of this dataset.	M	1	Code	Unrestricted

54	metadata	Optional unordered list of additional metadata about this data(set). A list of optional metadata elements for this data identification could be specified in the Implementation Specification for this service.	M	1	Metadata	Unrestricted
55	outputFormat	Unordered list of zero or more references to data formats supported for server outputs.	M	1	Mime	Unrestricted
56	Keywords	Unordered list of one or more commonly used or formalised word(s) or phrase(s) used to describe the subject. When needed, the optional "type" can name the type of the associated list of keywords that shall all have the same type. Also when needed, the codeSpace attribute of that "type" can reference the type name authority and/or thesaurus.				Lines 57 - 58
57	keyword	Commonly used or formalised word or phrase used to describe the subject.	M	1	String	Unrestricted
58	type	Reference the type name authority and/or thesaurus.	M	1	Code	Unrestricted
59	Metadata	This element either references or contains more metadata about the element that includes this element. To reference metadata stored remotely, at least the xlinks:href attribute in xlink:simpleLink shall be included. Either at least one of the attributes in xlink:simpleLink or a substitute for the AbstractMetaData element shall be included, but not both. An Implementation Specification can restrict the contents of this element to always be a reference or always contain metadata. (Informative: This element was adapted from the metaDataProperty element in GML 3.0.)				Lines 60 - 61
60	about	Optional reference to the aspect of the element which includes this "metadata" element that this metadata provides more information about.	M	1	AnyURI	Unrestricted
61	abstractMetaData	Abstract element containing more metadata about the element that includes the containing "metadata" element. A specific server implementation, or an Implementation Specification, can define concrete elements in the AbstractMetaData substitution group	M	1	AbstractMetaData	Unrestricted
62	Mime	XML encoded identifier of a standard MIME type, possibly a parameterized MIME type.			<<Simple>>	
63	OnlineResource	Reference to on-line resource from which data can be obtained.				Lines 64 - 64
64	simpleLink	Xlink:href reference to metadata.	M	1	Xlink:simpleLink	Unrestricted
65	Operation	Metadata for one operation that this server implements.				Lines 66 - 70
66	constraint	Optional unordered list of valid domain constraints on non-parameter quantities that each apply to this operation. If one of these Constraint elements has the same "name" attribute as a Constraint element in the OperationsMetadata element, this Constraint element shall override the other one for this operation. The list of required and optional constraints for this operation shall be specified in the Implementation Specification for this service.	M	1	Domain	Unrestricted

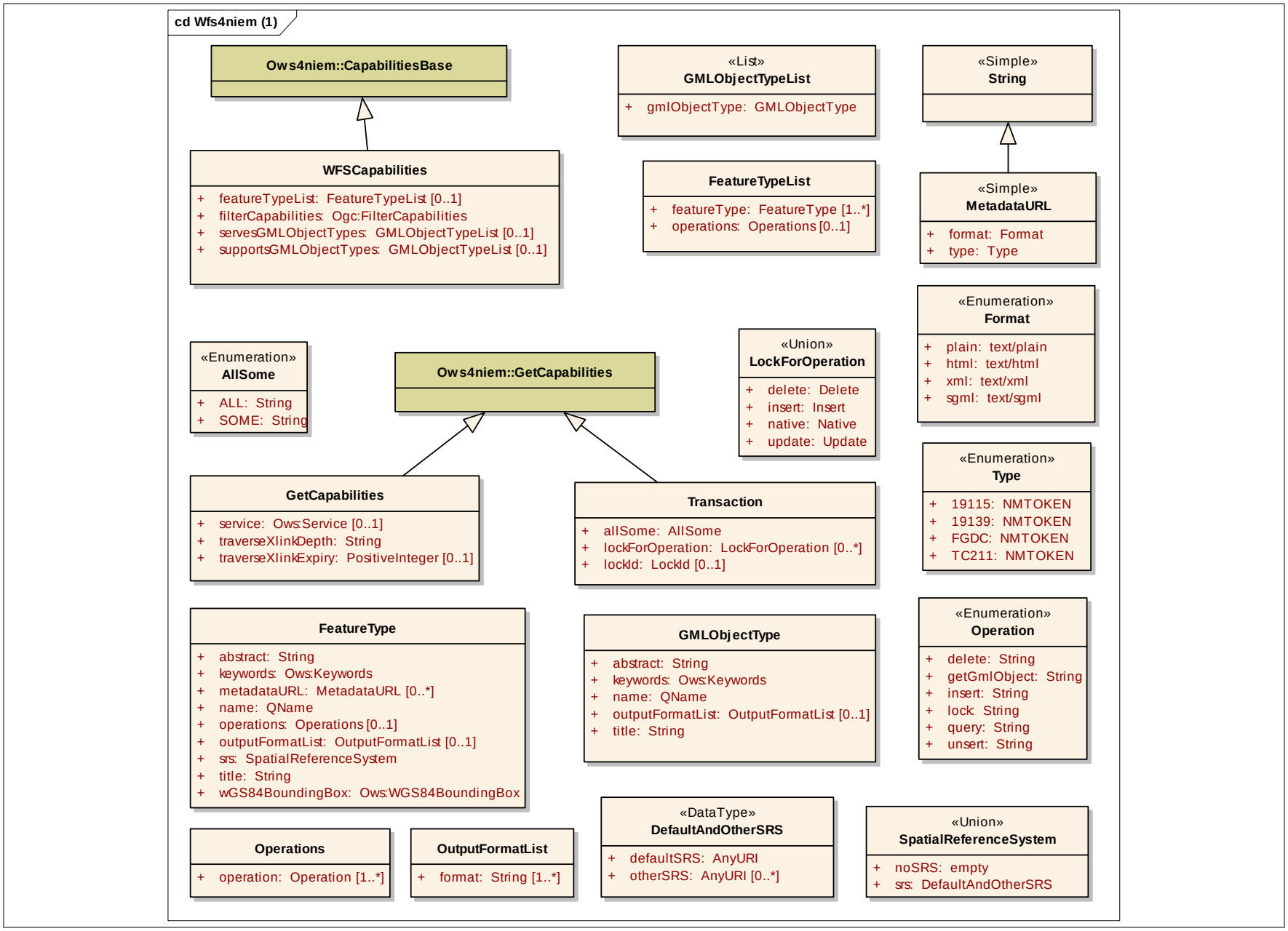
67	dCP	Unordered list of Distributed Computing Platforms (DCPs) supported for this operation. At present, only the HTTP DCP is defined, so this element will appear only once.	M	1	DCP	Unrestricted
68	metadata	Optional unordered list of additional metadata about this operation and its' implementation. A list of required and optional metadata elements for this operation should be specified in the Implementation Specification for this service. (Informative: This metadata might specify the operation request parameters or provide the XML Schemas for the operation request.)	M	1	Metadata	Unrestricted
69	name	Name or identifier of this operation (request) (for example, GetCapabilities). The list of required and optional operations implemented shall be specified in the Implementation Specification for this service.	M	1	String	Unrestricted
70	parameter	Optional unordered list of parameter domains that each apply to this operation which this server implements. If one of these Parameter elements has the same "name" attribute as a Parameter element in the OperationsMetadata element, this Parameter element shall override the other one for this operation. The list of required and optional parameter domain limitations for this operation shall be specified in the Implementation Specification for this service.	M	1	Domain	Unrestricted
71	OperationsMetadata	Metadata about the operations and related abilities specified by this service and implemented by this server, including the URLs for operation requests. The basic contents of this section shall be the same for all OWS types, but individual services can add elements and/or change the optionality of optional elements.				Lines 72 - 75
72	constraint	Optional unordered list of valid domain constraints on non-parameter quantities that each apply to this server. The list of required and optional constraints shall be specified in the Implementation Specification for this service.	M	1	Domain	Unrestricted
73	extendedCapabilities		M	1	Any	Unrestricted
74	operation	Metadata for unordered list of all the (requests for) operations that this server interface implements. The list of required and optional operations implemented shall be specified in the Implementation Specification for this service.	M	1	Operation	Unrestricted
75	parameter	Optional unordered list of parameter valid domains that each apply to one or more operations which this server interface implements. The list of required and optional parameter domain limitations shall be specified in the Implementation Specification for this service.	M	1	Domain	Unrestricted
76	Position	Position instances hold the coordinates of a position in a coordinate reference system (CRS) referenced by the related "crs" attribute or elsewhere. For an angular coordinate axis that is physically continuous for multiple revolutions, but whose recorded values can be discontinuous, special conditions apply when the bounding box is continuous across the value discontinuity: a) If the bounding box is continuous clear around this angular axis, then ordinate values of minus and plus infinity shall be used. b) If the bounding box is continuous across the value discontinuity but is not			<<List>>	

		continuous clear around this angular axis, then some non-normal value can be used if specified for a specific OWS use of the BoundingBoxType. For more information, see Subclauses 10.2.5 and C.13.				
77	RequestMethod	Connect point URL and any constraints for this HTTP request method for this operation request. In the OnlineResourceType, the xlink:href attribute in the xlink:simpleLink attribute group shall be used to contain this URL. The other attributes in the xlink:simpleLink attribute group should not be used.				Lines 78 - 78
78	constraint	Optional unordered list of valid domain constraints on non-parameter quantities that each apply to this request method for this operation. If one of these Constraint elements has the same "name" attribute as a Constraint element in the OperationsMetadata or Operation element, this Constraint element shall override the other one for this operation. The list of required and optional constraints for this request method for this operation shall be specified in the Implementation Specification for this service.	M	1	Domain	Unrestricted
79	ResponsibleParty	Identification of, and means of communication with, person responsible for the server. At least one of IndividualName, OrganisationName, or PositionName shall be included.				Lines 80 - 84
80	contactInfo	Address of the responsible party.	M	1	Contact	Unrestricted
81	individualName	Name of the responsible person: surname, given name, title separated by a delimiter.	M	1	String	Unrestricted
82	organisationName	Name of the responsible organization.	M	1	String	Unrestricted
83	positionName	Role or position of the responsible person.	M	1	String	Unrestricted
84	role	Function performed by the responsible party. Possible values of this Role shall include the values and the meanings listed in Subclause B.5.5 of ISO 19115:2003.	M	1	Code	Unrestricted
85	ResponsiblePartySubset	Identification of, and means of communication with, person responsible for the server.				Lines 86 - 89
86	contactInfo	Address of the responsible party.	M	1	Contact	Unrestricted
87	individualName	Name of the responsible person: surname, given name, title separated by a delimiter.	M	1	String	Unrestricted
88	positionName	Role or position of the responsible person.	M	1	String	Unrestricted
89	role	Function performed by the responsible party. Possible values of this Role shall include the values and the meanings listed in Subclause B.5.5 of ISO 19115:2003.	M	1	Code	Unrestricted
90	Sections	Unordered list of zero or more names of requested sections in complete service metadata document. Each Section value shall contain an allowed section name as specified by each OWS specification. See Sections parameter subclause for more information.				Lines 91 - 91
91	section		M	1	String	Unrestricted
92	Service	Service type identifier, where the string value is the OWS type abbreviation, such as "WMS" or "WFS".			<<Simple>>	

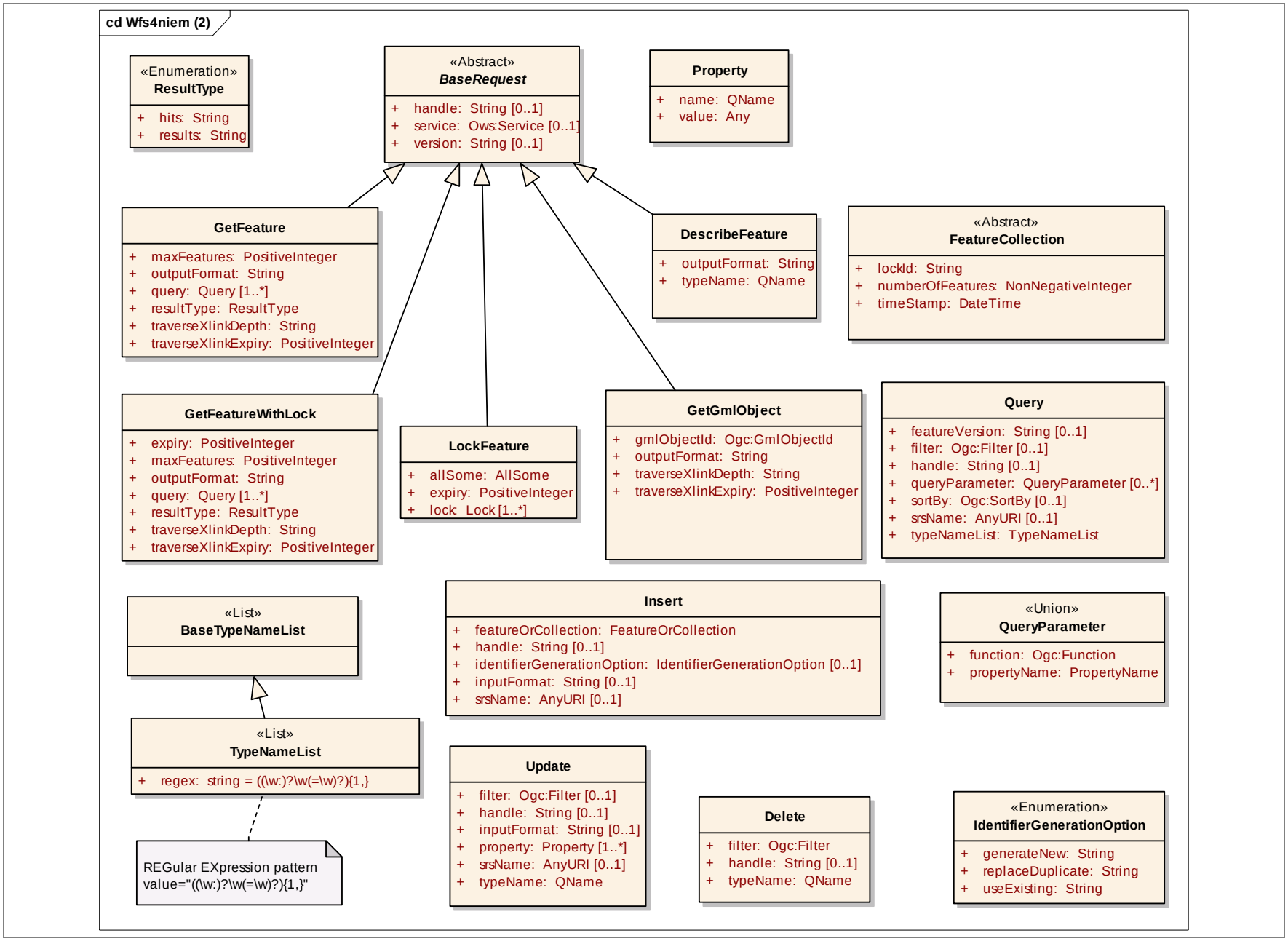
93	ServiceIdentification	General metadata for this specific server. This XML Schema of this section shall be the same for all OWS.				Lines 94 - 97
94	accessConstraints	Unordered list of access constraints applied to assure the protection of privacy or intellectual property, and any other restrictions on retrieving or using data from or otherwise using this server. The reserved value NONE (case insensitive) shall be used to mean no access constraints are imposed. If this element is omitted, no meaning is implied.	M	1	String	Unrestricted
95	fees	If this element is omitted, no meaning is implied.	M	1	String	Unrestricted
96	serviceType	A service type name from a registry of services. For example, the values of the codeSpace URI and name and code string may be "OGC" and "catalogue." This type name is normally used for machine-to-machine communication.	M	1	Code	Unrestricted
97	serviceTypeVersion	Unordered list of one or more versions of this service type implemented by this server. This information is not adequate for version negotiation, and shall not be used for that purpose.	M	1	Version	Unrestricted
98	ServiceProvider	Metadata about the organization that provides this specific service instance or server.				Lines 99 - 101
99	providerName	A unique identifier for the service provider organization.	M	1	String	Unrestricted
100	providerSite	Reference to the most relevant web site of the service provider.	M	1	OnlineResource	Unrestricted
101	serviceContact	Information for contacting the service provider. The OnlineResource element within this ServiceContact element should not be used to reference a web site of the service provider.	M	1	ResponsiblePartySubset	Unrestricted
102	Telephone	Telephone numbers for contacting the responsible individual or organization.				Lines 103 - 104
103	facsimile	Telephone number of a facsimile machine for the responsible organization or individual.	M	1	String	Unrestricted
104	voice	Telephone number by which individuals can speak to the responsible organization or individual.	M	1	String	Unrestricted
105	UpdateSequence	Service metadata document version, having values that are "increased" whenever any change is made in service metadata document. Values are selected by each server, and are always opaque to clients. See updateSequence parameter use subclause for more information.			<<Simple>>	
106	Version	Specification version for OWS operation. The string value shall contain one x.y.z "version" value (e.g., "2.1.3"). A version number shall contain three non-negative integers separated by decimal points, in the form "x.y.z". The integers y and z shall not exceed 99. Each version shall be for the Implementation Specification (document) and the associated XML Schemas to which requested operations will conform. An Implementation Specification version normally specifies XML Schemas against which an XML encoded operation response must conform and should be validated. See			<<Simple>>	

		Version negotiation subclause for more information.				
107	WGS84BoundingBox	XML encoded minimum rectangular bounding box (or region) parameter, surrounding all the associated data. This box is specialized for use with the 2D WGS 84 coordinate reference system with decimal values of longitude and latitude.				Lines 108 - 111
108	crs	This attribute can be included when considered useful. When included, this attribute shall reference the 2D WGS 84 coordinate reference system with longitude before latitude and decimal values of longitude and latitude.	M	1	AnyURI	Unrestricted
109	dimensions	The number of dimensions in this CRS (the length of a coordinate sequence in this use of the PositionType). This number is specified by the CRS definition, but can also be specified here.	M	1	PositiveInteger	Unrestricted
110	lowerCorner	Position of the bounding box corner at which the values of longitude and latitude normally are the algebraic minimums within this bounding box. For more information, see Subclauses 10.4.5 and C.13.	M	1	PositionType2D	Unrestricted
111	upperCorner	Position of the bounding box corner at which the values of longitude and latitude normally are the algebraic minimums within this bounding box. For more information, see Subclauses 10.4.5 and C.13.	M	1	PositionType2D	Unrestricted

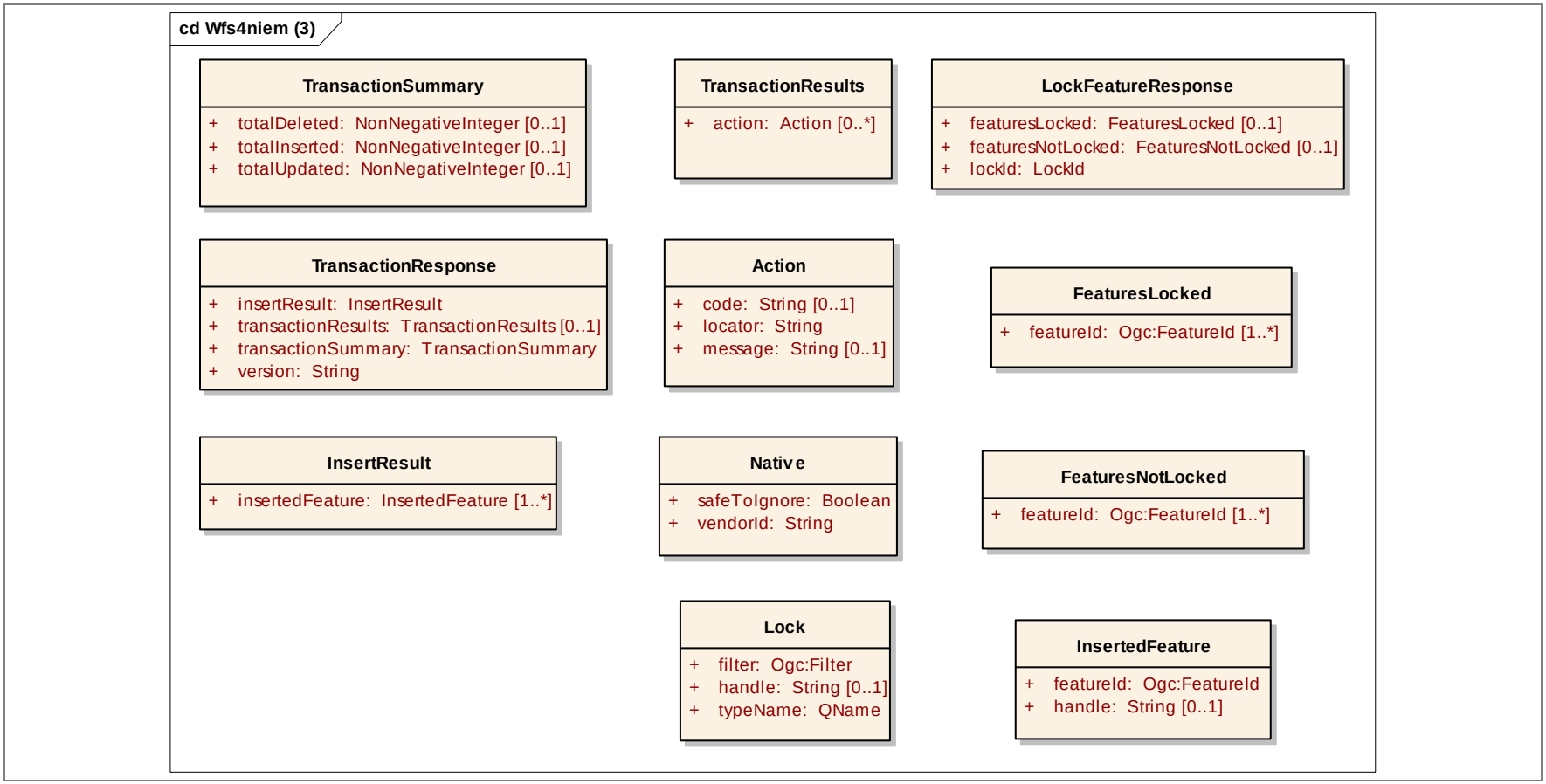
WFS4NIEM (1 of 3)



WFS4NIEM (2 of 3)



WFS4NIEM (3 of 3)



Wfs4niem						
Line	**Name/RoleName**	**Definition**	**Obligation / Condition**	**Maximum Occurrence**	**Data Type**	**Domain**
1	Action	An action of a transaction request that failed to complete.				Lines 2 - 4
2	code	The code attribute may be used to specify an exception code indicating why an action failed.	O	1	String	Unrestricted
3	locator	The locator attribute is used to locate an action within a <Transaction> element. The value of the locator attribute is either a string that is equal to the value of the handle attribute specified on an <Insert>, <Update> or <Delete> action. If a value is not specified for the handle attribute then a WFS may	M	1	String	Unrestricted

		employ some other means of locating the action. For example, the value of the locator attribute may be an integer indicating the order of the action (i.e. 1=First action, 2=Second action, etc.).				
4	message	If an action fails, the message element may be used to supply an exception message.	O	1	String	Unrestricted
5	AllSome	An enumeration of ALL and SOME tokens.			<<Enumeration>>	Lines 6 - 7
6	ALL	All.	M	1	String	Unrestricted
7	SOME	Some.	M	1	String	Unrestricted
8	BaseRequest	XML encoded WFS operation request base, for all operations except GetCapabilities.			<<Abstract>>	Lines 9 - 11
9	handle	The handle attribute allows a client application to assign a client-generated request identifier to a WFS request. The handle is included to facilitate error reporting. A WFS may report the handle in an exception report to identify the offending request or action. If the handle is not present, then the WFS may employ other means to localize the error (e.g. line numbers).	O	1	String	Unrestricted
10	service	The service attribute is included to support service endpoints that implement more than one OGC service. For example, a single CGI that implements WMS, WFS and WCS services. The endpoint can inspect the value of this attribute to figure out which service should process the request. The value WFS indicates that a web feature service should process the request. This parameter is somewhat redundant in the XML encoding since the request namespace can be used to determine which service should process any give request. For example, wfs:GetCapabilities and easily be distinguished from wcs:GetCapabilities using the namespaces.	O	1	Ows:Service	Unrestricted
11	version	The version attribute is used to indicate the version of the WFS specification that a request conforms to. All requests in this schema conform to V1.1 of the WFS specification. For WFS implementations that support more than one version of a WFS sepcification ... if the version attribute is not specified then the service should assume that the request conforms to greatest available specification version.	O	1	String	Unrestricted
12	BaseTypeNameList	A list of XML/Schema QName.			<<List>>	
13	DefaultAndOtherSRS	The default and other supported Spatial Reference Systems.			<<DataType>>	Lines 14 - 15
14	defaultSRS	The DefaultSRS element indicated which spatial reference system shall be used by a WFS to express the state of a spatial feature if not otherwise explicitly identified within a query or transaction request. The SRS may be indicated using either the EPSG form (EPSG:posc code) or the URL form defined in subclause 4.3.2 of refernce[2].	M	1	AnyURI	Unrestricted

15	otherSRS	The OtherSRS element is used to indicate other supported SRSs within query and transaction operations. A supported SRS means that the WFS supports the transformation of spatial properties between the OtherSRS and the internal storage SRS. The effects of such transformations must be considered when determining and declaring the guaranteed data accuracy.	O	*	AnyURI	Unrestricted
16	Delete	Indicates that one or more feature instances should be removed from the feature repository.				Lines 17 - 19
17	filter	The Filter element is used to constrain the scope of the delete operation to those features identified by the filter. Feature instances can be specified explicitly and individually using the identifier of each feature instance OR a set of features to be operated on can be identified by specifying spatial and non-spatial constraints in the filter. If no filter is specified then an exception should be raised since it is unlikely that a client application intends to delete all feature instances.	M	1	Ogc:Filter	Unrestricted
18	handle	The handle attribute allows a client application to assign a client-generated request identifier to an Insert action. The handle is included to facilitate error reporting. If a Delete action in a Transaction request fails, then a WFS may include the handle in an exception report to localize the error. If no handle is included of the offending Insert element then a WFS may employee other means of localizing the error (e.g. line number).	O	1	String	Unrestricted
19	typeName	The value of the typeName attribute is the name of the feature type to be updated. The name specified must be a valid type that belongs to the feature content as defined by the GML Application Schema.	M	1	QName	Unrestricted
20	DescribeFeature	The DescribeFeatureType operation allows a client application to request that a Web Feature Service describe one or more feature types. A Web Feature Service must be able to generate feature descriptions as valid GML3 application schemas. The schemas generated by the DescribeFeatureType operation can be used by a client application to validate the output. Feature instances within the WFS interface must be specified using GML3. The schema of feature instances specified within the WFS interface must validate against the feature schemas generated by the DescribeFeatureType request.				Lines 21 - 22
21	outputFormat	The outputFormat attribute is used to specify what schema description language should be used to describe features. The default value of 'text/xml; subtype=3.1.1' means that the WFS must generate a GML3 application schema that can be used to validate the GML3 output of a GetFeature request or feature instances specified in Transaction operations. For the purposes of experimentation, vendor extension, or even extensions that serve a specific community of interest, other acceptable output format values may be advertised by a WFS service in the capabilities document. The meaning of	M	1	String	Unrestricted

		such values in not defined in the WFS specification. The only proviso is such cases is that clients may safely ignore outputFormat values that do not recognize.				
22	typeName	The TypeName element is used to enumerate the feature types to be described. If no TypeName elements are specified then all features should be described. The name must be a valid type that belongs to the feature content as defined by the GML Application Schema.	M	1	QName	Unrestricted
23	FeatureCollection	This type defines a container for the response to a GetFeature or GetFeatureWithLock request. If the request is GetFeatureWithLock, the lockId attribute must be populated. The lockId attribute can otherwise be safely ignored.			<<Abstract>>	Lines 24 - 26
24	lockId	The value of the lockId attribute is an identifier that a Web Feature Service generates when responding to a GetFeatureWithLock request. A client application can use this value in subsequent operations (such as a Transaction request) to reference the set of locked features.	M	1	String	Unrestricted
25	numberOfFeatures	The numberOfFeatures attribute should contain a count of the number of features in the response. That is a count of all features elements dervied from gml:AbstractFeatureType.	M	1	NonNegativeInteger	Unrestricted
26	timeStamp	The timeStamp attribute should contain the date and time that the response was generated.	M	1	DateTime	Unrestricted
27	FeatureOrCollection	A union of and choice between a GML feature and a GML feature collection.			<<Union>>	Lines 28 - 29
28	feature	Any GML Feature	M	1	Gml:AbstractFeature	Unrestricted
29	featureCollection	Any GML Feature Collection.	M	1	Gml:AbstractFeatureCollection	Unrestricted
30	FeaturesLocked	The LockFeature or GetFeatureWithLock operations identify and attempt to lock a set of feature instances that satisfy the constraints specified in the request. In the event that the lockAction attribute (on the LockFeature or GetFeatureWithLock elements) is set to SOME, a Web Feature Service will attempt to lock as many of the feature instances from the result set as possible. The FeaturesLocked element contains the list of ogc:FeatureId elements enumerating the feature instances that a WFS actually managed to lock.				Lines 31 - 31
31	featureId	Ogc:FeatureId, an XML ID	M	*	Ogc:FeatureId	Unrestricted
32	FeaturesNotLocked	In contrast to the FeaturesLocked element, the FeaturesNotLocked element contains a list of ogc:Filter elements identifying feature instances that a WFS did not manage to lock because they were already locked by another process.				Lines 33 - 33
33	featureId	Ogc:FeatureId, an XML ID	M	*	Ogc:FeatureId	Unrestricted
34	FeatureType	An element of this type that describes a feature in an application namespace				Lines 35 -

		shall have an xml xmlns specifier, e.g. xmlns:bo="http://www.BlueOx.org/BlueOx"				43
35	abstract	Brief narrative description of this feature type, normally used for display to a human.	M	1	String	Unrestricted
36	keywords	Short words that categorize this Feature to aid catalog searching.	M	1	Ows:Keywords	Unrestricted
37	metadataURL	A Web Feature Server MAY use zero or more MetadataURL elements to offer detailed, standardized metadata about the data underneath a particular feature type. The type attribute indicates the standard to which the metadata complies; the format attribute indicates how the metadata is structured. Three types are defined at present: 'TC211' or 'ISO19115' = ISO TC211 19115; 'FGDC' = FGDC CSDGM. 'ISO19139' = ISO 19139	O	*	MetadataURL	Unrestricted
38	name	Name of this feature type, including any namespace prefix	M	1	QName	Unrestricted
39	operations	Operations on this feature type that are available from a web feature service.	O	1	Operations	Unrestricted
40	outputFormatList	List of MIME output formats that are available from a web feature service for this feature type.	O	1	OutputFormatList	Unrestricted
41	srs	Spatial Reference Systems (or none) supported for this feature type by a web feature service.	M	1	SpatialReferenceSystem	Unrestricted
42	title	Title of this feature type, normally used for display to a human.	M	1	String	Unrestricted
43	wGS84BoundingBox	Minimum bounding rectangle for this feature in the WGS84 Spatial Reference System.	M	1	Ows:WGS84BoundingBox	Unrestricted
44	FeatureTypeList	A list of feature types available from this server.				Lines 45 - 46
45	featureType	One or more feature types available from this server.	M	*	FeatureType	Unrestricted
46	operations	Operations supported on the listed feature type.	O	1	Operations	Unrestricted
47	Format	Enumeration of encoding formats.			<<Enumeration>>	Lines 48 - 51
48	html	Hypertext Markup Language	M	1	text/html	Unrestricted
49	plain	Plain text.	M	1	text/plain	Unrestricted
50	sgml	Standard Generalized Markup Language	M	1	text/sgml	Unrestricted
51	xml	eXtensible Markup Language	M	1	text/xml	Unrestricted
52	GetCapabilities	Request to a WFS to perform the GetCapabilities operation. This operation allows a client to retrieve a Capabilities XML document providing metadata for the specific WFS server. The GetCapapbilities element is used to request that a Web Feature Service generate an XML document describing the organization providing the service, the WFS operations that the service supports, a list of feature types that the service can operate on and list of filtering capabilities that the service support. Such an XML document is called				Lines 53 - 55

		a capabilities document.				
53	service	Token to indicate the service type; default is "WFS".	O	1	Ows:Service	Unrestricted
54	traverseXlinkDepth	This attribute indicates the depth to which nested property XLink linking element locator attribute (href) XLinks are traversed and resolved if possible. A value of "1" indicates that one linking element locator attribute (href) Xlink will be traversed and the referenced element returned if possible, but nested property XLink linking element locator attribute (href) XLinks in the returned element are not traversed. A value of "*" indicates that all nested property XLink linking element locator attribute (href) XLinks will be traversed and the referenced elements returned if possible. The range of valid values for this attribute consists of positive integers plus "*".	M	1	String	Unrestricted
55	traverseXlinkExpiry	The traverseXlinkExpiry attribute value is specified in minutes It indicates how long a Web Feature Service should wait to receive a response to a nested GetGmlObject request.	O	1	PositiveInteger	Unrestricted
56	GetFeature	A GetFeature element contains one or more Query elements that describe a query operation on one feature type. In response to a GetFeature request, a Web Feature Service must be able to generate a GML3 response that validates using a schema generated by the DescribeFeatureType request. A Web Feature Service may support other possibly non-XML (and even binary) output formats as long as those formats are advertised in the capabilities document.				Lines 57 - 62
57	maxFeatures	The maxFeatures attribute is used to specify the maximum number of features that a GetFeature operation should generate (regardless of the actual number of query hits).	M	1	PositiveInteger	Unrestricted
58	outputFormat	The outputFormat attribute is used to specify the output format that the Web Feature Service should generate in response to a GetFeature or GetFeatureWithLock element. The default value of 'text/xml; subtype=gml/3.1.1' indicates that the output is an XML document that conforms to the Geography Markup Language (GML) Implementation Specification V3.1.1. For the purposes of experimentation, vendor extension, or even extensions that serve a specific community of interest, other acceptable output format values may be used to specify other formats as long as those values are advertised in the capabilities document. For example, the value WKB may be used to indicate that a Well Known Binary format be used to encode the output.	M	1	String	Unrestricted
59	query	The Query element is used to describe a single query. One or more Query elements can be specified inside a GetFeature element so that multiple queries can be executed in one request. The output from the various queries are combined in a wfs:FeatureCollection element to form the response	M	*	Query	Unrestricted

		document.				
60	resultType	The resultType attribute is used to indicate what response a WFS should return to user once a GetFeature request is processed. Possible values are: results - meaning that the full response set (i.e. all the feature instances) should be returned. hits - meaning that an empty response set should be returned (i.e. no feature instances should be returned) but the "numberOfFeatures" attribute should be set to the number of feature instances that would be returned.	M	1	ResultType	Unrestricted
61	traverseXlinkDepth	This attribute indicates the depth to which nested property XLink linking element locator attribute (href) XLinks are traversed and resolved if possible. A value of "1" indicates that one linking element locator attribute (href) Xlink will be traversed and the referenced element returned if possible, but nested property XLink linking element locator attribute (href) XLinks in the returned element are not traversed. A value of "*" indicates that all nested property XLink linking element locator attribute (href) XLinks will be traversed and the referenced elements returned if possible. The range of valid values for this attribute consists of positive integers plus "*". If this attribute is not specified then no xlinks shall be resolved and the value of traverseXlinkExpiry attribute (if it specified) may be ignored.	M	1	String	Unrestricted
62	traverseXlinkExpiry	The traverseXlinkExpiry attribute value is specified in minutes. It indicates how long a Web Feature Service should wait to receive a response to a nested GetGmlObject request. This attribute is only relevant if a value is specified for the traverseXlinkDepth attribute.	M	1	PositiveInteger	Unrestricted
63	GetFeatureWithLock	A GetFeatureWithLock request operates identically to a GetFeature request expect that it attempts to lock the feature instances in the result set and includes a lock identifier in its response to a client. A lock identifier is an identifier generated by a Web Feature Service that a client application can use, in subsequent operations, to reference the locked set of feature instances.				Lines 64 - 70
64	expiry	The expiry attribute is used to set the length of time (expressed in minutes) that features will remain locked as a result of a GetFeatureWithLock request. After the expiry period elapses, the locked resources must be released. If the expiry attribute is not set, then the default value of 5 minutes will be enforced.	M	1	PositiveInteger	Unrestricted
65	maxFeatures	See definition of wfs:GetFeatureType.	M	1	PositiveInteger	Unrestricted
66	outputFormat	See definition of wfs:GetFeatureType.	M	1	String	Unrestricted
67	query	The Query element is used to describe a single query. One or more Query elements can be specified inside a GetFeature element so that multiple queries can be executed in one request. The output from the various queries are combined in a wfs:FeatureCollection element to form the response	M	*	Query	Unrestricted

		document.				
68	resultType	See definition of wfs:GetFeatureType.	M	1	ResultType	Unrestricted
69	traverseXlinkDepth	See definition of wfs:GetFeatureType.	M	1	String	Unrestricted
70	traverseXlinkExpiry	See definition of wfs:GetFeatureType.	M	1	PositiveInteger	Unrestricted
71	GetGmlObject	A GetGmlObjectType element contains exactly one GmlObjectId. The value of the gml:id attribute on that GmlObjectId is used as a unique key to retrieve the complex element with a gml:id attribute with the same value.				Lines 72 - 75
72	gmlObjectId	The gml:id attribute on that GmlObjectId is an XML ID.	M	1	Ogc:GmlObjectId	Unrestricted
73	outputFormat	MIME type format in which the GML Object is to be returned;default="text/xml; subtype=gml/3.1.1"	M	1	String	Unrestricted
74	traverseXlinkDepth	This attribute indicates the depth to which nested property XLink linking element locator attribute (href) XLinks are traversed and resolved if possible. A value of "1" indicates that one linking element locator attribute (href) XLink will be traversed and the referenced element returned if possible, but nested property XLink linking element locator attribute (href) XLinks in the returned element are not traversed. A value of "*" indicates that all nested property XLink linking element locator attribute (href) XLinks will be traversed and the referenced elements returned if possible. The range of valid values for this attribute consists of positive integers plus "*".	M	1	String	Unrestricted
75	traverseXlinkExpiry	The traverseXlinkExpiry attribute value is specified in minutes. It indicates how long a Web Feature Service should wait to receive a response to a nested GetGmlObject request.	M	1	PositiveInteger	Unrestricted
76	GMLObjectType	An element of this type that describes a GML object in an application namespace shall have an xml xmlns specifier, e.g. xmlns:bo="http://www.BlueOx.org/BlueOx"				Lines 77 - 81
77	abstract	Brief narrative description of this GML Object type, normally used for display to a human.	M	1	String	Unrestricted
78	keywords	Short words that categorize this Object to aid catalog searching.	M	1	Ows:Keywords	Unrestricted
79	name	Name of this GML Object type, including any namespace prefix.	M	1	QName	Unrestricted
80	outputFormatList	List of MIME types that are supported for output of this GML Object type by a web feature service.	O	1	OutputFormatList	Unrestricted
81	title	Title of this GML Object type, normally used for display to a human.	M	1	String	Unrestricted
82	GMLObjectTypeList	A list of GML Object Types available from this service.			<<List>>	Lines 83 - 83
83	gmlObjectType	A GML Object Type available from this service.	M	1	GMLObjectType	Unrestricted
84	IdentifierGenerationOption	Enumeration of options for the generation of identifiers for features and objects inserted by this transactional web feature service.			<<Enumeration>>	Lines 85 - 87

85	generateNew	The GenerateNew value indicates that WFS should generate a new unique feature identifier for the feature being inserted into the repositry.	M	1	String	Unrestricted
86	replaceDuplicate	The ReplaceDuplicate value indicates that WFS should not generate a new feature identifier for the feature being inserted into the repositry. Instead, the WFS should use the identifier encoded if the feature. If a duplicate exists then the WFS should replace the existing feature instance with the one encoded in the Insert action.	M	1	String	Unrestricted
87	useExisting	The UseExsiting value indicates that WFS should not generate a new feature identifier for the feature being inserted into the repositry. Instead, the WFS should use the identifier encoded if the feature. If a duplicate exists then the WFS should raise an exception.	M	1	String	Unrestricted
88	Insert	An Insert element may contain a feature collection or one or more feature instances to be inserted into the repository.				Lines 89 - 93
89	featureOrCollection	Union of and choice between any GML Feature and any GML Feature Collection.	M	1	FeatureOrCollection	Unrestricted
90	handle	The handle attribute allows a client application to assign a client-generated request identifier to an Insert action. The handle is included to facilitate error reporting. If an Insert action in a Transaction request fails, then a WFS may include the handle in an exception report to localize the error. If no handle is included of the offending Insert element then a WFS may employee other means of localizing the error (e.g. line number).	O	1	String	Unrestricted
91	identifierGenerationOption	The idgen attribute control how a WFS generates identifiers from newly created feature instances using the Insert action. The default action is to have the WFS generate a new id for the features. This is also backward compatible with WFS 1.0 where the only action was for the WFS to generate an new id.	O	1	IdentifierGenerationOption	Unrestricted
92	inputFormat	This inputFormat attribute is used to indicate the format used to encode a feature instance in an Insert element. The default value of 'text/xml; subtype=gml/3.1.1' is used to indicate that feature encoding is GML3. Another example might be 'text/xml; subtype=gml/2.1.2' indicating that the feature us encoded in GML2. A WFS must declare in the capabilities document, using a Parameter element, which version of GML it supports.	O	1	String	Unrestricted
93	srsName	===== PAV 12NOV2004 ==== WHY IS THIS HERE? WOULDN'T WE KNOW THE INCOMING SRS FROM THE GML GEOMETRY ELEMENTS? I ASSUME THAT IF THE INCOMING SRS DOES NOT MATCH ONE OF THE STORAGE SRS(s) THEN THE WFS WOULD EITHER PROJECT INTO THE STORAGE SRS OR RAISE AN EXCEPTION.	O	1	AnyURI	Unrestricted
94	InsertedFeature	Return type for a successful Feature or Object insertion.				Lines 95 - 96
95	featureId	This is the feature identifier for the newly created feature. The feature identifier	M	1	Ogc:FeatureId	Unrestricted

		may be generated by the WFS or provided by the client (depending on the value of the idgen attribute). In all cases of idgen values, the feature id must be reported here.				
96	handle	If the insert element that generated this feature had a value for the "handle" attribute then a WFS may report it using this attribute to correlate the feature created with the action that created it.	O	1	String	Unrestricted
97	InsertResult	Reports the list of identifiers of all features created by a transaction request. New features are created using the Insert action and the list of idetifiers must be presented in the same order as the Insert actions were encountered in the transaction request. Features may optionally be correlated with identifiers using the handle attribute (if it was specified on the Insert element).				Lines 98 - 98
98	insertedFeature	Return type for a successful Feature or Object insertion.	M	*	InsertedFeature	Unrestricted
99	Lock	This type defines the Lock element. The Lock element defines a locking operation on feature instances of a single type. An OGC Filter is used to constrain the scope of the operation. Features to be locked can be identified individually by using their feature identifier or they can be locked by satisfying the spatial and non-spatial constraints defined in the filter.				Lines 100 - 102
100	filter	The Filter element is used to define spatial and/or non-spatial constraints on query. Spatial constrains use GML3 to specify the constraining geometry. A full description of the Filter element can be found in the Filter Encoding Implementation Specification.	M	1	Ogc:Filter	Unrestricted
101	handle	The handle attribute allows a client application to assign a client-generated request identifier to a Lock action. The handle is included to facilitate error reporting. If one of a set of Lock actions failed while processing a LockFeature request, a WFS may report the handle in an exception report to localize the error. If a handle is not present then a WFS may employ some other means of localizing the error (e.g. line number).	O	1	String	Unrestricted
102	typeName	The value of the typeName attribute is the name of the feature type to be updated. The name specified must be a valid type that belongs to the feature content as defined by the GML Application Schema.	M	1	QName	Unrestricted
103	LockFeature	This type defines the LockFeature operation. The LockFeature element contains one or more Lock elements that define which features of a particular type should be locked. A lock identifier (lockId) is returned to the client application which can be used by subsequent operations to reference the locked features.				Lines 104 - 106
104	allSome	The lockAction attribute is used to indicate what a Web Feature Service should do when it encounters a feature instance that has already been locked by another client application. Valid values are ALL or SOME. ALL means that the Web Feature Service must acquire locks on all the requested feature	M	1	AllSome	Unrestricted

		instances. If it cannot acquire those locks then the request should fail. In this instance, all locks acquired by the operation should be released. SOME means that the Web Feature Service should lock as many of the requested features as it can.				
105	expiry	The expiry attribute is used to set the length of time (expressed in minutes) that features will remain locked as a result of a LockFeature request. After the expiry period elapses, the locked resources must be released. If the expiry attribute is not set, then the default value of 5 minutes will be enforced.	M	1	PositiveInteger	Unrestricted
106	lock	Alocking operation on feature instances of a single type. An OGC Filter is used to constrain the scope of the operation. Features to be locked can be identified individually by using their feature identifier or they can be locked by satisfying the spatial and non-spatial constraints defined in the filter.	M	*	Lock	Unrestricted
107	LockFeatureResponse	The LockFeatureResponseType is used to define an element to contains the response to a LockFeature operation.				Lines 108 - 110
108	featuresLocked	The LockFeature or GetFeatureWithLock operations identify and attempt to lock a set of feature instances that satisfy the constraints specified in the request. In the event that the lockAction attribute (on the LockFeature or GetFeatureWithLock elements) is set to SOME, a Web Feature Service will attempt to lock as many of the feature instances from the result set as possible. The FeaturesLocked element contains the list of ogc:FeatureId elements enumerating the feature instances that a WFS actually managed to lock.	O	1	FeaturesLocked	Unrestricted
109	featuresNotLocked	In contrast to the FeaturesLocked element, the FeaturesNotLocked element contains a list of ogc:Filter elements identifying feature instances that a WFS did not manage to lock because they were already locked by another process.	O	1	FeaturesNotLocked	Unrestricted
110	lockId	The LockFeatureResponse includes a LockId element that contains a lock identifier. The lock identifier can be used by a client, in subsequent operations, to operate upon the locked feature instances.	M	1	LockId	Unrestricted
111	LockForOperation	A union of and choice among operations to be performed with Object / Feature locking.			<<Union>>	Lines 112 - 115
112	delete	Delete Operation	M	1	Delete	Unrestricted
113	insert	Insert Operation	M	1	Insert	Unrestricted
114	native	Native Operation.	M	1	Native	Unrestricted
115	update	Update Operation	M	1	Update	Unrestricted
116	MetadataURL	A Web Feature Server MAY use zero or more MetadataURL elements to offer detailed, standardized metadata about the data underneath a particular feature type. The type attribute indicates the standard to which the metadata complies; the format attribute indicates how the metadata is structured. Three			<<Simple>>	Lines 117 - 118

		types are defined at present: 'TC211' or 'ISO19115' = ISO TC211 19115; 'FGDC' = FGDC CSDGM. 'ISO19139' = ISO 19139				
117	format	Metadata Format.	M	1	Format	Unrestricted
118	type	Metadata Type.	M	1	Type	Unrestricted
119	Native	Many times, a Web Feature Service interacts with a repository that may have special vendor specific capabilities. The native element allows vendor specific command to be passed to the repository via the Web Feature Service.				Lines 120 - 121
120	safeToIgnore	In the event that a Web Feature Service does not recognize the vendorId or does not recognize the vendor specific command, the safeToIgnore attribute is used to indicate whether the exception can be safely ignored. A value of TRUE means that the Web Feature Service may ignore the command. A value of FALSE means that a Web Feature Service cannot ignore the command and an exception should be raised if a problem is encountered.	M	1	Boolean	Unrestricted
121	vendorId	The vendorId attribute is used to specify the name of vendor who's vendor specific command the client application wishes to execute.	M	1	String	Unrestricted
122	Operation	Enumeration of operations a web feature service may provide.			<<Enumeration>>	Lines 123 - 128
123	delete	Delete operation.	M	1	String	Unrestricted
124	getGmlObject	GetGMLObject operation.	M	1	String	Unrestricted
125	insert	Insert operation.	M	1	String	Unrestricted
126	lock	Lock operation.	M	1	String	Unrestricted
127	query	Query operation.	M	1	String	Unrestricted
128	unsert	Unsert operation.	M	1	String	Unrestricted
129	Operations	One or more web feature service operations.				Lines 130 - 130
130	operation	A web feature service operation.	M	*	Operation	Unrestricted
131	OutputFormatList	List of MIME output formats that are available from a web feature service for this feature type.				Lines 132 - 132
132	format	MIME output format.	M	*	String	Unrestricted
133	Property	Named property of a feature or object to be updated.				Lines 134 - 135
134	name	The Name element contains the name of a feature property to be updated.	M	1	QName	Unrestricted
135	value	The value to be assigned to the named property.	M	1	Any	Unrestricted
136	Query	The Query element is of type QueryType.				Lines 137 - 143
137	featureVersion	For systems that implement versioning, the featureVersion attribute is used to	O	1	String	Unrestricted

		specify which version of a particular feature instance is to be retrieved. A value of ALL means that all versions should be retrieved. An integer value 'i', means that the ith version should be retrieve if it exists or the most recent version otherwise.				
138	filter	The Filter element is used to define spatial and/or non-spatial constraints on query. Spatial constrains use GML3 to specify the constraining geometry. A full description of the Filter element can be found in the Filter Encoding Implementation Specification.	O	1	Ogc:Filter	Unrestricted
139	handle	The handle attribute allows a client application to assign a client-generated identifier for the Query. The handle is included to facilitate error reporting. If one Query in a GetFeature request causes an exception, a WFS may report the handle to indicate which query element failed. If the a handle is not present, the WFS may use other means to localize the error (e.g. line numbers).	O	1	String	Unrestricted
140	queryParameter	Union of and choice between a property and a function.	O	*	QueryParameter	Unrestricted
141	sortBy	The SortBy element is used specify property names whose values should be used to order (upon presentation) the set of feature instances that satisfy the query.	O	1	Ogc:SortBy	Unrestricted
142	srsName	This attribute is used to specify a specific WFS-supported SRS that should be used for returned feature geometries. The value may be the WFS StorageSRS value, DefaultRetrievalSRS value, or one of AdditionalSRS values. If no srsName value is supplied, then the features will be returned using either the DefaultRetrievalSRS, if specified, and StorageSRS otherwise. For feature types with no spatial properties, this attribute must not be specified or ignored if it is specified.	O	1	AnyURI	Unrestricted
143	typeNameList	The typeName attribute is a list of one or more feature type names that indicate which types of feature instances should be included in the reponse set. Specifying more than one typename indicates that a join operation is being performed. All the names in the typeName list must be valid types that belong to this query's feature content as defined by the GML Application Schema.	M	1	TypeNameList	Unrestricted
144	QueryParameter	Union of and choice between a property and a function.			<<Union>>	Lines 145 - 146
145	function	A function may be used as a select item in a query. However, if a function is used, care must be taken to ensure that the result type matches the type in the	M	1	Ogc:Function	Unrestricted
146	propertyName	The Property element is used to specify one or more properties of a feature whose values are to be retrieved by a Web Feature Service. While a Web Feature Service should endeavour to satisfy the exact request specified, in	M	1	PropertyName	Unrestricted

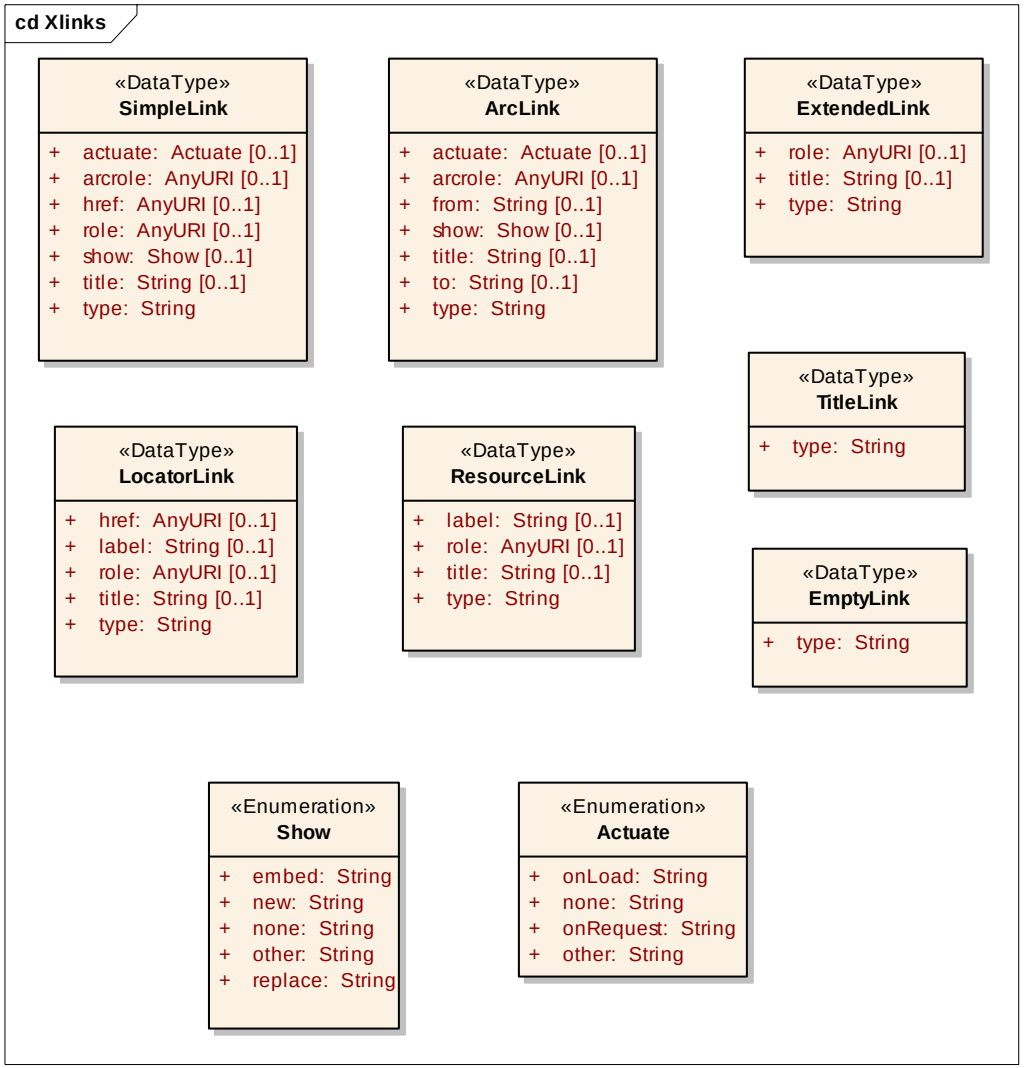
		some instance this may not be possible. Specifically, a Web Feature Service must generate a valid GML3 response to a Query operation. The schema used to generate the output may include properties that are mandatory. In order that the output validates, these mandatory properties must be specified in the request. If they are not, a Web Feature Service may add them automatically to the Query before processing it. Thus a client application should, in general, be prepared to receive more properties than it requested. Of course, using the DescribeFeatureType request, a client application can determine which properties are mandatory and request them in the first place.				
147	ResultType	Enumeration of type of result; hit count of items satisfying filter conditions, or return of data results.			<<Enumeration>>	Lines 148 - 149
148	hits	Indicates that an empty response should be generated with the "numberOfFeatures" attribute set (i.e. no feature instances should be returned). In this manner a client may determine the number of feature instances that a GetFeature request will return without having to actually get the entire result set back.	M	1	String	Unrestricted
149	results	Indicates that a complete response should be generated by the WFS. That is, all response feature instances should be returned to the client.	M	1	String	Unrestricted
150	SpatialReferenceSystem	Union of and choice between no SRS, and default and other SRSs.			<<Union>>	Lines 151 - 152
151	noSRS	No spatial reference system.	M	1	empty	Unrestricted
152	srs	The default and other supported Spatial Reference Systems.	M	1	DefaultAndOtherSRS	Unrestricted
153	String	Character String.			<<Simple>>	
154	Transaction	The TransactionType defines the Transaction operation. A Transaction element contains one or more Insert, Update Delete and Native elements that allow a client application to create, modify or remove feature instances from the feature repository that a Web Feature Service controls.				Lines 155 - 157
155	allSome	The releaseAction attribute is used to control how a Web Feature service releases locks on feature instances after a Transaction request has been processed. Valid values are ALL or SOME. A value of ALL means that the Web Feature Service should release the locks of all feature instances locked with the specified lockId regardless or whether or not the features were actually modified. A value of SOME means that the Web Feature Service will only release the locks held on feature instances that were actually operated upon by the transaction. The lockId that the client application obtained shall remain valid and the other, unmodified, feature instances shall remain locked. If the expiry attribute was specified in the original operation that locked the feature instances, then the expiry counter will be reset to give the client application that same amount of time to post subsequent transactions against	M	1	AllSome	Unrestricted

		the locked features.				
156	lockForOperation	Operations to be performed with Object / Feature locking.	M	1	LockForOperation [0..*]	Unrestricted
157	lockId	In order for a client application to operate upon locked feature instances, the Transaction request must include the LockId element. The content of this element must be the lock identifier the client application obtained from a previous GetFeatureWithLock or LockFeature operation. If the correct lock identifier is specified the Web Feature Service knows that the client application may operate upon the locked feature instances. No LockId element needs to be specified to operate upon unlocked features.	O	1	LockId	Unrestricted
158	TransactionResponse	The response for a transaction request that was successfully completed. If the transaction failed for any reason, an exception report is returned instead.				Lines 159 - 162
159	insertResult	Reports the identifiers of the newly created features.	M	1	InsertResult	Unrestricted
160	transactionResults	Reports exception codes and messages for all actions of a transaction that failed to complete successfully.	O	1	TransactionResults	Unrestricted
161	transactionSummary	Reports the total number of features affected by some kind of write action (i.e, insert, update, delete).	M	1	TransactionSummary	Unrestricted
162	version	The version attribute contains the version of the request that generated this response. So a V1.1.0 transaction request generates a V1.1.0 transaction response.	M	1	String	Unrestricted
163	TransactionResults	The TransactionResults element may be used to report exception codes and messages for all actions of a transaction that failed to complete successfully.				Lines 164 - 164
164	action	The Action element reports an exception code and exception message indicating why the corresponding action of a transaction request failed.	O	*	Action	Unrestricted
165	TransactionSummary	Reports the total number of features affected by some kind of write action (i.e, insert, update, delete).				Lines 166 - 168
166	totalDeleted	Number of Features deleted.	O	1	NonNegativeInteger	Unrestricted
167	totalInserted	Num ber of Features inserted.	O	1	NonNegativeInteger	Unrestricted
168	totalUpdated	Number of Features updated.	O	1	NonNegativeInteger	Unrestricted
169	Type	Enumeration of metadata types.			<<Enumeration>>	Lines 170 - 173
170	19115	ISO/TC211 19115 Metadata	M	1	NMTOKEN	Unrestricted
171	19139	ISO/TC211 19139 Metadata	M	1	NMTOKEN	Unrestricted
172	FGDC	U.S. Federal Geographic Data Committee CSGDM Metadata.	M	1	NMTOKEN	Unrestricted
173	TC211	Anyr ISO/TC211 Metadata.	M	1	NMTOKEN	Unrestricted
174	TypeNameList	pattern value="((\w:)?\w(=\w)?){1,}"			<<List>>	Lines 175 - 175
175	regex	REGular EXpression pattern.	M	1	string	Unrestricted

176	Update	Update operation.				Lines 177 - 182
177	filter	The Filter element is used to constrain the scope of the update operation to those features identified by the filter. Feature instances can be specified explicitly and individually using the identifier of each feature instance OR a set of features to be operated on can be identified by specifying spatial and non-spatial constraints in the filter. If no filter is specified then update operation applies to all feature instances.	O	1	Ogc:Filter	Unrestricted
178	handle	The handle attribute allows a client application to assign a client-generated request identifier to an Insert action. The handle is included to facilitate error reporting. If an Update action in a Transaction request fails, then a WFS may include the handle in an exception report to localize the error. If no handle is included of the offending Insert element then a WFS may employee other means of localizing the error (e.g. line number).	O	1	String	Unrestricted
179	inputFormat	This inputFormat attribute is used to indicate the format used to encode a feature instance in an Insert element. The default value of 'text/xml; subtype=gml/3.1.1' is used to indicate that feature encoding is GML3. Another example might be 'text/xml; subtype=gml/2.1.2' indicating that the feature us encoded in GML2. A WFS must declare in the capabilities document, using a Parameter element, which version of GML it supports.	O	1	String	Unrestricted
180	property	Changing or updating a feature instance means that the current value of one or more properties of the feature are replaced with new values. The Update element contains one or more Property elements. A Property element contains the name or a feature property who's value is to be changed and the replacement value for that property.	M	*	Property	Unrestricted
181	srsName	DO WE NEED THIS HERE?	O	1	AnyURI	Unrestricted
182	typeName	The value of the typeName attribute is the name of the feature type to be updated. The name specified must be a valid type that belongs to the feature content as defined by the GML Application Schema.	M	1	QName	Unrestricted
183	WFSCapabilities	XML encoded WFS GetCapabilities operation response. This document provides clients with service metadata about a specific service instance, including metadata about the tightly-coupled data served. If the server does not implement the updateSequence parameter, the server shall always return the complete Capabilities document, without the updateSequence parameter. When the server implements the updateSequence parameter and the GetCapabilities operation request included the updateSequence parameter with the current value, the server shall return this element with only the "version" and "updateSequence" attributes. Otherwise, all optional elements shall be included or not depending on the actual value of the Contents				Lines 184 - 187

		parameter in the GetCapabilities operation request.				
184	featureTypeList	List of GML Feature Types returned from a web feature service.	O	1	FeatureTypeList	Unrestricted
185	filterCapabilities	Filter operation capabilities.	M	1	Ogc:FilterCapabilities	Unrestricted
186	servesGMLObjectTypes	List of GML Object Types served by a web feature service.	O	1	GMLObjectTypeList	Unrestricted
187	supportsGMLObjectTypes	List of GML Object Types supported by a web feature service.	O	1	GMLObjectTypeList	Unrestricted

Xlinks

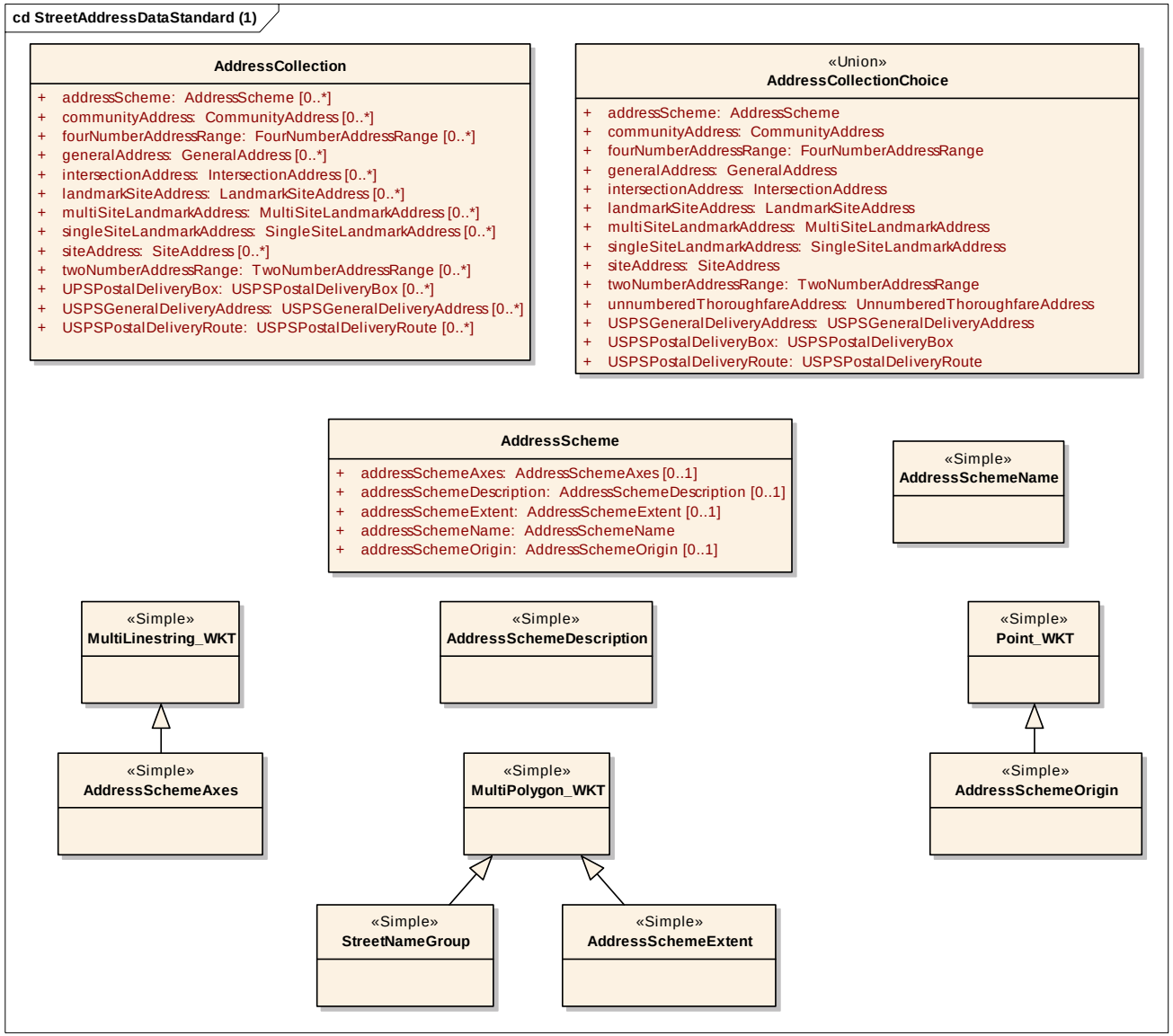

cd Xlinks
«DataType»
SimpleLink
+ actuate: Actuate [0..1]
+ arcrole: AnyURI [0..1]
+ href: AnyURI [0..1]
+ role: AnyURI [0..1]
+ show: Show [0..1]
+ title: String [0..1]
+ type: String
«DataType»
ArcLink
+ actuate: Actuate [0..1]
+ arcrole: AnyURI [0..1]
+ from: String [0..1]
+ show: Show [0..1]
+ title: String [0..1]
+ to: String [0..1]
+ type: String
«DataType»
ExtendedLink
+ role: AnyURI [0..1]
+ title: String [0..1]
+ type: String
«DataType»
TitleLink
+ type: String
«DataType»
LocatorLink
+ href: AnyURI [0..1]
+ label: String [0..1]
+ role: AnyURI [0..1]
+ title: String [0..1]
+ type: String
«DataType»
ResourceLink
+ label: String [0..1]
+ role: AnyURI [0..1]
+ title: String [0..1]
+ type: String
«DataType»
EmptyLink
+ type: String
«Enumeration»
Show
+ embed: String
+ new: String
+ none: String
+ other: String
+ replace: String
«Enumeration»
Actuate
+ onLoad: String
+ none: String
+ onRequest: String
+ other: String

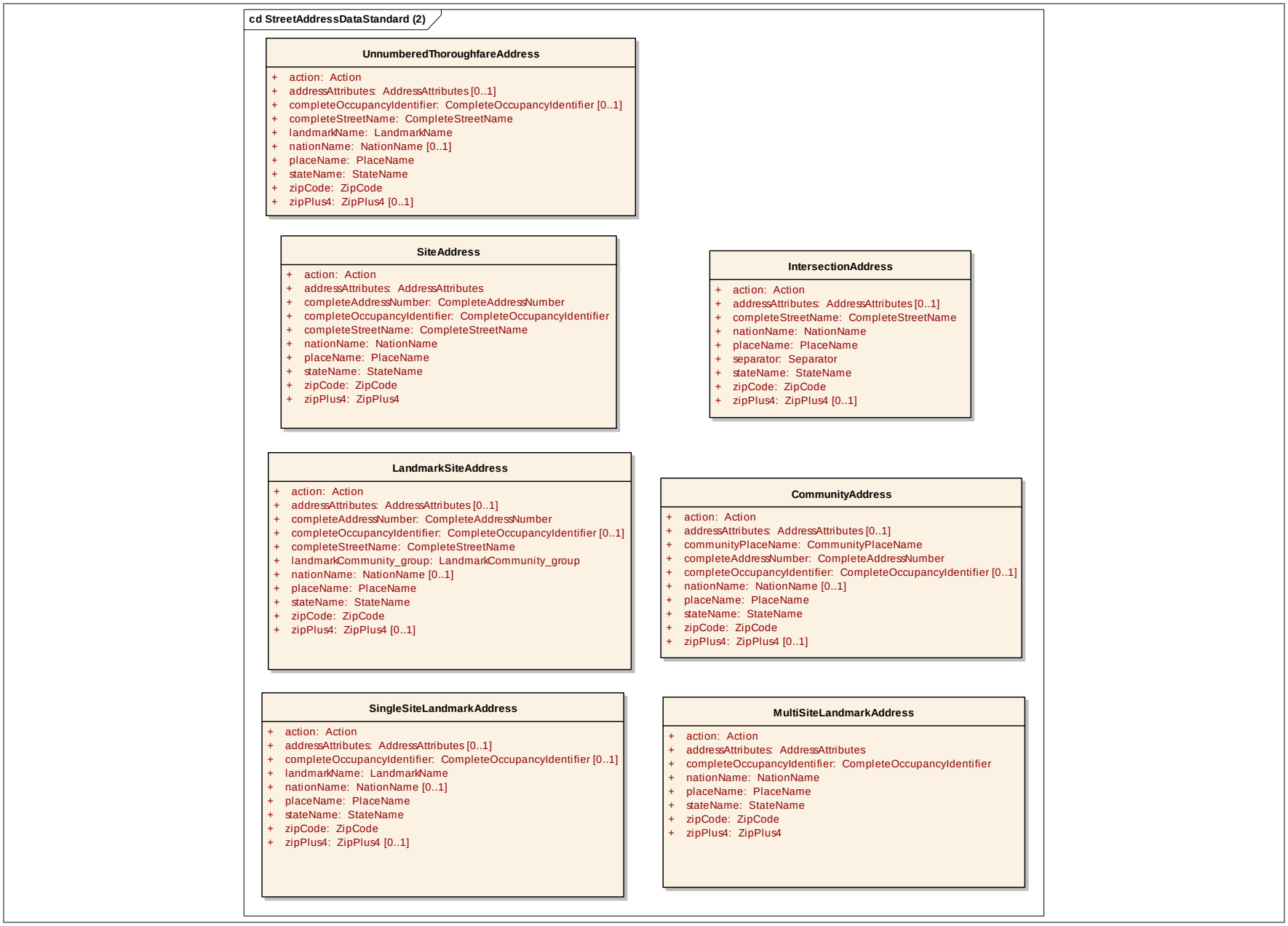
Xlinks						
Line	**Name/RoleName**	**Definition**	**Obligation / Condition**	**Maximum Occurrence**	**Data Type**	**Domain**
1	Actuate	The 'actuate' attribute is used to communicate the desired timing of traversal from the starting resource to the ending resource			<<Enumeration>>	Lines 2 - 5
2	none	behavior is unconstrained	M	1	String	Unrestricted
3	onLoad	traverse to the ending resource immediately on loading the starting resource	M	1	String	Unrestricted
4	onRequest	traverse from the starting resource to the ending resource only on a post-loading event triggered for this purpose	M	1	String	Unrestricted
5	other	behavior is unconstrained; examine other markup in link for hints	M	1	String	Unrestricted
6	ArcLink	An ArcLink contains information about how to traverse a pair of resources, including the direction of traversal and possibly application behavior information as well.			<<DataType>>	Lines 7 - 13
7	actuate	The 'actuate' attribute is used to communicate the desired timing of traversal from the starting resource to the ending resource	O	1	Actuate	Unrestricted
8	arcrole	The arcrole attribute corresponds to the [RDF] notion of a property, where the role can be interpreted as stating that "starting-resource HAS arc-role ending-resource."	O	1	AnyURI	Unrestricted
9	from	The starting resource for an arc.	O	1	String	Unrestricted
10	show	The show attribute is used to communicate the desired presentation of the ending resource on traversal from the starting resource.	O	1	String	"new", "replace", "embed", "other", or "none".
11	title	provides a human-readable title for the link	O	1	String	Unrestricted
12	to	The ending resource for an arc.	O	1	String	Unrestricted
13	type	fixed value "arc"	M	1	String	"arc"
14	EmptyLink	An empty, nonfunctional link.			<<DataType>>	Lines 15 - 15
15	type	fixed value "none"	M	1	String	"none"
16	ExtendedLink	An extended link is a link that associates an arbitrary number of resources. The participating resources may be any combination of remote and local.			<<DataType>>	Lines 17 - 19
17	role	The value of the role attribute must be a URI reference that identifies some resource that describes the intended property.	O	1	AnyURI	Unrestricted
18	title	provides a human-readable title for the link	O	1	String	Unrestricted
19	type	fixed value "extended"	M	1	String	"extended"
20	LocatorLink	The locator Link provides a URI reference that identifies a remote resource. The			<<DataType>>	Lines 21 - 25

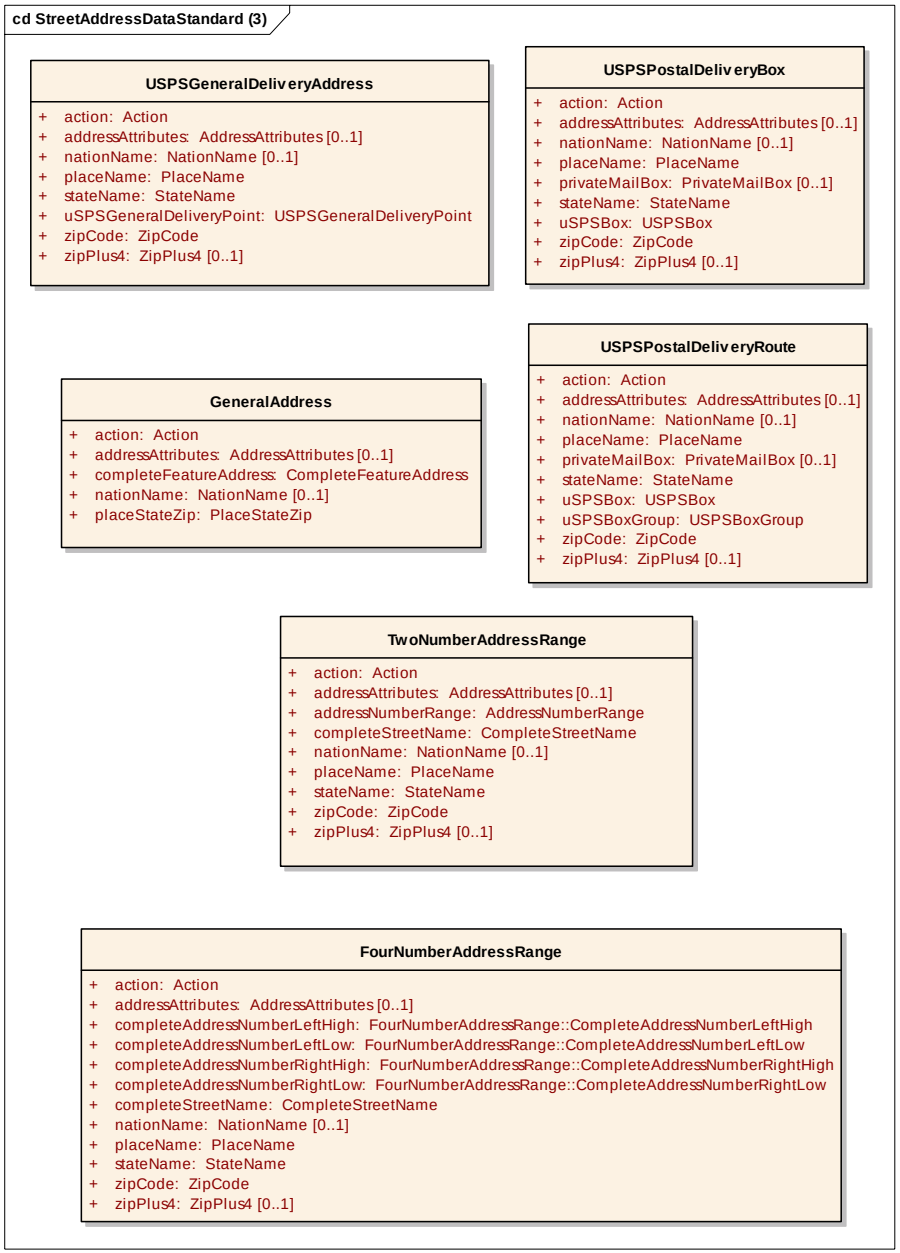
		semantic attributes supply information about the resource in generic terms, outside of the context of a particular arc that leads to it.				
21	href	The locator attribute that supplies the data that allows an XLink application to find a remote resource (or resource fragment).	O	1	AnyURI	Unrestricted
22	label	provides a human-readable label for the link	O	1	String	Unrestricted
23	role	The value of the role attribute must be a URI reference that identifies some resource that describes the intended property.	O	1	AnyURI	Unrestricted
24	title	provides a human-readable title for the link	O	1	String	Unrestricted
25	type	fixed value "locator"	M	1	String	"locator"
26	ResourceLink	The XLink element for local resources.			<<DataType>>	Lines 27 - 30
27	label	provides a human-readable label for the link	O	1	String	Unrestricted
28	role	The value of the role attribute must be a URI reference that identifies some resource that describes the intended property.	O	1	AnyURI	Unrestricted
29	title	provides a human-readable title for the link	O	1	String	Unrestricted
30	type	fixed value "resource"	M	1	String	"resource"
31	Show	The show attribute is used to communicate the desired presentation of the ending resource on traversal from the starting resource.			<<Enumeration>>	Lines 32 - 36
32	embed	load ending resource in place of the presentation of the starting resource	M	1	String	Unrestricted
33	new	load ending resource in a new window, frame, pane, or other presentation context	M	1	String	Unrestricted
34	none	behavior is unconstrained	M	1	String	Unrestricted
35	other	behavior is unconstrained; examine other markup in the link for hints	M	1	String	Unrestricted
36	replace	load the resource in the same window, frame, pane, or other presentation context	M	1	String	Unrestricted
37	SimpleLink	A simple link is a link that associates exactly two resources, one local and one remote, with an arc going from the former to the latter. Thus, a simple link is always an outbound link.			<<DataType>>	Lines 38 - 44
38	actuate	The 'actuate' attribute is used to communicate the desired timing of traversal from the starting resource to the ending resource	O	1	Actuate	Unrestricted
39	arcrole	The arcrole attribute corresponds to the [RDF] notion of a property, where the role can be interpreted as stating that "starting-resource HAS arc-role ending-resource."	O	1	AnyURI	Unrestricted
40	href	The locator attribute that supplies the data that allows an XLink application to find a remote resource (or resource fragment).	O	1	AnyURI	Unrestricted
41	role	The value of the role attribute must be a URI reference that identifies some resource that describes the intended property.	O	1	AnyURI	Unrestricted
42	show	The show attribute is used to communicate the desired presentation of the ending resource on traversal from the starting resource.	O	1	String	"new", "replace", "embed", "other", or

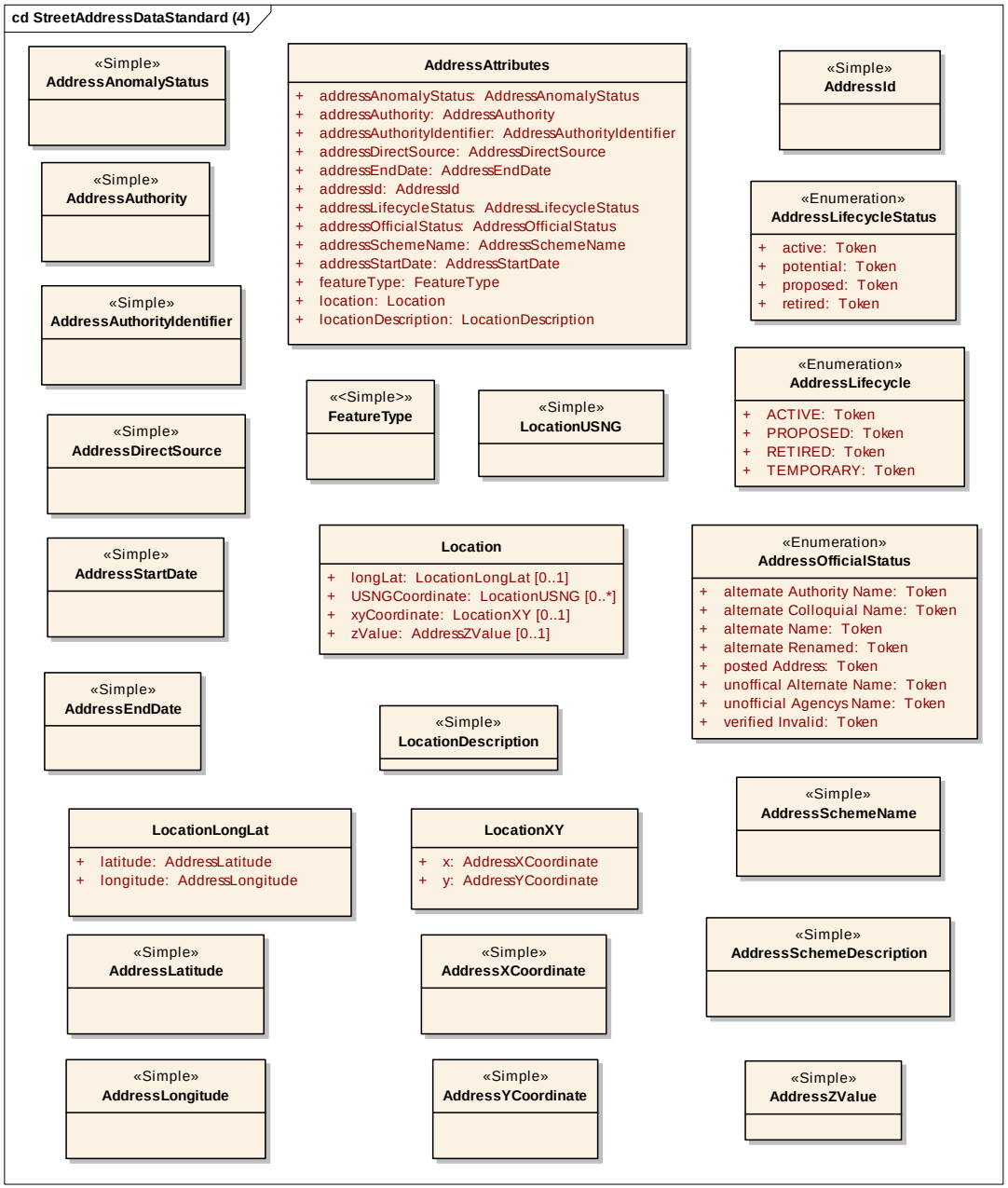
						"none".
43	title	provides a human-readable title for the link	O	1	String	Unrestricted
44	type	fixed value "simple"	M	1	String	"simple"
45	TitleLink	A title only link.			<<DataType>>	Lines 46 - 46
46	type	fixed value "title"	M	1	String	"title"

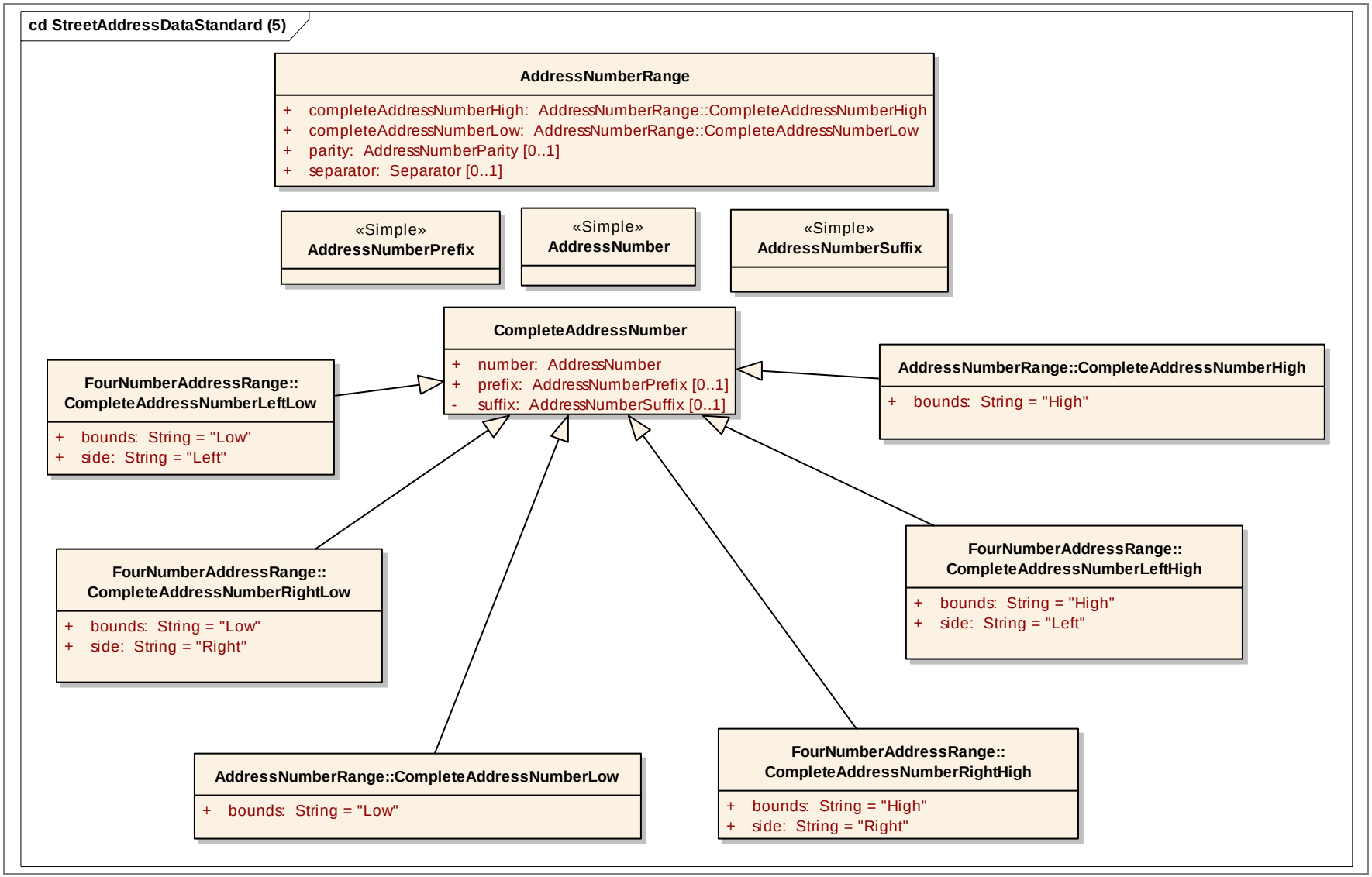
StreetAddressStandard (1 of 7)



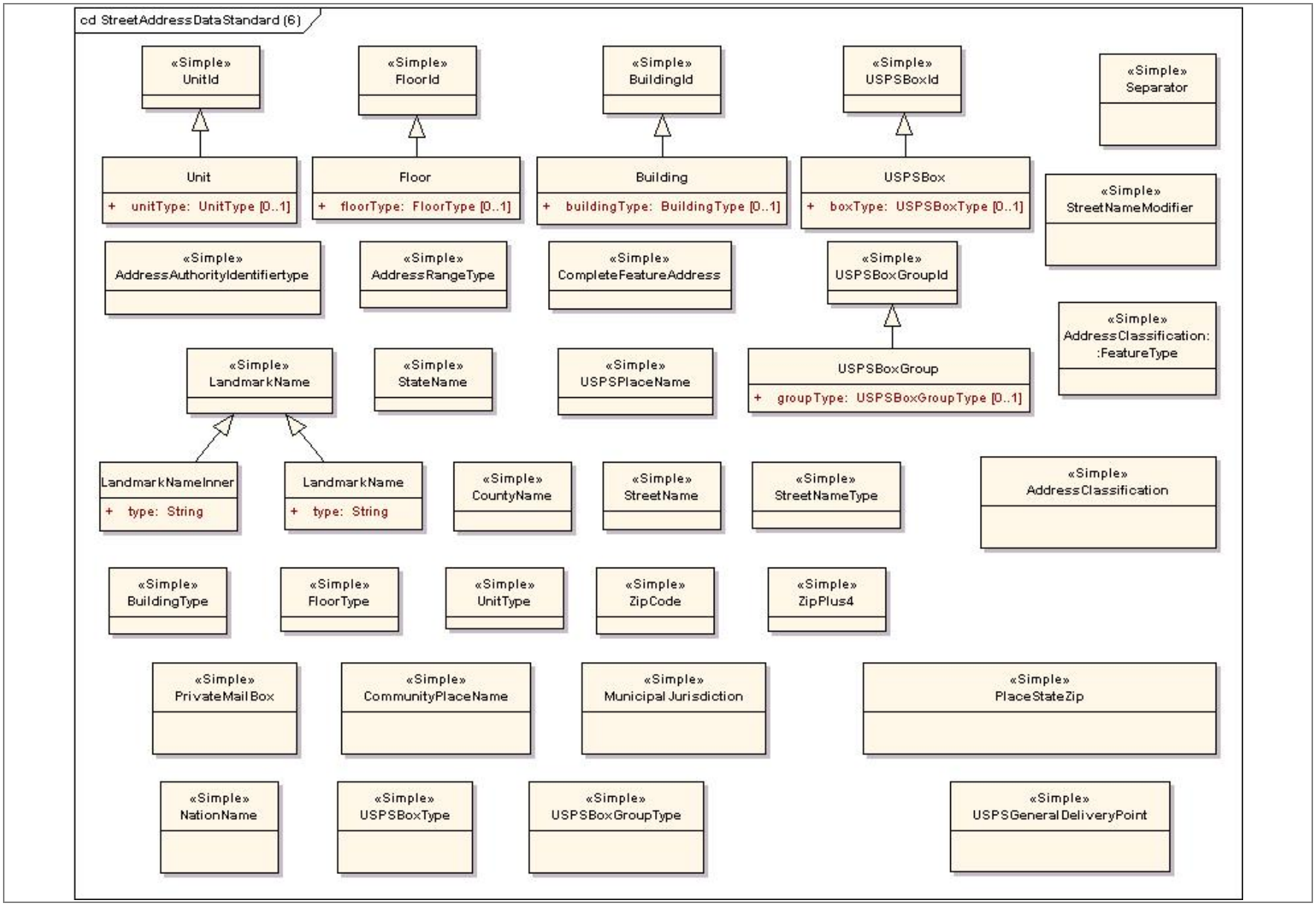

cd StreetAddressDataStandard (2)
UnnumberedThoroughfareAddress
+ action: Action
+ addressAttributes: AddressAttributes [0..1]
+ completeOccupancyIdentifier: CompleteOccupancyIdentifier [0..1]
+ completeStreetName: CompleteStreetName
+ landmarkName: LandmarkName
+ nationName: NationName [0..1]
+ placeName: PlaceName
+ stateName: StateName
+ zipCode: ZipCode
+ zipPlus4: ZipPlus4 [0..1]
SiteAddress
+ action: Action
+ addressAttributes: AddressAttributes
+ completeAddressNumber: CompleteAddressNumber
+ completeOccupancyIdentifier: CompleteOccupancyIdentifier
+ completeStreetName: CompleteStreetName
+ nationName: NationName
+ placeName: PlaceName
+ stateName: StateName
+ zipCode: ZipCode
+ zipPlus4: ZipPlus4
IntersectionAddress
+ action: Action
+ addressAttributes: AddressAttributes [0..1]
+ completeStreetName: CompleteStreetName
+ nationName: NationName
+ placeName: PlaceName
+ separator: Separator
+ stateName: StateName
+ zipCode: ZipCode
+ zipPlus4: ZipPlus4 [0..1]
LandmarkSiteAddress
+ action: Action
+ addressAttributes: AddressAttributes [0..1]
+ completeAddressNumber: CompleteAddressNumber
+ completeOccupancyIdentifier: CompleteOccupancyIdentifier [0..1]
+ completeStreetName: CompleteStreetName
+ landmarkCommunity_group: LandmarkCommunity_group
+ nationName: NationName [0..1]
+ placeName: PlaceName
+ stateName: StateName
+ zipCode: ZipCode
+ zipPlus4: ZipPlus4 [0..1]
CommunityAddress
+ action: Action
+ addressAttributes: AddressAttributes [0..1]
+ communityPlaceName: CommunityPlaceName
+ completeAddressNumber: CompleteAddressNumber
+ completeOccupancyIdentifier: CompleteOccupancyIdentifier [0..1]
+ nationName: NationName [0..1]
+ placeName: PlaceName
+ stateName: StateName
+ zipCode: ZipCode
+ zipPlus4: ZipPlus4 [0..1]
SingleSiteLandmarkAddress
+ action: Action
+ addressAttributes: AddressAttributes [0..1]
+ completeOccupancyIdentifier: CompleteOccupancyIdentifier [0..1]
+ landmarkName: LandmarkName
+ nationName: NationName [0..1]
+ placeName: PlaceName
+ stateName: StateName
+ zipCode: ZipCode
+ zipPlus4: ZipPlus4 [0..1]
MultiSiteLandmarkAddress
+ action: Action
+ addressAttributes: AddressAttributes
+ completeOccupancyIdentifier: CompleteOccupancyIdentifier
+ nationName: NationName
+ placeName: PlaceName
+ stateName: StateName
+ zipCode: ZipCode
+ zipPlus4: ZipPlus4


cd StreetAddressDataStandard (3)
USPSGeneralDeliveryAddress
+ action: Action
+ addressAttributes: AddressAttributes [0..1]
+ nationName: NationName [0..1]
+ placeName: PlaceName
+ stateName: StateName
+ uSPSGeneralDeliveryPoint: USPSGeneralDeliveryPoint
+ zipCode: ZipCode
+ zipPlus4: ZipPlus4 [0..1]
USPSPostalDeliveryBox
+ action: Action
+ addressAttributes: AddressAttributes [0..1]
+ nationName: NationName [0..1]
+ placeName: PlaceName
+ privateMailBox: PrivateMailBox [0..1]
+ stateName: StateName
+ uSPSBox: USPSBox
+ zipCode: ZipCode
+ zipPlus4: ZipPlus4 [0..1]
GeneralAddress
+ action: Action
+ addressAttributes: AddressAttributes [0..1]
+ completeFeatureAddress: CompleteFeatureAddress
+ nationName: NationName [0..1]
+ placeStateZip: PlaceStateZip
USPSPostalDeliveryRoute
+ action: Action
+ addressAttributes: AddressAttributes [0..1]
+ nationName: NationName [0..1]
+ placeName: PlaceName
+ privateMailBox: PrivateMailBox [0..1]
+ stateName: StateName
+ uSPSBox: USPSBox
+ uSPSBoxGroup: USPSBoxGroup
+ zipCode: ZipCode
+ zipPlus4: ZipPlus4 [0..1]
TwoNumberAddressRange
+ action: Action
+ addressAttributes: AddressAttributes [0..1]
+ addressNumberRange: AddressNumberRange
+ completeStreetName: CompleteStreetName
+ nationName: NationName [0..1]
+ placeName: PlaceName
+ stateName: StateName
+ zipCode: ZipCode
+ zipPlus4: ZipPlus4 [0..1]
FourNumberAddressRange
+ action: Action
+ addressAttributes: AddressAttributes [0..1]
+ completeAddressNumberLeftHigh: FourNumberAddressRange::CompleteAddressNumberLeftHigh
+ completeAddressNumberLeftLow: FourNumberAddressRange::CompleteAddressNumberLeftLow
+ completeAddressNumberRightHigh: FourNumberAddressRange::CompleteAddressNumberRightHigh
+ completeAddressNumberRightLow: FourNumberAddressRange::CompleteAddressNumberRightLow
+ completeStreetName: CompleteStreetName
+ nationName: NationName [0..1]
+ placeName: PlaceName
+ stateName: StateName
+ zipCode: ZipCode
+ zipPlus4: ZipPlus4 [0..1]

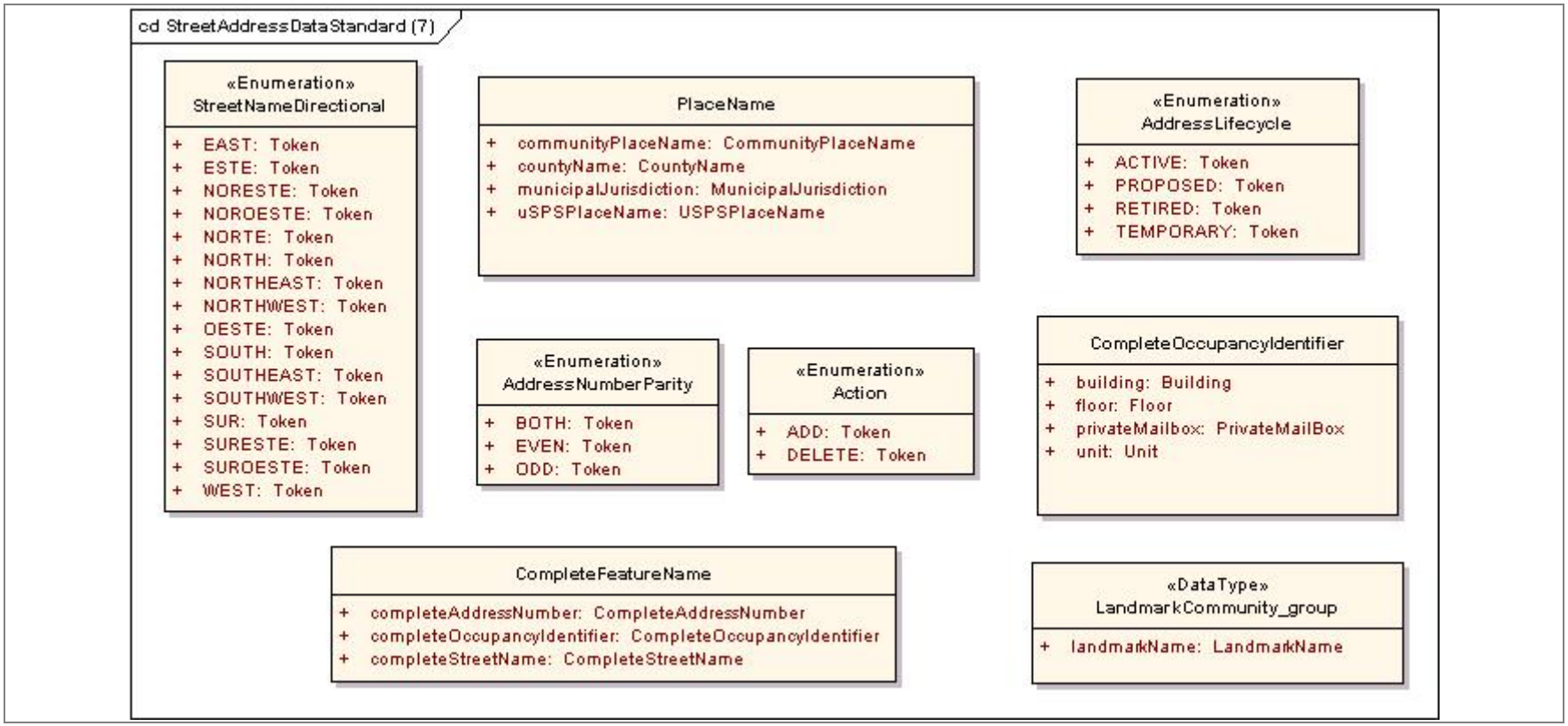

cd StreetAddressDataStandard (4)
«Simple»
AddressAnomalyStatus
«Simple»
AddressAuthority
«Simple»
AddressAuthorityIdentifier
«Simple»
AddressDirectSource
«Simple»
AddressStartDate
«Simple»
AddressEndDate
AddressAttributes
+ addressAnomalyStatus: AddressAnomalyStatus
+ addressAuthority: AddressAuthority
+ addressAuthorityIdentifier: AddressAuthorityIdentifier
+ addressDirectSource: AddressDirectSource
+ addressEndDate: AddressEndDate
+ addressId: AddressId
+ addressLifecycleStatus: AddressLifecycleStatus
+ addressOfficialStatus: AddressOfficialStatus
+ addressSchemeName: AddressSchemeName
+ addressStartDate: AddressStartDate
+ featureType: FeatureType
+ location: Location
+ locationDescription: LocationDescription
«<Simple>»
FeatureType
«Simple»
LocationUSNG
Location
+ longLat: LocationLongLat [0..1]
+ USNGCoordinate: LocationUSNG [0..*]
+ xyCoordinate: LocationXY [0..1]
+ zValue: AddressZValue [0..1]
«Simple»
LocationDescription
LocationLongLat
+ latitude: AddressLatitude
+ longitude: AddressLongitude
LocationXY
+ x: AddressXCoordinate
+ y: AddressYCoordinate
«Simple»
AddressLatitude
«Simple»
AddressLongitude
«Simple»
AddressXCoordinate
«Simple»
AddressYCoordinate
«Simple»
AddressId
«Enumeration»
AddressLifecycleStatus
+ active: Token
+ potential: Token
+ proposed: Token
+ retired: Token
«Enumeration»
AddressLifecycle
+ ACTIVE: Token
+ PROPOSED: Token
+ RETIRED: Token
+ TEMPORARY: Token
«Enumeration»
AddressOfficialStatus
+ alternate Authority Name: Token
+ alternate Colloquial Name: Token
+ alternate Name: Token
+ alternate Renamed: Token
+ posted Address: Token
+ unoffical Alternate Name: Token
+ unofficial Agencys Name: Token
+ verified Invalid: Token
«Simple»
AddressSchemeName
«Simple»
AddressSchemeDescription
«Simple»
AddressZValue


cd StreetAddressDataStandard (5)
AddressNumberRange
+ completeAddressNumberHigh: AddressNumberRange::CompleteAddressNumberHigh
+ completeAddressNumberLow: AddressNumberRange::CompleteAddressNumberLow
+ parity: AddressNumberParity [0..1]
+ separator: Separator [0..1]
«Simple»
AddressNumberPrefix
«Simple»
AddressNumber
«Simple»
AddressNumberSuffix
CompleteAddressNumber
+ number: AddressNumber
+ prefix: AddressNumberPrefix [0..1]
- suffix: AddressNumberSuffix [0..1]
FourNumberAddressRange::
CompleteAddressNumberLeftLow
+ bounds: String = "Low"
+ side: String = "Left"
AddressNumberRange::CompleteAddressNumberHigh
+ bounds: String = "High"
FourNumberAddressRange::
CompleteAddressNumberRightLow
+ bounds: String = "Low"
+ side: String = "Right"
FourNumberAddressRange::
CompleteAddressNumberLeftHigh
+ bounds: String = "High"
+ side: String = "Left"
AddressNumberRange::CompleteAddressNumberLow
+ bounds: String = "Low"
FourNumberAddressRange::
CompleteAddressNumberRightHigh
+ bounds: String = "High"
+ side: String = "Right"

StreetAddressStandard (6 of 7)



StreetAddressStandard (7 of 7)



StreetAddressDataStandard						
Line	**Name/RoleName**	**Definition**	**Obligation / Condition**	**Maximum Occurrence**	**Data Type**	**Domain**
1	Action	An action command for incremental datasets. Add indicates that the information is new. DELETE indicates that the information is to be removed.			<<Enumeration>>	Lines 2 - 3
2	ADD	The ADD action type	M	1	Token	Unrestricted
3	DELETE	The DELETE action Type	M	1	Token	Unrestricted
4	AddressAnomalyStatus	A status flag, or an explanatory note, for an address that is not correct according to the address schema in which it is located, but is nonetheless a valid address. This field may be used to identify the type of anomaly (e.g. wrong parity, out of sequence, out of range, etc.) rather than simply whether or not it is anomalous. Local jurisdictions may create specific categories for anomalies.			<<Simple>>	
5	AddressAttributes	Supporting information for the Address				Lines 6 - 18
6	addressAnomalyStatus	A status flag, or an explanatory note, for an address that is not correct according to the address schema in which it is located, but is nonetheless a valid address.	M	1	AddressAnomalyStatus	Unrestricted
7	addressAuthority	The authority (e.g., municipality, county) that created or has jurisdiction over the creation of an address	M	1	AddressAuthority	Unrestricted
8	addressAuthorityIdentifier	The FIPS/GNIS identifier for the governmental unit issuing the address or responsible for its maintenance.	M	1	AddressAuthorityIdentifier	Unrestricted
9	addressDirectSource	Source from whom the data provider obtained the address, or with whom the data provider validated the address.	M	1	AddressDirectSource	Unrestricted
10	addressEndDate	The date on which the address is known to no longer be valid.	M	1	AddressEndDate	valid date
11	addressId	The unique identification number assigned to an address by the addressing authority	M	1	AddressId	Unrestricted

12	addressLifecycleStatus	The life cycle status of the address.	M	1	AddressLifecycleStatus	potential, proposed, active, retired
13	addressOfficialStatus	Whether the address is as given by the official addressing authority (official), or an unofficial variant or equivalent of it (alias)	M	1	AddressOfficialStatus	Unrestricted
14	addressSchemeName	Name of the address scheme that operates over a specified area, i.e.: mountain addresses, plains addresses.	M	1	AddressSchemeName	Unrestricted
15	addressStartDate	The earliest date on which the address is known to exist.	M	1	AddressStartDate	Unrestricted
16	featureType	The type of feature identified by the address	M	1	FeatureType	Unrestricted
17	location	A location given by X-Y coordinates, longitude and latitude, US National Grid,, or a Z value	M	1	Location	Unrestricted
18	locationDescription	A text description providing more detail on how to identify or find the addressed feature.	M	1	LocationDescription	Unrestricted
19	AddressAuthority	The authority (e.g., municipality, county) that created or has jurisdiction over the creation of an address. The addressing authority may or may not be the same as the physical or postal jurisdiction noted for the address.			<<Simple>>	
20	AddressAuthorityIdentifier	The FIPS or GNIs code for the authority (e.g., municipality, county) that created or has jurisdiction over the creation of an address. The addressing authority may or may not be the same as the physical or postal jurisdiction noted for the address.			<<Simple>>	
21	AddressAuthorityIdentifiertype	A Concatenation of codes found in FIPS 5-2, 6-4, and 55-3 data guides, with a locally defined code that MUST be defined in the metadata. The general format is (expressed as regular expressions) [0-9]{2}[0-9]{3}[0-9]{5}[0-9]{4}.			<<Simple>>	
22	AddressClassification	The type or classification of the address according to the classification standard.			<<Simple>>	
23	AddressCollection	Wrapper collecting a set of addresses				Lines 24 - 36
24	addressScheme	Written information about parity, street	O	*	AddressScheme	Unrestricted

		naming conventions, numbering intervals, grids, and other business rules.				
25	communityAddress	Puerto Rican urbanization addresses where the urbanization name is preceded by a number, and no street name is included. In Puerto Rico, an urbanization denotes an area, sector, or residential development within a geographic area.	O	*	CommunityAddress	Unrestricted
26	fourNumberAddressRange	Although they do not necessarily refer to one specific site, block addresses are important for municipal operations (such as snow plow dispatch), emergency dispatch, and geocoding. A block address range may be expressed by four numbers, representing the low and high end of the numeric range for each side of a block.	O	*	FourNumberAddressRange	Unrestricted
27	generalAddress	The general address handles all of the address classes, for files in which the various classes are mixed together. The feature address may have any syntax, but city, state, and ZIP are separated from the rest of the address.	O	*	GeneralAddress	Unrestricted
28	intersectionAddress	An address that refers to the insection of two thoroughfares. Intersection addresses are useful for recording events occurring in the street, such as accidents, infrastructure locations, etc.	O	*	IntersectionAddress	Unrestricted
29	landmarkSiteAddress	Landmark addresses specify a location by reference to a named landmark. A landmark is named point or area that is prominent enough in the local landscape as to be publicly known.	O	*	LandmarkSiteAddress	Unrestricted
30	multiSiteLandmarkAddress	The outer and the inner landmark classes must be expressed explicitly as landmark names. The inner name is more specific and the Outer name is more general. In the case of Truth Hall Room 306 Howard University". Howard University would be an outer LandmarkName, and Truth hall would be the	O	*	MultiSiteLandmarkAddress	Unrestricted

		inner LandmarkName. The inner LandmarkName may conflict with more global landmark names if not distinguished by a more general LandmarkName.				
31	singleSiteLandmarkAddress	A Landmark Address that refers to a single landmark.	O	*	SingleSiteLandmarkAddress	Unrestricted
32	siteAddress SiteAddress	The Address Class associated with singlar locations referenced off of a linear feature, having numeric identifiers.	O	*	SiteAddress	Unrestricted
33	twoNumberAddressRange	An thoroughfare address range given by an upper and lower address number.	O	*	TwoNumberAddressRange	Unrestricted
34	uSPSGeneralDeliveryAddress	A central point where mail may be picked up by the addressee. Two values are permitted: "General Delivery" (for post offices), and ship's names (for overseas military addresses).	O	*	USPSGeneralDeliveryAddress	Unrestricted
35	uSPSPostalDeliveryBox	A box used for receipt of USPS mail. The box may be located in the post office lobby (e.g PO Box), on the customer's premises or other USPS authorized place (e.g. rural route box).	O	*	USPSPostalDeliveryBox	Unrestricted
36	uSPSPostalDeliveryRoute	A collection of postal boxes served from a single distribution point.	O	*	USPSPostalDeliveryRoute	Unrestricted
37	AddressCollectionChoice	The Single Choice Union of all Address Types			<<Union>>	Lines 38 - 51
38	addressScheme	Written information about parity, street naming conventions, numbering intervals, grids, and other business rules.	M	1	AddressScheme	Unrestricted
39	communityAddress	Puerto Rican urbanization addresses where the urbanization name is preceded by a number, and no street name is included. In Puerto Rico, an urbanization denotes an area, sector, or residential development within a geographic area.	M	1	CommunityAddress	Unrestricted
40	fourNumberAddressRange	Although they do not necessarily refer to one specific site, block addresses are important for municipal operations (such as snow plow dispatch), emergency dispatch, and geocoding. A block address range may	M	1	FourNumberAddressRange	Unrestricted

		be expressed by four numbers, representing the low and high end of the numeric range for each side of a block.				
41	generalAddress	The general address handles all of the address classes, for files in which the various classes are mixed together. The feature address may have any syntax, but city, state, and ZIP are separated from the rest of the address.	M	1	GeneralAddress	Unrestricted
42	intersectionAddress	An address that refers to the insection of two thoroughfares. Intersection addresses are useful for recording events occurring in the street, such as accidents, infrastructure locations, etc.	M	1	IntersectionAddress	Unrestricted
43	landmarkSiteAddress	Landmark addresses specify a location by reference to a named landmark. A landmark is named point or area that is prominent enough in the local landscape as to be publicly known.	M	1	LandmarkSiteAddress	Unrestricted
44	multiSiteLandmarkAddress	The outer and the inner landmark classes must be expressed explicitly as landmark names. The inner name is more specific and the Outer name is more general. In the case of Truth Hall Room 306 Howard University". Howard University would be an outer LandmarkName, and Truth hall would be the inner LandmarkName. The inner LandmarkName may conflict with more global landmark names if not distinguished by a more general LandmarkName.	M	1	MultiSiteLandmarkAddress	Unrestricted
45	singleSiteLandmarkAddress	A Landmark Address that refers to a single landmark.	M	1	SingleSiteLandmarkAddress	Unrestricted
46	siteAddress SiteAddress	The Address Class associated with singlar locations referenced off of a linear feature, having numeric identifiers.	M	1	SiteAddress	Unrestricted
47	twoNumberAddressRange	An thoroughfare address range given by an upper and lower address number.	M	1	TwoNumberAddressRange	Unrestricted
48	unnumberedThoroughfareAddress	The Address Class associated with singlar locations referenced off of a linear feature,	M	1	UnnumberedThoroughfareAddress	Unrestricted

		lacking numeric identifiers.				
49	uSPSGeneralDeliveryAddress	A central point where mail may be picked up by the addressee. Two values are permitted: "General Delivery" (for post offices), and ship's names (for overseas military addresses).	M	1	USPSGeneralDeliveryAddress	Unrestricted
50	uSPSPostalDeliveryBox	A box used for receipt of USPS mail. The box may be located in the post office lobby (e.g PO Box), on the customer's premises or other USPS authorized place (e.g. rural route box).	M	1	USPSPostalDeliveryBox	Unrestricted
51	uSPSPostalDeliveryRoute	A collection of postal boxes served from a single distribution point.	M	1	USPSPostalDeliveryRoute	Unrestricted
52	AddressDirectSource	Source from whom the data provider obtained the address, or with whom the data provider validated the address. Important if the data provider did not obtain the address directly from the local authority.			<<Simple>>	
53	AddressEndDate	The earliest date on which the address is known to no longer be valid.			<<Simple>>	
54	AddressId	The unique identification number assigned to an address by the addressing authority. The ID number must be unique for each address assigned by an addressing authority. This, combined with the FIPS number of the addressing authority, can provide a unique ID for every address in the US.			<<Simple>>	
55	AddressLatitude	The latitude coordinate of the address location, noted in decimal degrees. For point and polygon features, coordinate pairs typically locate the point of assignment: a centroid point, a point locating the entry to a property, etc.			<<Simple>>	
56	AddressLifecycle	The Lifecycle status of the address.			<<Enumeration>>	Lines 57 - 60
57	ACTIVE	The ACTIVE status in an address lifecycle.	M	1	Token	Unrestricted
58	PROPOSED	The PROPOSED status in an address lifecycle.	M	1	Token	Unrestricted

59	RETIRED	The RETIRED status in an address lifecycle.	M	1	Token	Unrestricted
60	TEMPORARY	The TEMPORARY status in an address lifecycle.	M	1	Token	Unrestricted
61	AddressLifecycleStatus	The life cycle status of the address.			<<Enumeration>>	Lines 62 - 65
62	active	Address has been issued and is in use.	M	1	Token	Unrestricted
63	potential	Address falls within a theoretical range, but has never been used.	M	1	Token	Unrestricted
64	proposed	Application pending for use of this address (e.g., address tentatively issued for subdivision plat that is not yet fully approved).	M	1	Token	Unrestricted
65	retired	Address was issued, but is now obsolete (e.g. street name has been changed), building was demolished, etc.	M	1	Token	Unrestricted
66	AddressLongitude	The longitude coordinate of the address location, noted in decimal degrees. For point and polygon features, coordinate pairs typically locate the point of assignment: a centroid point, a point locating the entry to a property, etc.			<<Simple>>	
67	AddressNumber	The numeric identifier for a land parcel, house, building or other feature, as defined by the official address authority for the given jurisdiction. 1. The address number is defined as an integer to support address sorting, parity (even/odd) definition, and in/out of address range tests. 2. Special care should be taken with records where the address number is 0 (zero). Occasionally zero is issued as a valid address number (e.g. Zero Prince Street, Alexandria, VA 22314) or it can be imputed (1/2 Fifth Avenue, New York, NY 10003 (for which the address number would be 0 and the suffix would be "1/2")). More often, though, the address number is either missing or non-existent, and null value has been converted to zero. 3. Some addresses may contain letters, fractions, hyphens, decimals and			<<Simple>>	

		other non-integer content within the complete address number. Those non-integer elements should be placed in the Address Number Prefix if they appear before the site number, or in the Address Number Suffix if they follow the number. 4. The address number must be converted to text when it is combined with the prefix and suffix into a complete address number. 5. If necessary, the Separator can be used to separate the address number from the prefix or suffix elements in constructing the complete address number.				
68	AddressNumberParity	"A relation between a pair of integers: if both integers are odd or both are even they have the same parity; if one is odd and the other is even they have different parity."1 Odd and even addresses are usually associated with opposite sides of a street. For example, a jurisdiction may assign odd numbers to the right side of the street when moving away from an address axis.			<<Enumeration>>	Lines 69 - 71
69	BOTH	The integers can be even or odd	M	1	Token	Unrestricted
70	EVEN	The integers are even	M	1	Token	Unrestricted
71	ODD	The integers are odd	M	1	Token	Unrestricted
72	AddressNumberPrefix	The non-integer portion of the identifier for the house, building or other feature which precedes the address number itself, as defined by the official address authority for the given jurisdiction. 1. This element will not be applicable for most addresses. When township-range or other non-numeric geographic index references precede an address number, they are placed in this field. The address number can then be maintained as an integer for sorting and quality control tests. 2. If necessary, the Separator can be used to separate the address number from the prefix or suffix elements in constructing the complete			<<Simple>>	

		address number.				
73	AddressNumberRange	{ Complete Address Number (low)*} + { Separator Element *} + { Complete Address Number (high)*} A set of two address numbers, separated by a "Separator", representing the low and high numbers of an address range. An address number range element should be accompanied by an Address Range Type Attribute that describes the type of range presented in this element.				Lines 74 - 77
74	completeAddressNumberHigh	A Complete Address Number that is the high end of an Address Range	M	1	AddressNumberRange::CompleteAddressNumberHigh	Unrestricted
75	completeAddressNumberLow	A Complete Address Number that is the low end of an Address Range	M	1	AddressNumberRange::CompleteAddressNumberLow	Unrestricted
76	parity	"A relation between a pair of integers: if both integers are odd or both are even they have the same parity; if one is odd and the other is even they have different parity."1 Odd and even addresses are usually associated with opposite sides of a street. For example, a jurisdiction may assign odd numbers to the right side of the street when moving away from an address axis.	O	1	AddressNumberParity	Unrestricted
77	separator	A symbol or word required as a separator between components of a complex element or class. The separator is required for address number ranges and for intersection addresses, and it is occasionally needed in constructing complete street numbers.	O	1	Separator	Unrestricted
78	AddressNumberRange::CompleteAddressNumberHigh	A Complete Address Number that is the high end of an Address Range				Lines 79 - 79
79	bounds	The high end of the numeric range.	M	1	String	Unrestricted
80	AddressNumberRange::CompleteAddressNumberLow	A Complete Address Number that is the low end of an Address Range				Lines 81 - 81
81	bounds	The low end of the numeric range.	M	1	String	Unrestricted
82	AddressNumberSuffix	The non-integer portion of the identifier for the house, building or other feature which follows the address number itself, as defined			<<Simple>>	

		by the official address authority for the given jurisdiction. 1. This element will not be applicable for most addresses. When township-range or other non-numeric geographic index references follow an address number, they are placed in this field. The address number can then be maintained as an integer for sorting and quality control tests. 2. If necessary, the Separator can be used to separate the address number from the prefix or suffix elements in constructing the complete address number.				
83	AddressOfficialStatus	Whether the address is as given by the official addressing authority (official), or an unofficial variant or equivalent of it (alias).			<<Enumeration>>	Lines 84 - 91
84	alternate Authority Name	The alternate name is established by a separate, or the same, naming authority. Such names may apply to any address class, including landmarks. Such names would be established by naming authorities with a geographically larger area of responsibility, containing all or part of a naming authority with a smaller region, such as a state name overlaying a county name or a county name overlaying a city or town name. Examples would be a state highway designation (State Highway 7) overlaid upon locally named roads or a memorial highway overlaid on local road names or state highway names.	M	1	Token	Unrestricted
85	alternate Colloquial Name	Local communities hold on to address names much longer than do regional agencies. A community may use a colloquial address name as much as 30 years after that name has either expired or is no longer salient. This entry provides a conversion to a current name.	M	1	Token	Unrestricted
86	alternate Name	In any of the address classes described in 2.2, the collective name element may have	M	1	Token	Unrestricted

		another acceptable form. Some alternate names may be conditional, on attempt, ie if the alias resolves the address no further alternate names should be considered. Other alternate names are always applied, such as official renamings. All alternate names carry a limit of applicability and a timeframe of applicability. The limit of appicability may be a limit to a single zipcode, a naming authorities boundary, such as city or county limits, or a range of address numbers with such a boundary.				
87	alternate Renamed	Upon official renaming of an address, or renumbering of an address, or a series of addresses, the prior, older address will occur in address lists for a period of time and a conversion to current names or current addresses will need to be provided. Such an entity may match a single address or a range of addresses.	M	1	Token	Unrestricted
88	posted Address	Address is posted, but not recognized by addressing authority (e.g. vanity address on a building).	M	1	Token	Unrestricted
89	unoffical Alternate Name	In data processing, entry errors occur. Such errors if frequently encountered may be corrected by a direct match of the error and a substitution to a current name.	M	1	Token	Unrestricted
90	unofficial Agencys Name	For data processing efficiency, entities often create alternate names for internal use. When such alternate names are exposed to other entities they need to be resolved to a current name.	M	1	Token	Unrestricted
91	verified Invalid	Address is verified as being invalid, but keeps appearing in address lists. Different from Unoffical Altername Names in that these are known not to exist;Address has been issued and is in use.	M	1	Token	Unrestricted
92	AddressRangeType	The type of address range represented by the data. Address ranges are ambiguous, in			<<Simple>>	

		that a set of 2 site numbers and a street name can represent either a building, a block face range, a block range, or an entire street range. 1. The terms "actual" or "theoretical" indicate whether the range is based on existing (in-use) addresses or the potential address range (based on a grid or other numbering system) for the given range. 2. Further discussion of ranges is found under Address Range				
93	AddressScheme	A system for assigning addresses ina given area. An addressing scheme is known by its Address Scheme Name (required), It is defined by its Address Scheme Origin (optional),Address Scheme Axes (optional), and Address Scheme Extent (optional). It is further described in itsAddress Scheme Description (required)				Lines 94 - 98
94	addressSchemeAxes	Address axes define the boundaries between adjoining zones in address schema. Those zones may be quadrants (northwest, northeast, southeast, southwest) or other geographic divisions. Lowest address numbers occur nearest an axis.	M	1	AddressSchemeAxes	Unrestricted
95	addressSchemeDescription	A description of an Address Scheme that includes business rules about parity, naming conventions, and other matters concerning the assignment and maintenance of an addressing scheme.	M	1	AddressSchemeDescription	Unrestricted
96	addressSchemeExtent	Boundary of the area over which an address schema operates.	M	1	AddressSchemeExtent	Unrestricted
97	addressSchemeName	Name of the address scheme that operates over a specified area, i.e.: mountain addresses, plains addresses.	M	1	AddressSchemeName	Unrestricted
98	addressSchemeOrigin	Boundary of the area over which an address schema operates.	M	1	AddressSchemeOrigin	Unrestricted
99	AddressSchemeAxes	Address axes define the boundaries between adjoining zones in address schema. Those zones may be quadrants			<<Simple>>	

		(northwest, northeast, southeast, southwest) or other geographic divisions. Lowest address numbers occur nearest an axis.				
100	AddressSchemeDescription	A description of an Address Scheme that includes business rules about parity, naming conventions, and other matters concerning the assignment and maintenance of an addressing scheme. This element may refer to an address ordinance, Standard Operating Procedures manual or other external document wherein the rules for addresses in a given scheme are written.			<<Simple>>	
101	AddressSchemeExtent	Boundary of the area over which an address schema operates.			<<Simple>>	
102	AddressSchemeName	Name of the address scheme that operates over a specified area, i.e.: mountain addresses, plains addresses.			<<Simple>>	
103	AddressSchemeOrigin	Location where the address axes meet.			<<Simple>>	
104	AddressStartDate	The earliest date on which the address is known to exist.			<<Simple>>	
105	AddressXCoordinate	The X coordinate of address location. This might contain information formatted as decimal or as Lat/Long in degrees minutes seconds. In other words do not assume this is numeric. Look to the metadata for the coordinate style and projective parameters used.			<<Simple>>	
106	AddressYCoordinate	The Y coordinate of address location. This might contain information formatted as decimal or as Lat/Long in degrees minutes seconds. In other words do not assume this is numeric. Look to the metadata for the coordinate style and projective parameters used.			<<Simple>>	
107	AddressZValue	Ordinal or ratio ("true") measurement of the height of each level of a building. Ordinal measurements give relative vertical positions: the lowest level of a building is 1, the one above that 2, etc. Ratio			<<Simple>>	

		measurements are elevations given in terms of a a spatial referencing system. Either method should be described in file-level metadata per FGDC's Content Standard for Geospatial Metadata.				
108	Building	The type of structure (when several structures are found at the same address), e.g., Apartment, Tower, Block				Lines 109 - 109
109	buildingType	The type of structure (when several structures are found at the same address), e.g., Apartment, Tower, Block	O	1	BuildingType	Unrestricted
110	BuildingId	The letters, numbers, words or combination thereof used to distinguish one structure from another when several occur at the same address. Used with Building Type to designate one of several structures at a given site. Fits within the USPS defnition of a "secondary address designator" and the general EPA definition of "secondary address identifier"			<<Simple>>	
111	BuildingType	This is a modifier to the BuildingId element and this cannot exist without it. The type of structure (when several structures are found at the same address), e.g., Apartment, Tower, Block. Used with Building Identifier to designate one of several structures at a given site. Fits within the general USPS definition of a "secondary address designator" and EPA definitions of "secondary address identifier"			<<Simple>>	
112	CommunityAddress	Puerto Rican urbanization addresses where the urbanization name is preceded by a number, and no street name is included. In Puerto Rico, an urbanization denotes an area, sector, or residential development within a geographic area.				Lines 113 - 122
113	action	An action command for incremental datasets. Add indicates that the information is new. DELETE indicates that the	M	1	Action	Unrestricted

		information is to be removed.				
114	addressAttributes	Supporting information for the address.	M	1	AddressAttributes	Unrestricted
115	communityPlaceName	A named area, sector, or development that is not an incorporated municipality or other governmental unit, such as a neighborhood or subdivision in a city, or a rural settlement in unincorporated area. Often called "urbanizacion" or "barrio" in Puerto Rican addressing usage.	M	1	CommunityPlaceName	Unrestricted
116	completeAddressNumber	{ Address Number Prefix } + { Separator Element } + { Address Number *} + { Separator Element } + {Address Number Suffix }	M	1	CompleteAddressNumber	Unrestricted
117	completeOccupancyIdentifier	{ Building Element } + { Floor Element } + { Unit Element } + { Private Mail Box }	M	1	CompleteOccupancyIdentifier	Unrestricted
118	nationName		M	1	NationName	Unrestricted
119	placeName	{ Municipal Jurisdiction *} or { Community Place Name *} or { USPS Place Name *} or { County Name *}	M	1	PlaceName	Unrestricted
120	stateName	The fifty states, District of Columbia, and U.S. territories and outlying possessions, represented by their two-letter FIPS abbreviation.	M	1	StateName	Unrestricted
121	zipCode	A five-digit code that identifies a specific geographic [postal] delivery area. ZIP Codes can represent an area within a state, an area that crosses state boundaries (unusual condition) or a single building or company that has a very high mail volume. “ZIP” is an acronym for Zone Improvement Plan.	M	1	ZipCode	Unrestricted
122	zipPlus4	A four-digit extension of the five-digit Zip Code that identifies a portion of a carrier route for USPS mail delivery.	M	1	ZipPlus4	Unrestricted
123	CommunityPlaceName	A named area, sector, or development that is not an incorporated municipality or other governmental unit, such as a neighborhood in a city, or a rural settlement in unincorporated area. Often called "urbanization" in Puerto Rican addressing			<<Simple>>	

		usage. 1. "Urbanizacion", commonly used in urban areas of Puerto Rico, is an important part of the address. Street names and address ranges are often repeated in a city, especially where a city has annexed older towns; they are distinguished by their urbanizacion or community name. 2. Certain other words can be used in place of "urbanizacion": extenciones, mansiones, reparto, villa, parque, jardine, altura, alturas, colinas, estancias, extension, quintas, sector, terraza, villa, villas. 3. For more information on Puerto Rican addressing conventions, see USPS Publication 28 Section 29, and USPS "Addressing Standards for Puerto Rico and the Virgin Islands".				
124	CompleteFeatureAddress	This element is defined solely for use with the General Address class, which is constructed to accommodate and mix addresses of all types (e.g., a general postal mailing list or contact list). Place Name, State Name, Zip Code, and Zip Plus 4, which appear in all address classes, are kept separate from the rest of the address. No longer a parsed datatype. Content still represents it as such.			<<Simple>>	
125	CompleteFeatureName	All of any address, excluding the Place Name, State Name, Zip Code, and Zip Plus 4				Lines 126 - 128
126	completeAddressNumber	{ Address Number Prefix } + { Separator Element } + { Address Number *} + { Separator Element } + {Address Number Suffix }	M	1	CompleteAddressNumber	Unrestricted
127	completeOccupancyIdentifier	{ Building Element } + { Floor Element } + { Unit Element } + { Private Mail Box }	M	1	CompleteOccupancyIdentifier	Unrestricted
128	completeStreetName	{ Street Name Pre Modifier } + { Street Name Pre Directional } + { Street Name Pre Type } + { Street Name *} + { Street Name Post Type } + { Street Name Post Directional	M	1	CompleteStreetName	Unrestricted

		} + { Street Name Post Modifier } Official name of a street as assigned by a local governing authority, or an alternate (alias) name that is used and recognized.				
129	CompleteOccupancyIdentifier	{ Building Element } + { Floor Element } + { Unit Element } + { Private Mail Box }				Lines 130 - 133
130	building	The building name	M	1	Building	Unrestricted
131	floor	The numbers, letters, words, or combination thereof distinguishing one floor from another within a building.	M	1	Floor	Unrestricted
132	privateMailbox	The numbers, letters, words, or combination thereof distinguishing one mailbox from another within a given address.	M	1	PrivateMailBox	Unrestricted
133	unit	The numbers, letters, words, or combination thereof distinguishing one occupancy from another within a given address.	M	1	Unit	Unrestricted
134	CountyName	The primary administrative subdivision of a state in the United States.			<<Simple>>	
135	FeatureType	The type of feature identified by the address Initial list of feature types: Block, block face, intersection, parcel, building, entrance, unit. The list might be expanded indefinitely to include infrastructure and other features.			<<Simple>>	
136	Floor	The numbers, letters, words or combination thereof distinguishing one floor from another within a structure.				Lines 137 - 137
137	floorType	The word describing the horizontal division of a building where an address is located.	O	1	FloorType	Unrestricted
138	FloorId	The number, letter, or word or combination of numbers and letters distinguishing one floor from another within a structure. Used with Floor Type to designate which floor of a given structure contains the address. If only a Floor name appears (such as Mezzanine) it should be parsed as a Floor Identifier rather than as a Floor Type. Fits within the general USPS definition of a "sescondary address designator" and the EPA definitions of "secondary address identifier."			<<Simple>>	

139	FloorType	The word describing the horizontal division of a building where an address is located. Used with Floor Identifier to designate which floor of a given structure contains the address. May preceed or follow the floor identifier. Fits within the USPS definition of a "secondary address designator" and the general EPA definition of "secondary address identifier"			<<Simple>>	
140	FourNumberAddressRange	Although they do not necessarily refer to one specific site, block addresses are important for municipal operations (such as snow plow dispatch), emergency dispatch, and geocoding. A block address range may be expressed by four numbers, representing the low and high end of the numeric range for each side of a block.				Lines 141 - 152
141	action	An action command for incremental datasets. Add indicates that the information is new. DELETE indicates that the information is to be removed.	M	1	Action	Unrestricted
142	addressAttributes	Supporting information for the address.	M	1	AddressAttributes	Unrestricted
143	completeAddressNumberLeftHigh	The left high element of a Four Number Address Range	M	1	FourNumberAddressRange::CompleteAddressNumberLeftHigh	Unrestricted
144	completeAddressNumberLeftLow	The left low element of a Four Number Address Range	M	1	FourNumberAddressRange::CompleteAddressNumberLeftLow	Unrestricted
145	completeAddressNumberRightHigh	The right high element of a Four Number Address Range	M	1	FourNumberAddressRange::CompleteAddressNumberRightHigh	Unrestricted
146	completeAddressNumberRightLow	The right low element of a Four Number Address Range	M	1	FourNumberAddressRange::CompleteAddressNumberRightLow	Unrestricted
147	completeStreetName	{ Street Name Pre Modifier } + { Street Name Pre Directional } + { Street Name Pre Type } + { Street Name *} + { Street Name Post Type } + { Street Name Post Directional } + { Street Name Post Modifier } Official name of a street as assigned by a local governing authority, or an alternate (alias) name that is used and recognized.	M	1	CompleteStreetName	Unrestricted
148	nationName		M	1	NationName	Unrestricted

149	placeName	{ Municipal Jurisdiction *} or { Community Place Name *} or { USPS Place Name *} or { County Name *}	M	1	PlaceName	Unrestricted
150	stateName	The fifty states, District of Columbia, and U.S. territories and outlying possessions, represented by their two-letter FIPS abbreviation.	M	1	StateName	Unrestricted
151	zipCode	A five-digit code that identifies a specific geographic [postal] delivery area. ZIP Codes can represent an area within a state, an area that crosses state boundaries (unusual condition) or a single building or company that has a very high mail volume. “ZIP” is an acronym for Zone Improvement Plan.	M	1	ZipCode	Unrestricted
152	zipPlus4	A four-digit extension of the five-digit Zip Code that identifies a portion of a carrier route for USPS mail delivery.	M	1	ZipPlus4	Unrestricted
153	FourNumberAddressRange::CompleteAddressNumberLeftHigh	The left high element of a Four Number Address Range				Lines 154 - 155
154	bounds	The high end of the numeric range.	M	1	String	Unrestricted
155	side	The side of the block for the numeric range.	M	1	String	Unrestricted
156	FourNumberAddressRange::CompleteAddressNumberLeftLow	The left low element of a Four Number Address Range				Lines 157 - 158
157	bounds	The low end of the numeric range.	M	1	String	Unrestricted
158	side	The side of the block for the numeric range.	M	1	String	Unrestricted
159	FourNumberAddressRange::CompleteAddressNumberRightHigh	The right high element of a Four Number Address Range				Lines 160 - 161
160	bounds	The high end of the numeric range.	M	1	String	Unrestricted
161	side	The side of the block for the numeric range.	M	1	String	Unrestricted
162	FourNumberAddressRange::CompleteAddressNumberRightLow	The right low element of a Four Number Address Range				Lines 163 - 164
163	bounds	The low end of the numeric range.	M	1	String	Unrestricted
164	side	The side of the block for the numeric range.	M	1	String	right, left
165	GeneralAddress	The general address handles all of the address classes, for files in which the various classes are mixed together. The				Lines 166 - 170

		feature address may have any syntax, but city, state, and ZIP are separated from the rest of the address.				
166	action	An action command for incremental datasets. Add indicates that the information is new. DELETE indicates that the information is to be removed.	M	1	Action	Unrestricted
167	addressAttributes	Supporting information for the address.	M	1	AddressAttributes	Unrestricted
168	completeFeatureAddress	This element is defined solely for use with the General Address class, which is constructed to accommodate and mix addresses of all types (e.g., a general postal mailing list or contact list). Place Name, State Name, Zip Code, and Zip Plus 4, which appear in all address classes, are kept separate from the rest of the address. No longer a parsed datatype. Content still represents it as such.	M	1	CompleteFeatureAddress	Unrestricted
169	nationName		M	1	NationName	Unrestricted
170	placeStateZip	The unparsed accumulation of Postal City, State, and ZIPCode elements.	M	1	PlaceStateZip	Unrestricted
171	IntersectionAddress	An address that refers to the insection of two thoroughfares. Intersection addresses are useful for recording events occurring in the street, such as accidents, infrastructure locations, etc.				Lines 172 - 180
172	action	An action command for incremental datasets. Add indicates that the information is new. DELETE indicates that the information is to be removed.	M	1	Action	Unrestricted
173	addressAttributes	Supporting information for the address.	M	1	AddressAttributes	Unrestricted
174	completeStreetName	{ Street Name Pre Modifier } + { Street Name Pre Directional } + { Street Name Pre Type } + { Street Name *} + { Street Name Post Type } + { Street Name Post Directional } + { Street Name Post Modifier } Official name of a street as assigned by a local governing authority, or an alternate (alias) name that is used and recognized.	M	1	CompleteStreetName	Unrestricted

175	nationName		M	1	NationName	Unrestricted
176	placeName	{ Municipal Jurisdiction *} or { Community Place Name *} or { USPS Place Name *} or { County Name *}	M	1	PlaceName	Unrestricted
177	separator	A symbol or word required as a separator between components of a complex element or class. The separator is required for address number ranges and for intersection addresses, and it is occasionally needed in constructing complete street numbers.	M	1	Separator	Unrestricted
178	stateName	The fifty states, District of Columbia, and U.S. territories and outlying possessions, represented by their two-letter FIPS abbreviation.	M	1	StateName	Unrestricted
179	zipCode	A five-digit code that identifies a specific geographic [postal] delivery area. ZIP Codes can represent an area within a state, an area that crosses state boundaries (unusual condition) or a single building or company that has a very high mail volume. “ZIP” is an acronym for Zone Improvement Plan.	M	1	ZipCode	Unrestricted
180	zipPlus4	A four-digit extension of the five-digit Zip Code that identifies a portion of a carrier route for USPS mail delivery.	M	1	ZipPlus4	Unrestricted
181	LandmarkCommunity_group	A Communtiy Address name			<<DataType>>	Lines 182 - 182
182	landmarkName	The name by which a prominent feature is publicly known. Landmarks usually have a street address. A landmark name does not imply official historic landmark status, but simply a commonly used name that substitutes for an address number and street name in identifying the location of a specific building or feature. Generally the use of a landmark's street address is preferable because it is unambiguous. All landmark names should be cross-referenced to a street address or other coordinate location.	M	1	LandmarkName	Unrestricted

183	LandmarkName	The name by which a prominent feature is publicly known. Landmarks usually have a street address. A landmark name does not imply official historic landmark status, but simply a commonly used name that substitutes for an address number and street name in identifying the location of a specific building or feature. Generally the use of a landmark's street address is preferable because it is unambiguous. All landmark names should be cross-referenced to a street address or other coordinate location.				Lines 184 - 185
184	type	The name of the landmark type	M	1	String	Unrestricted
185	type	The name of the landmark type	M	1	String	Unrestricted
186	LandmarkName	The name by which a prominent feature is publicly known. Landmarks usually have a street address. A landmark name does not imply official historic landmark status, but simply a commonly used name that substitutes for an address number and street name in identifying the location of a specific building or feature. Generally the use of a landmark's street address is preferable because it is unambiguous. All landmark names should be cross-referenced to a street address or other coordinate location.			<<Simple>>	Lines 187 - 188
187	type	The name of the landmark type	M	1	String	Unrestricted
188	type	The name of the landmark type	M	1	String	Unrestricted
189	LandmarkNameInner	The more specific element of a multipart landmark name.				Lines 190 - 190
190	type	The type of the Landmark name (single, multi, community)	M	1	String	Unrestricted
191	LandmarkSiteAddress	Landmark addresses specify a location by reference to a named landmark. A landmark is named point or area that is prominent enough in the local landscape as to be publicly known.				Lines 192 - 202

192	action	An action command for incremental datasets. Add indicates that the information is new. DELETE indicates that the information is to be removed.	M	1	Action	Unrestricted
193	addressAttributes	Supporting information for the address.	M	1	AddressAttributes	Unrestricted
194	completeAddressNumber	{ Address Number Prefix } + { Separator Element } + { Address Number *} + { Separator Element } + {Address Number Suffix }	M	1	CompleteAddressNumber	Unrestricted
195	completeOccupancyIdentifier	{ Building Element } + { Floor Element } + { Unit Element } + { Private Mail Box }	M	1	CompleteOccupancyIdentifier	Unrestricted
196	completeStreetName	{ Street Name Pre Modifier } + { Street Name Pre Directional } + { Street Name Pre Type } + { Street Name *} + { Street Name Post Type } + { Street Name Post Directional } + { Street Name Post Modifier } Official name of a street as assigned by a local governing authority, or an alternate (alias) name that is used and recognized.	M	1	CompleteStreetName	Unrestricted
197	landmarkCommunity_group	A Community Address name	M	1	LandmarkCommunity_group	Unrestricted
198	nationName		M	1	NationName	Unrestricted
199	placeName	{ Municipal Jurisdiction *} or { Community Place Name *} or { USPS Place Name *} or { County Name *}	M	1	PlaceName	Unrestricted
200	stateName	The fifty states, District of Columbia, and U.S. territories and outlying possessions, represented by their two-letter FIPS abbreviation.	M	1	StateName	Unrestricted
201	zipCode	A five-digit code that identifies a specific geographic [postal] delivery area. ZIP Codes can represent an area within a state, an area that crosses state boundaries (unusual condition) or a single building or company that has a very high mail volume. “ZIP” is an acronym for Zone Improvement Plan.	M	1	ZipCode	Unrestricted
202	zipPlus4	A four-digit extension of the five-digit Zip Code that identifies a portion of a carrier route for USPS mail delivery.	M	1	ZipPlus4	Unrestricted

203	Location	A location given by X-Y coordinates, longitude and latitude, US National Grid,, or a Z value				Lines 204 - 207
204	longLat	A location given by a longitude and latitude	M	1	LocationLongLat	Unrestricted
205	uSNGCoordinate	A location given by US National Grid coordinates	M	*	LocationUSNG	Unrestricted
206	xYCoordinate	A location given by X and Y coordinates in some spatial reference system (e.g., State Plane or Universal Transverse Mercator (UTM))	M	1	LocationXY	Unrestricted
207	zValue	The location in vertical elevation.	M	1	AddressZValue	Unrestricted
208	LocationDescription	A text description providing more detail on how to identify or find the addressed feature.			<<Simple>>	
209	LocationLongLat	A location defined by a longitude and latitude				Lines 210 - 211
210	latitude	The latitude poriton of a longitude and latitude location.	M	1	AddressLatitude	Unrestricted
211	longitude	The longitude poriton of a longitude and latitude location.	M	1	AddressLongitude	Unrestricted
212	LocationUSNG	The USNG or US National Grid is an alphanumeric reference system that overlays the Universal Transverse Mercator (UTM) numerical coordinate system. A USNG coordinate consists of three parts, the: 1. Grid Zone Designation (GZD) for worldwide unique geoaddresses (two digits plus one letter, developed from the UTM system). 2. 100,000-meter Square Identification for regional areas (two letters). 3. Grid Coordinates for local areas (always an even number of digits between 2 and 10 depending upon precision necesary to uniquely identify the location). Look to www.fgdc.gov/standards/status/usng.html for a normative definition.			<<Simple>>	
213	LocationXY	A location defined as a coordinate pair in some spatial reference system, like StatePlane, or Universal Transerse Mercator (UTM).				Lines 214 - 215

214	x	The X coordinate in a coordinate pair.	M	1	AddressXCoordinate	Unrestricted
215	y	The y coordiante in a coordinate pair.	M	1	AddressYCoordinate	Unrestricted
216	MultiLinestring_WKT	MultiLinestringWKT as defined in "OpenGIS Simple Features Specification for SQL Revision 1.0" published 13 March, 1998. A MultiLinestring is defined in section 2.1.8 and its Well Known Text Representation is documented in setion 3.2.5.2.			<<Simple>>	
217	MultiPolygon_WKT	MultiPolygon WKT as defined in "OpenGIS Simple Features Specification for SQL Revision 1.0" published 13 March, 1998. A MultiPolygon is defined in section 2.1.12 and its Well Known Text Representation is documented in setion 3.2.5.2.			<<Simple>>	
218	MultiSiteLandmarkAddress	The outer and the inner landmark classes must be expressed explicitly as landmark names. The inner name is more specific and the Outer name is more general. In the case of Truth Hall Room 306 Howard University". Howard University would be an outer LandmarkName, and Truth hall would be the inner LandmarkName. The inner LandmarkName may conflict with more global landmark names if not distinguished by a more general LandmarkName.				Lines 219 - 226
219	action	An action command for incremental datasets. Add indicates that the information is new. DELETE indicates that the information is to be removed.	M	1	Action	Unrestricted
220	addressAttributes	Supporting information for the address.	M	1	AddressAttributes	Unrestricted
221	completeOccupancyIdentifier	{ Building Element } + { Floor Element } + { Unit Element } + { Private Mail Box }	M	1	CompleteOccupancyIdentifier	Unrestricted
222	nationName		M	1	NationName	Unrestricted
223	placeName	{ Municipal Jurisdiction *} or { Community Place Name *} or { USPS Place Name *} or { County Name *}	M	1	PlaceName	Unrestricted
224	stateName	The fifty states, District of Columbia, and U.S. territories and outlying possessions, represented by their two-letter FIPS	M	1	StateName	Unrestricted

		abbreviation.				
225	zipCode	A five-digit code that identifies a specific geographic [postal] delivery area. ZIP Codes can represent an area within a state, an area that crosses state boundaries (unusual condition) or a single building or company that has a very high mail volume. “ZIP” is an acronym for Zone Improvement Plan.	M	1	ZipCode	Unrestricted
226	zipPlus4	A four-digit extension of the five-digit Zip Code that identifies a portion of a carrier route for USPS mail delivery.	M	1	ZipPlus4	Unrestricted
227	MunicipalJurisdiction	The name of the municipality (city, township, or othe non-county local government) in which the address is physically located. In many places this will be different than the city name used by the U.S. Postal Service. Required by most local governments for tax and services determinations. This will be null for addresses in unincorporated portions of counties.			<<Simple>>	
228	NationName	The name of the nation in which the address is located. Although the scope of this standard is restricted US addresses, this item is included for two reasons: to facilitate reconciliation with address standards of other nations, and to accommodate files which mix addresses from the US and other nations. USPS Publication28 lists country names and their international postal codes.			<<Simple>>	
229	PlaceName	{ Municipal Jurisdiction *} or { Community Place Name *} or { USPS Place Name *} or { County Name *}				Lines 230 - 233
230	communityPlaceName	A named area, sector, or development that is not an incorporated municipality or other governmental unit, such as a neighborhood or subdivision in a city, or a rural settlement in unincorporated area. Often called "urbanizacion" or "barrio" in Puerto Rican addressing usage.	M	1	CommunityPlaceName	Unrestricted

231	countyName	The name of the county, which is the primary political and administrative subdivision of a state in the United States.	M	1	CountyName	Unrestricted
232	municipalJurisdiction	The name of the incorporated municipality (city, township, or other local government, excluding counties) in which the address is physically located. In many places this will be different than the city name used by the U.S. Postal Service.	M	1	MunicipalJurisdiction	Unrestricted
233	uSPSPlaceName	The name given by the U.S. Postal Service to the post office from which mail is delivered to the address. In many places this will be different from the name of the municipality in which the address is physically located. The name given by the U.S. Postal Service to the post office from which mail is delivered to the address. In many places this will be different from the name of the incorporated municipality in which the address is physically located.	M	1	USPSPlaceName	Unrestricted
234	PlaceStateZip	The unparsed accumulation of Postal City, State, and ZIPCode elements.			<<Simple>>	
235	Point_WKT	Point WKT as defined in "OpenGIS Simple Features Specification for SQL Revision 1.0" published 13 March, 1998. A Point is defined in section 2.1.3 and its Well Known Text Representation is documented in setion 3.2.5.2.			<<Simple>>	
236	PrivateMailBox	A mailbox rented from a private Commercial Mail Receiving Agency (CMRA). USPS Pub 28 Section 284: Normally Private Mail Box identifiers, like mailstop codes and other internal mail distribution codes, pertain to the recipient and are not part of the address. "Exception: When the CMRA mailing address contains a secondary address element (e.g. rural route box number, suite, # or other term), the CMRA customer must use Private Mail Box (PMB) when utilizing a three line address format" (see examples			<<Simple>>	

		above).				
237	Separator	A symbol or word required as a separator between components of a complex element or class. The separator is required for address number ranges and for intersection addresses, and it is occasionally needed in constructing complete street numbers. 1. The default separator, an empty space, is implicit and is not shown in the syntaxes of complex elements and classes. 2. An explicit separator is required for address ranges and intersection addresses. 3. Within a given dataset, one value should be used consistently within a given complex element. 4. For complete street numbers, the separator is rarely needed and its use should be minimized. As an alternative, the separator symbol usually can be included with the address number prefix or suffix. 5. The separator is not needed in creating fractions (1/2, etc.) for address number suffixes. 6. Some address parsing softaware permits the use of ampersands to signify intersection addresses. Be wary, though--in many programming languages, ampersands are reserved for other uses, which could complicate data exchange.			<<Simple>>	
238	SingleSiteLandmarkAddress	A Landmark Address that refers to a single landmark.				Lines 239 - 247
239	action	An action command for incremental datasets. Add indicates that the information is new. DELETE indicates that the information is to be removed.	M	1	Action	Unrestricted
240	addressAttributes	Supporting information for the address.	M	1	AddressAttributes	Unrestricted
241	completeOccupancyIdentifier	{ Building Element } + { Floor Element } + { Unit Element } + { Private Mail Box }	M	1	CompleteOccupancyIdentifier	Unrestricted
242	landmarkName	The name by which a prominent feature is publicly known. Landmarks usually have a street address. A landmark name does not	M	1	LandmarkName	Unrestricted

		imply official historic landmark status, but simply a commonly used name that substitutes for an address number and street name in identifying the location of a specific building or feature. Generally the use of a landmark's street address is preferable because it is unambiguous. All landmark names should be cross-referenced to a street address or other coordinate location.				
243	nationName		M	1	NationName	Unrestricted
244	placeName	{ Municipal Jurisdiction *} or { Community Place Name *} or { USPS Place Name *} or { County Name *}	M	1	PlaceName	Unrestricted
245	stateName	The fifty states, District of Columbia, and U.S. territories and outlying possessions, represented by their two-letter FIPS abbreviation.	M	1	StateName	Unrestricted
246	zipCode	A five-digit code that identifies a specific geographic [postal] delivery area. ZIP Codes can represent an area within a state, an area that crosses state boundaries (unusual condition) or a single building or company that has a very high mail volume. “ZIP” is an acronym for Zone Improvement Plan.	M	1	ZipCode	Unrestricted
247	zipPlus4	A four-digit extension of the five-digit Zip Code that identifies a portion of a carrier route for USPS mail delivery.	M	1	ZipPlus4	Unrestricted
248	SiteAddress	The Address Class associated with singlar locations referenced off of a linear feature, having numeric identifiers.				Lines 249 - 258
249	action	An action command for incremental datasets. Add indicates that the information is new. DELETE indicates that the information is to be removed.	M	1	Action	Unrestricted
250	addressAttributes	Supporting information for the address.	M	1	AddressAttributes	Unrestricted
251	completeAddressNumber	{ Address Number Prefix } + { Separator Element } + { Address Number *} + { Separator Element } + {Address Number	M	1	CompleteAddressNumber	Unrestricted

		Suffix }				
252	completeOccupancyIdentifier	{ Building Element } + { Floor Element } + { Unit Element } + { Private Mail Box }	M	1	CompleteOccupancyIdentifier	Unrestricted
253	completeStreetName	{ Street Name Pre Modifier } + { Street Name Pre Directional } + { Street Name Pre Type } + { Street Name *} + { Street Name Post Type } + { Street Name Post Directional } + { Street Name Post Modifier } Official name of a street as assigned by a local governing authority, or an alternate (alias) name that is used and recognized.	M	1	CompleteStreetName	Unrestricted
254	nationName		M	1	NationName	Unrestricted
255	placeName	{ Municipal Jurisdiction *} or { Community Place Name *} or { USPS Place Name *} or { County Name *}	M	1	PlaceName	Unrestricted
256	stateName	The fifty states, District of Columbia, and U.S. territories and outlying possessions, represented by their two-letter FIPS abbreviation.	M	1	StateName	Unrestricted
257	zipCode	A five-digit code that identifies a specific geographic [postal] delivery area. ZIP Codes can represent an area within a state, an area that crosses state boundaries (unusual condition) or a single building or company that has a very high mail volume. “ZIP” is an acronym for Zone Improvement Plan.	M	1	ZipCode	Unrestricted
258	zipPlus4	A four-digit extension of the five-digit Zip Code that identifies a portion of a carrier route for USPS mail delivery.	M	1	ZipPlus4	Unrestricted
259	StateName	The primary legal subdivision of the United States, represented by its two letter USPS abbreviation. This is the only element stored in abbreviated form.			<<Simple>>	
260	StreetName	Official name of a street as assigned by a local governing authority, or an alternate (alias) name that is used and recognized, excluding street types, directionals, and modifiers. 1. Each jurisdiction should establish its own list of street names and			<<Simple>>	

		use it as a domain of values to validate addresses. Alternate and Official names are distinguished by the address attribute "Alias Status Attribute" 2. Local addressing authorities are urged to follow consistent internal street naming practices, and to resolve internal street name inconsistencies, especially for numbered streets ("Twentieth" or "20th" ?), internal capitalization ("McIntyre" or "Mcintyre" ?), hyphens, and apostrophes. 3. If alternate or abbreviated versions of street names are needed for a specialized purpose such as mailing or emergency dispatch, they can be created in views or export routines.				
261	StreetNameDirectional	A word preceding or following the street name that indicates the directional taken by the thoroughfare from an arbitrary starting point, or the sector where it is located. 1. Standard USPS English abbreviations are E, W, S, N, NE, SE, SW, NW 2. Standard USPS Spanish abbreviations are E, O, S, N, NE, SE, SO, NO 3. USPS Publication 28 recomends abbreviating post-directionals. The Address Standards Working Group differs, and recommends storing post - directionals fully spelled out, exactly as given by the local naming authority, to avoid confusion. For example: "NW Jones St": Is it Northwest Jones Street? Ned Walter Jones Street? North Walter Jones Street? The abbreviations create ambiguity. If stored unabbreviated, directionals can be exported as standard abbreviations as needed for mailing and other purposes.			<<Enumeration>>	Lines 262 - 277
262	EAST	often abbreviatable as E	M	1	Token	Unrestricted
263	ESTE	Spanish word often abbreviateable as E	M	1	Token	Unrestricted
264	NORESTE	Spanish word often abbreviateable as NE	M	1	Token	Unrestricted
265	NOROESTE	Spanish word often abbreviateable as NW	M	1	Token	Unrestricted

266	NORTE	Spanish word often abbreviateable as N	M	1	Token	Unrestricted
267	NORTH	often abbreviatable as N	M	1	Token	Unrestricted
268	NORTHEAST	often abbreviatable as NE	M	1	Token	Unrestricted
269	NORTHWEST	often abbreviateable as NW	M	1	Token	Unrestricted
270	OESTE	Spanish word often abbreviateable as W	M	1	Token	Unrestricted
271	SOUTH	often abbreviatable as S	M	1	Token	Unrestricted
272	SOUTHEAST	often abbreviatable as SE	M	1	Token	Unrestricted
273	SOUTHWEST	often abbreviateable as SW	M	1	Token	Unrestricted
274	SUR	Spanish word often abbreviateable as S	M	1	Token	Unrestricted
275	SURESTE	Spanish word often abbreviateable as SE	M	1	Token	Unrestricted
276	SUROESTE	Spanish word often abbreviateable as SW	M	1	Token	Unrestricted
277	WEST	often abbreviatable as W	M	1	Token	Unrestricted
278	StreetNameGroup	A geographic area where the street names conform to a theme. For example, some neighborhoods feature streets named for birds, US presidents or trees. A subset of the complete street name domain applies to this area.			<<Simple>>	
279	StreetNameModifier	A word or phrase that precedes or follows all other elements of the street name and modifies it, but is separated from the street name by a street name pre-directional and/or pre-type. The street name pre-modifier is rarely needed and its use should be minimized. The modif ier can be included in the Street Name element unless it is separated from the street name by a pre-type or a pre-directional.			<<Simple>>	
280	StreetNameType	The element of the complete street name preceding or following the street name element that indicates the type of street. 1. A street may have either a pre-type or a post-type, or neither, but not both. 2. USPS Publication 28 provides the best list of pre-types and post-types, but it is not exhaustive. 2. USPS Publication 28 provides a standard list of street type abbreviations, and recommends their use.			<<Simple>>	

		The Address Standards Working Group differs, and recommends storing pre-types and post -types fully spelled out, exactly as given by the local naming authority, to avoid confusion. If stored unabbreviated, directionals can be exported as standard abbreviations as needed for mailing and other purposes. 3. Pre-types are much less common than post -types in English. They are typically used for numbered highway routes and roads. They are much more common in Spanish and French language street names. 4. Occasionally a street name may have neither a prefix type or a suffix type (e.g., "Broadway.") 5. Names like "County Road 28", where the street type occurs in the middle of the name, should be treated as a street name with no pre-type or post -type.				
281	TwoNumberAddressRange	An thoroughfare address range given by an upper and lower address number.				Lines 282 - 290
282	action	An action command for incremental datasets. Add indicates that the information is new. DELETE indicates that the information is to be removed.	M	1	Action	Unrestricted
283	addressAttributes	Supporting information for the address.	M	1	AddressAttributes	Unrestricted
284	addressNumberRange	{ Complete Address Number (low)*} + { Separator Element *} + { Complete Address Number (high)*} A set of two address numbers, separated by a "Separator", representing the low and high numbers of an address range. An address number range element should be accompanied by an Address Range Type Attribute that describes the type of range presented in this element.	M	1	AddressNumberRange	Unrestricted
285	completeStreetName	{ Street Name Pre Modifier } + { Street Name Pre Directional } + { Street Name Pre Type } + { Street Name *} + { Street Name Post Type } + { Street Name Post Directional	M	1	CompleteStreetName	Unrestricted

		} + { Street Name Post Modifier } Official name of a street as assigned by a local governing authority, or an alternate (alias) name that is used and recognized.				
286	nationName		M	1	NationName	Unrestricted
287	placeName	{ Municipal Jurisdiction *} or { Community Place Name *} or { USPS Place Name *} or { County Name *}	M	1	PlaceName	Unrestricted
288	stateName	The fifty states, District of Columbia, and U.S. territories and outlying possessions, represented by their two-letter FIPS abbreviation.	M	1	StateName	Unrestricted
289	zipCode	A five-digit code that identifies a specific geographic [postal] delivery area. ZIP Codes can represent an area within a state, an area that crosses state boundaries (unusual condition) or a single building or company that has a very high mail volume. “ZIP” is an acronym for Zone Improvement Plan.	M	1	ZipCode	Unrestricted
290	zipPlus4	A four-digit extension of the five-digit Zip Code that identifies a portion of a carrier route for USPS mail delivery.	M	1	ZipPlus4	Unrestricted
291	Unit	The numbers, letters, words, or combination thereof distinguishing one occupancy from another within a given address.				Lines 292 - 292
292	unitType	The word describing the type of occupancy within a building or structure. Used with the Unit Identifier element to designate one of several occupancy units within a building.	O	1	UnitType	Unrestricted
293	UnitId	The numbers, letters, words, or combination thereof distinguishing one occupancy from another within a given address. Used with the Unit Type to designate different occupancies at the same address. Fits within the USPS definition of "secondary address designator" and the general EPA definition of "secondary address identifier."			<<Simple>>	
294	UnitType	The word describing the type of occupancy within a building or structure. Used with the			<<Simple>>	

		Unit Identifier element to designate one of several occupancy units within a building.				
295	UnnumberedThoroughfareAddress	The Address Class associated with singlar locations referenced off of a linear feature, lacking numeric identifiers.				Lines 296 - 305
296	action	An action command for incremental datasets. Add indicates that the information is new. DELETE indicates that the information is to be removed.	M	1	Action	Unrestricted
297	addressAttributes	Supporting information for the address.	M	1	AddressAttributes	Unrestricted
298	completeOccupancyIdentifier	{ Building Element } + { Floor Element } + { Unit Element } + { Private Mail Box }	M	1	CompleteOccupancyIdentifier	Unrestricted
299	completeStreetName	{ Street Name Pre Modifier } + { Street Name Pre Directional } + { Street Name Pre Type } + { Street Name *} + { Street Name Post Type } + { Street Name Post Directional } + { Street Name Post Modifier } Official name of a street as assigned by a local governing authority, or an alternate (alias) name that is used and recognized.	M	1	CompleteStreetName	Unrestricted
300	landmarkName	The name by which a prominent feature is publicly known. Landmarks usually have a street address. A landmark name does not imply official historic landmark status, but simply a commonly used name that substitutes for an address number and street name in identifying the location of a specific building or feature. Generally the use of a landmark's street address is preferable because it is unambiguous. All landmark names should be cross-referenced to a street address or other coordinate location.	M	1	LandmarkName	Unrestricted
301	nationName		M	1	NationName	Unrestricted
302	placeName	{ Municipal Jurisdiction *} or { Community Place Name *} or { USPS Place Name *} or { County Name *}	M	1	PlaceName	Unrestricted
303	stateName	The fifty states, District of Columbia, and U.S. territories and outlying possessions,	M	1	StateName	Unrestricted

		represented by their two-letter FIPS abbreviation.				
304	zipCode	A five-digit code that identifies a specific geographic [postal] delivery area. ZIP Codes can represent an area within a state, an area that crosses state boundaries (unusual condition) or a single building or company that has a very high mail volume. “ZIP” is an acronym for Zone Improvement Plan.	M	1	ZipCode	Unrestricted
305	zipPlus4	A four-digit extension of the five-digit Zip Code that identifies a portion of a carrier route for USPS mail delivery.	M	1	ZipPlus4	Unrestricted
306	USPSBox	A box used for receipt of USPS mail. The box may be located in the post office lobby (e.g PO Box), on the customer's premises or other USPS authorized place (e.g. rural route box).				Lines 307 - 307
307	boxType	A box used for receipt of USPS mail. The box may be located in the post office lobby (e.g PO Box), on the customer's premises or other USPS authorized place (e.g. rural route box).	O	1	USPSBoxType	Unrestricted
308	USPSBoxGroup	A collection of postal boxes served from a single distribution point.				Lines 309 - 309
309	groupType	The allowable USPS Box Group types. See USPS Publication 28.	O	1	USPSBoxGroupType	Unrestricted
310	USPSBoxGroupId	The numbers or letters distinguishing one group of boxes from another within a distribution point. May include hyphen, slash or period.			<<Simple>>	
311	USPSBoxGroupType	A collection of postal boxes served from a single distribution point. This group includes rural routes, highway contract routes, postal service centers, overseas military common mail rooms and military unit numbers.			<<Simple>>	
312	USPSBoxId	The numbers or letters distinguishing one box from another within a post office. May include slash, hyphen or period.			<<Simple>>	
313	USPSBoxType	A box used for receipt of USPS mail. The			<<Simple>>	

		box may be located in the post office lobby (e.g PO Box), on the customer's premises or other USPS authorized place (e.g. rural route box).				
314	USPSGeneralDeliveryAddress	A central point where mail may be picked up by the addressee. Two values are permitted: "General Delivery" (for post offices), and ship's names (for overseas military addresses).				Lines 315 - 322
315	action	An action command for incremental datasets. Add indicates that the information is new. DELETE indicates that the information is to be removed.	M	1	Action	Unrestricted
316	addressAttributes	Supporting information for the address.	M	1	AddressAttributes	Unrestricted
317	nationName		M	1	NationName	Unrestricted
318	placeName	{ Municipal Jurisdiction *} or { Community Place Name *} or { USPS Place Name *} or { County Name *}	M	1	PlaceName	Unrestricted
319	stateName	The fifty states, District of Columbia, and U.S. territories and outlying possessions, represented by their two-letter FIPS abbreviation.	M	1	StateName	Unrestricted
320	uSPSGeneralDeliveryPoint	A central point where mail may be picked up by the addressee. Two values are permitted: "General Delivery" (for post offices), and ship's names (for overseas military addresses).	M	1	USPSGeneralDeliveryPoint	Unrestricted
321	zipCode	A five-digit code that identifies a specific geographic [postal] delivery area. ZIP Codes can represent an area within a state, an area that crosses state boundaries (unusual condition) or a single building or company that has a very high mail volume. “ZIP” is an acronym for Zone Improvement Plan.	M	1	ZipCode	Unrestricted
322	zipPlus4	A four-digit extension of the five-digit Zip Code that identifies a portion of a carrier route for USPS mail delivery.	M	1	ZipPlus4	Unrestricted
323	USPSGeneralDeliveryPoint	A central point where mail may be picked up by the addressee. Two values are permitted:			<<Simple>>	

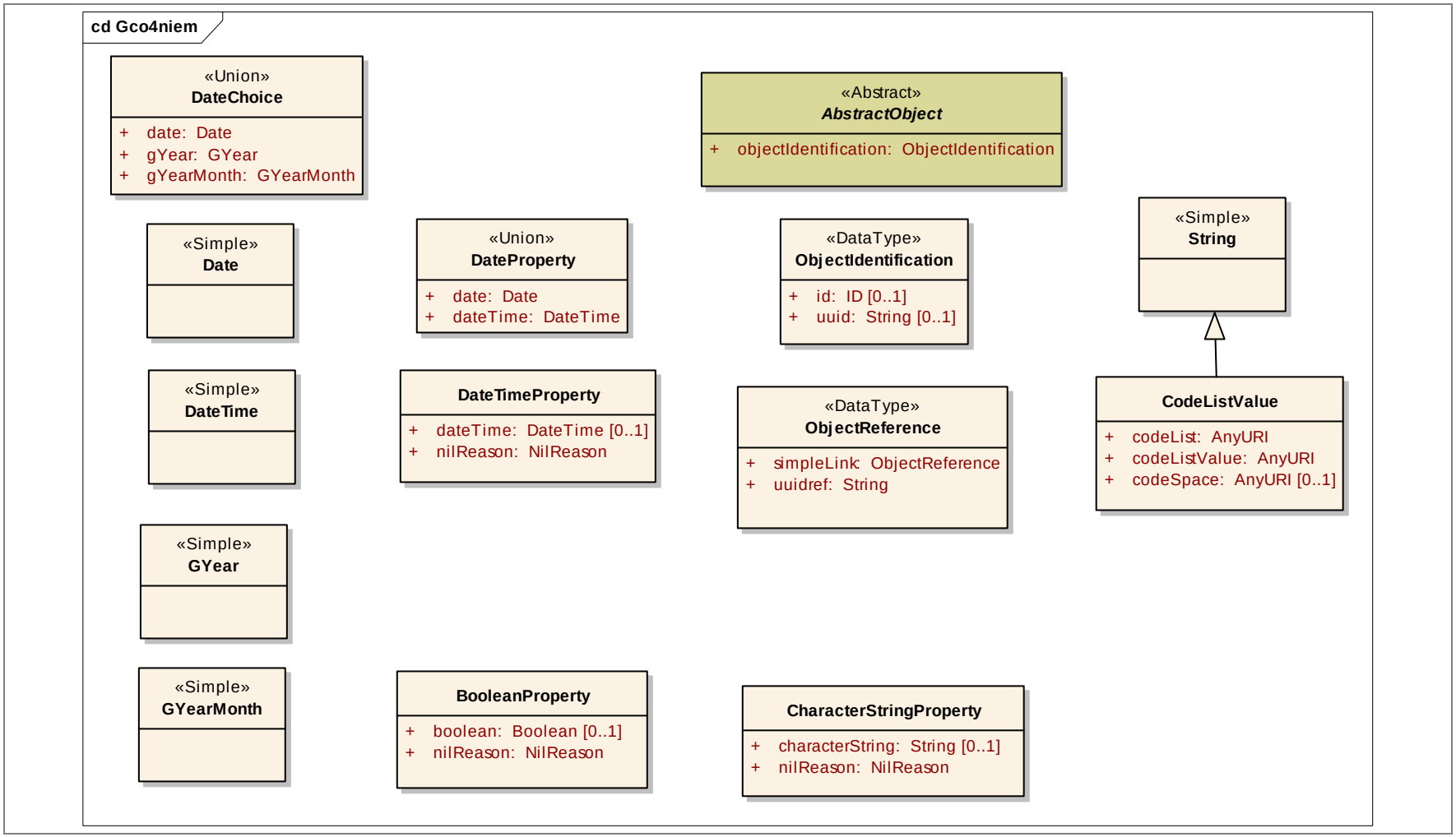
		"General Delivery" (for post offices), and ship's names (for overseas military addresses).				
324	USPSPlaceName	The name given by the U.S. Postal Service to the post office from which mail is delivered to the address. In many places this will be different from the name of the municipality in which the address is physically located. The name given by the U.S. Postal Service to the post office from which mail is delivered to the address. In many places this will be different from the name of the incorporated municipality in which the address is physically located.			<<Simple>>	
325	USPSPostalDeliveryBox	A box used for receipt of USPS mail. The box may be located in the post office lobby (e.g PO Box), on the customer's premises or other USPS authorized place (e.g. rural route box).				Lines 326 - 334
326	action	An action command for incremental datasets. Add indicates that the information is new. DELETE indicates that the information is to be removed.	M	1	Action	Unrestricted
327	addressAttributes	Supporting information for the address.	M	1	AddressAttributes	Unrestricted
328	nationName		M	1	NationName	Unrestricted
329	placeName	{ Municipal Jurisdiction *} or { Community Place Name *} or { USPS Place Name *} or { County Name *}	M	1	PlaceName	Unrestricted
330	privateMailBox	The numbers, letters, words, or combination thereof distinguishing one mailbox from another within a given address.	M	1	PrivateMailBox	Unrestricted
331	stateName	The fifty states, District of Columbia, and U.S. territories and outlying possessions, represented by their two-letter FIPS abbreviation.	M	1	StateName	Unrestricted
332	uSPSBox	A box used for receipt of USPS mail. The box may be located in the post office lobby (e.g PO Box), on the customer's premises or other USPS authorized place (e.g. rural	M	1	USPSBox	Unrestricted

		route box).				
333	zipCode	A five-digit code that identifies a specific geographic [postal] delivery area. ZIP Codes can represent an area within a state, an area that crosses state boundaries (unusual condition) or a single building or company that has a very high mail volume. “ZIP” is an acronym for Zone Improvement Plan.	M	1	ZipCode	Unrestricted
334	zipPlus4	A four-digit extension of the five-digit Zip Code that identifies a portion of a carrier route for USPS mail delivery.	M	1	ZipPlus4	Unrestricted
335	USPSPostalDeliveryRoute	A collection of postal boxes served from a single distribution point.				Lines 336 - 345
336	action	An action command for incremental datasets. Add indicates that the information is new. DELETE indicates that the information is to be removed.	M	1	Action	Unrestricted
337	addressAttributes	Supporting information for the address.	M	1	AddressAttributes	Unrestricted
338	nationName		M	1	NationName	Unrestricted
339	placeName	{ Municipal Jurisdiction *} or { Community Place Name *} or { USPS Place Name *} or { County Name *}	M	1	PlaceName	Unrestricted
340	privateMailBox	The numbers, letters, words, or combination thereof distinguishing one mailbox from another within a given address.	M	1	PrivateMailBox	Unrestricted
341	stateName	The fifty states, District of Columbia, and U.S. territories and outlying possessions, represented by their two-letter FIPS abbreviation.	M	1	StateName	Unrestricted
342	uSPSBox	A box used for receipt of USPS mail. The box may be located in the post office lobby (e.g PO Box), on the customer's premises or other USPS authorized place (e.g. rural route box).	M	1	USPSBox	Unrestricted
343	uSPSBoxGroup	A collection of postal boxes served from a single distribution point.	M	1	USPSBoxGroup	Unrestricted
344	zipCode	A five-digit code that identifies a specific geographic [postal] delivery area. ZIP Codes	M	1	ZipCode	Unrestricted

		can represent an area within a state, an area that crosses state boundaries (unusual condition) or a single building or company that has a very high mail volume. “ZIP” is an acronym for Zone Improvement Plan.				
345	zipPlus4	A four-digit extension of the five-digit Zip Code that identifies a portion of a carrier route for USPS mail delivery.	M	1	ZipPlus4	Unrestricted
346	ZipCode	A five-digit code that identifies a specific pseudo geographic delivery area. ZIP Codes can represent an area within a state, an area that crosses state boundaries (unusual condition) or a single building or company that has a very high mail volume. "ZIP" is an acronym for Zone Improvement Plan. Zero pad from the left to fill the range as in 01776.			<<Simple>>	
347	ZipPlus4	A four-digit extension of the five-digit Zip Code that identifies a portion of a carrier route for USPS mail delivery. Zero pad from the left to fill the range as in 0030.			<<Simple>>	

Observation

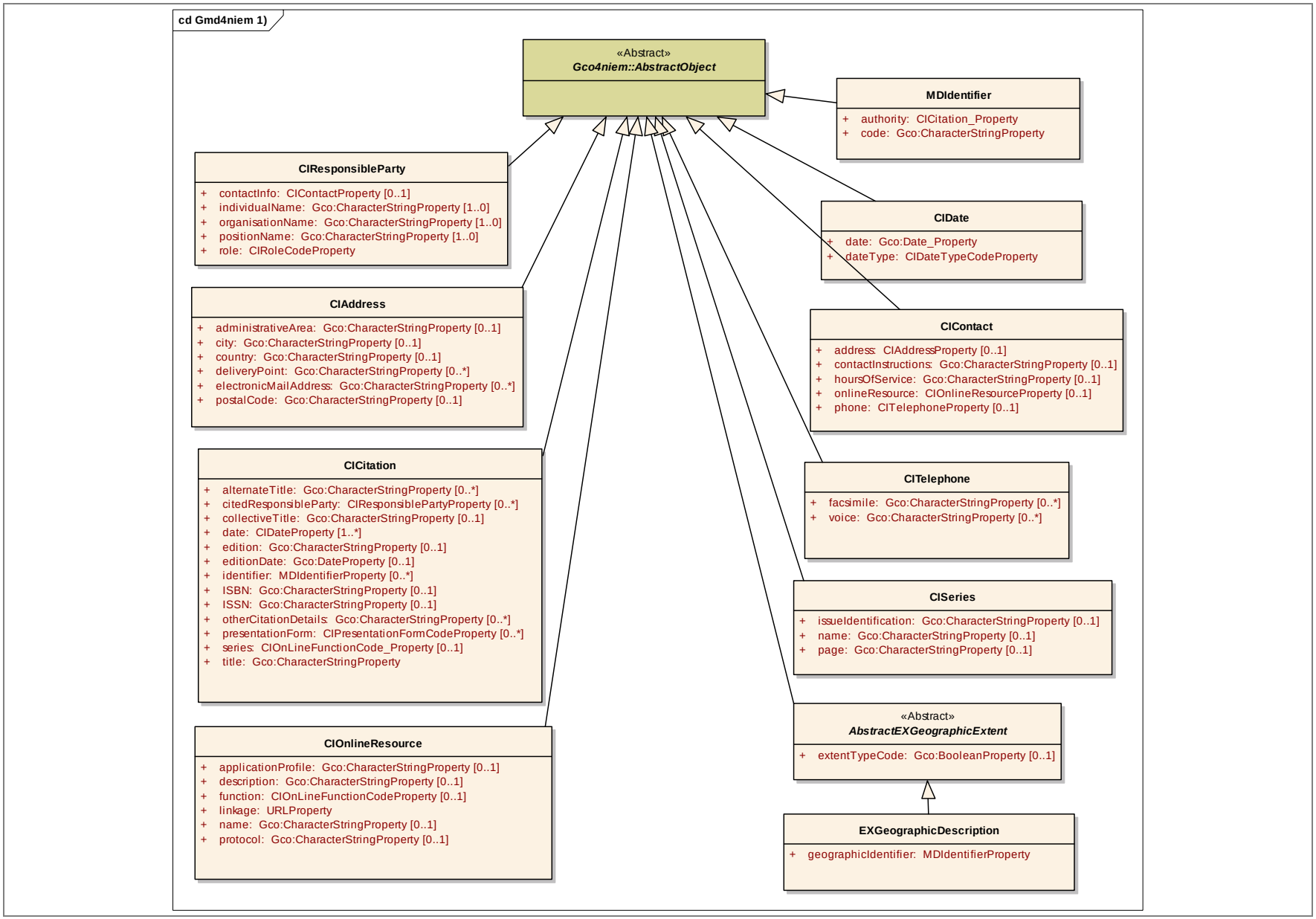
GCO4NIEM



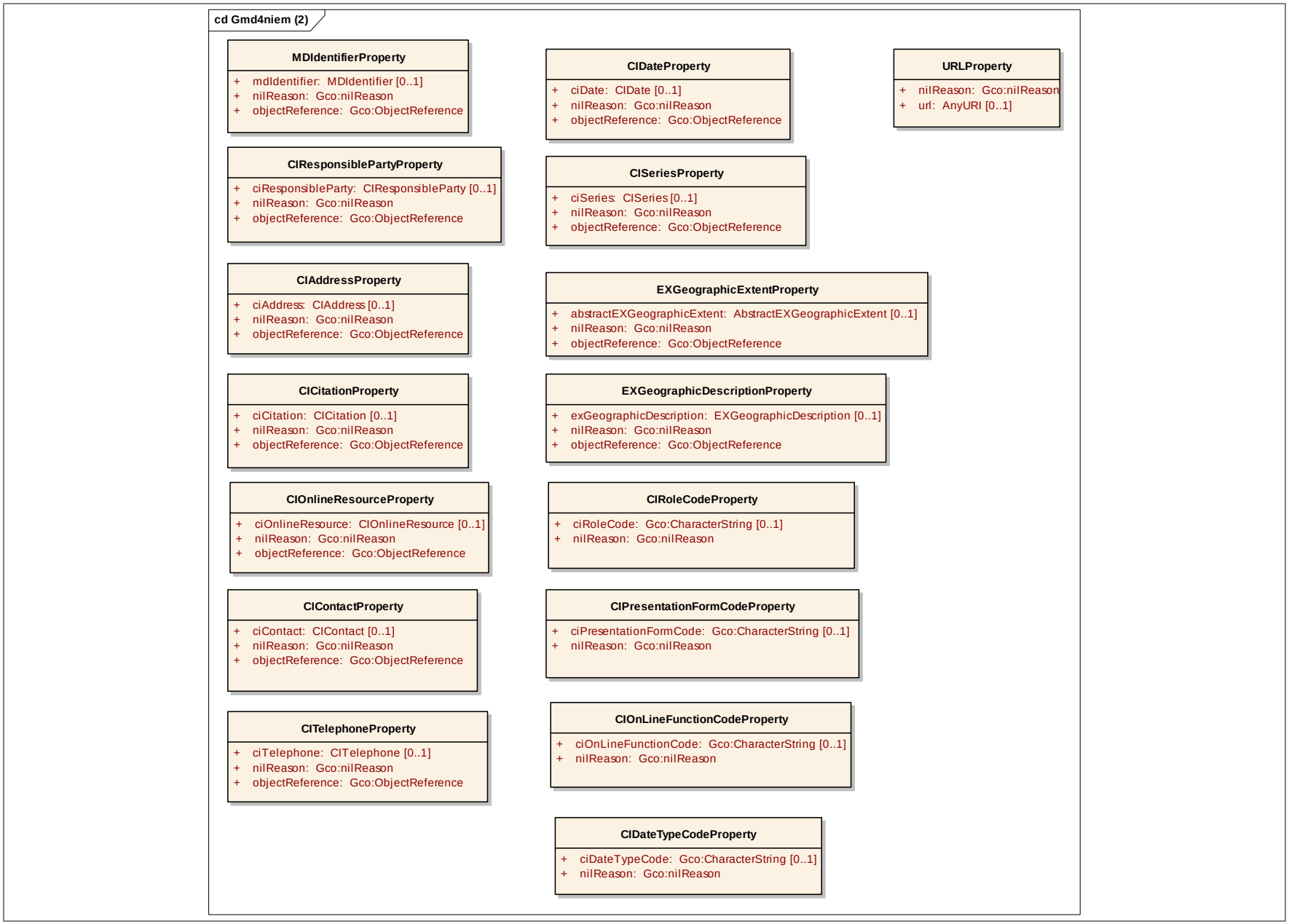
Gco4niem						
Line	**Name/RoleName**	**Definition**	**Obligation / Condition**	**Maximum Occurrence**	**Data Type**	**Domain**
1	AbstractObject	An object definition that must be extended to be instantiated.			<<Abstract>>	Lines 2 - 2
2	objectIdentification	ID for an Object	M	1	ObjectIdentification	Unrestricted
3	BooleanProperty	A optional boolean value with a reason if it is absent.				Lines 4 - 5
4	boolean	Boolean	O	1	Boolean	Unrestricted
5	nilReason	The reason a boolean value is missing	M	1	NilReason	Unrestricted
6	CharacterStringProperty	An optional character string with a reason if it is absent				Lines 7 - 8
7	characterString	String	O	1	String	Unrestricted
8	nilReason	The reason a character string is not present	M	1	NilReason	Unrestricted
9	CodeListValue	used to refer to a specific codeListValue in a register				Lines 10 - 12
10	codeList	Reference to code list from which value is obtained.	M	1	AnyURI	Unrestricted
11	codeListValue	specific codeListValue	M	1	AnyURI	Unrestricted
12	codeSpace	Authority or units for code space	O	1	AnyURI	Unrestricted
13	Date	Date object.			<<Simple>>	
14	DateChoice	Union of and choice among a date, a gYear and a gYearMonth.			<<Union>>	Lines 15 - 17
15	date	Date Object	M	1	Date	Unrestricted
16	gYear	Gregorian year	M	1	GYear	Unrestricted
17	gYearMonth	Gregorian year-month	M	1	GYearMonth	Unrestricted
18	DateProperty	Union of and choice between a date and a datetime			<<Union>>	Lines 19 - 20
19	date	Date object	M	1	Date	Unrestricted
20	dateTime	DateTime object	M	1	DateTime	Unrestricted
21	DateTime	DateTimeObject			<<Simple>>	
22	DateTimeProperty	Optional DateTime with a reason if it is absent.				Lines 23 - 24
23	dateTime	DateTime Object	O	1	DateTime	Unrestricted
24	nilReason	Reason there is no DateTime present.	M	1	NilReason	Unrestricted
25	GYear	Year object			<<Simple>>	
26	GYearMonth	Year and Month object			<<Simple>>	
27	ObjectIdentification	Object identifier			<<DataType>>	Lines 28 - 29
28	id	A GML identifier.	O	1	ID	Unrestricted
29	uuid	A universally unique identifier	O	1	String	Unrestricted
30	ObjectReference	Reference to extrinsic object.			<<DataType>>	Lines 31 - 32
31	simpleLink	Object link	M	1	ObjectReference	Unrestricted

32	uuidref	Universally unique identifier reference	M	1	String	Unrestricted
33	String	String object.			<<Simple>>	

GMD4NIEM (1 of 2)



GMD4NIEM (2 of 2)



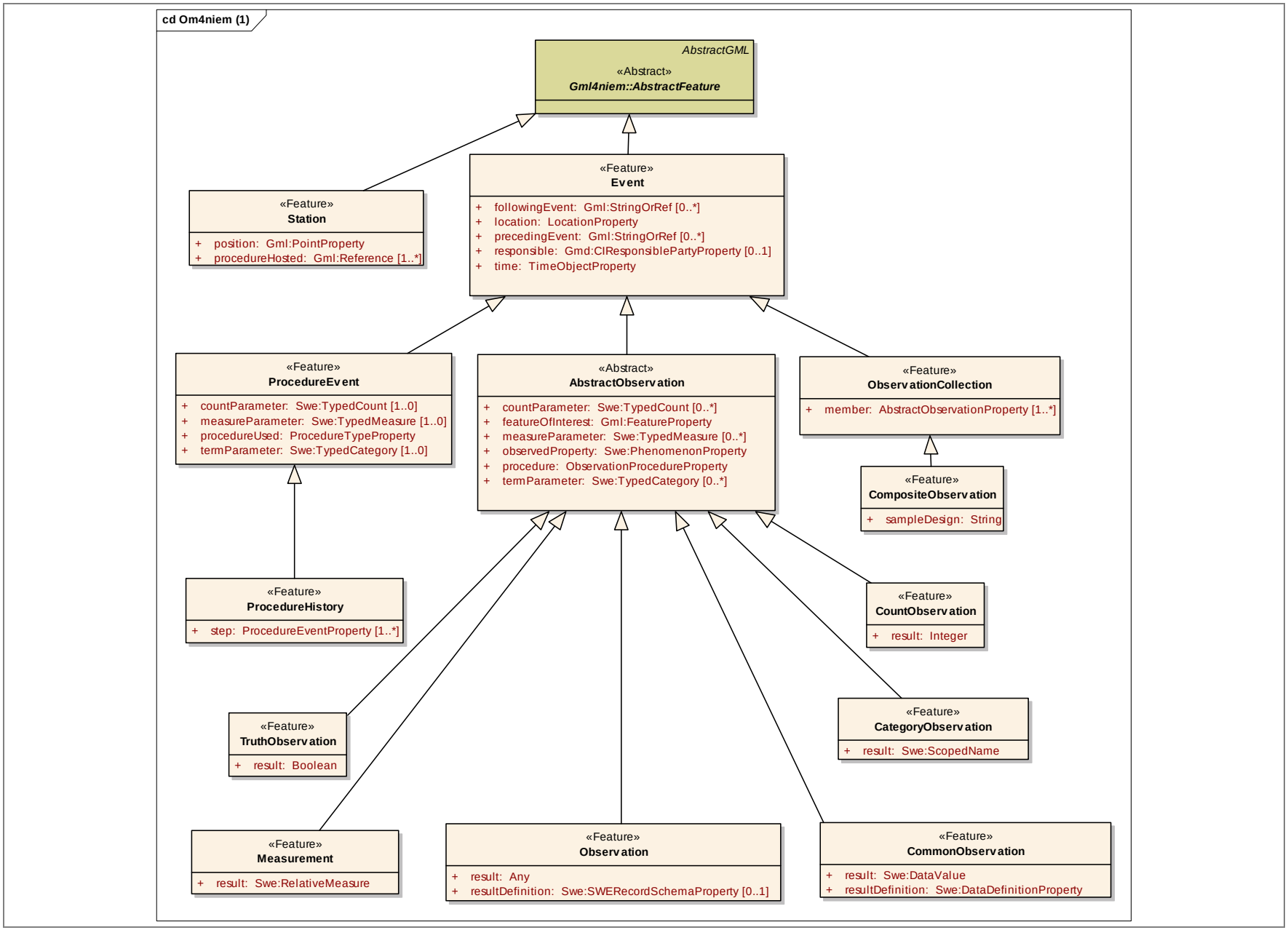
Gmd4niem						
Line	**Name/RoleName**	**Definition**	**Obligation / Condition**	**Maximum Occurrence**	**Data Type**	**Domain**
1	AbstractEXGeographicExtent	Geographic area of the dataset			<<Abstract>>	Lines 2 - 2
2	extentTypeCode		O	1	Gco:BooleanProperty	Unrestricted
3	CIAddress	Location of the responsible individual or organisation				Lines 4 - 9
4	administrativeArea		O	1	Gco:CharacterStringProperty	Unrestricted
5	city		O	1	Gco:CharacterStringProperty	Unrestricted
6	country		O	1	Gco:CharacterStringProperty	Unrestricted
7	deliveryPoint		O	*	Gco:CharacterStringProperty	Unrestricted
8	electronicMailAddress		O	*	Gco:CharacterStringProperty	Unrestricted
9	postalCode		O	1	Gco:CharacterStringProperty	Unrestricted
10	CIAddressProperty					Lines 11 - 13
11	ciAddress		O	1	CIAddress	Unrestricted
12	nilReason		M	1	Gco:nilReason	Unrestricted
13	objectReference		M	1	Gco:ObjectReference	Unrestricted
14	CICitation	Standardized resource reference				Lines 15 - 27
15	alternateTitle		O	*	Gco:CharacterStringProperty	Unrestricted
16	citedResponsibleParty		O	*	CIResponsiblePartyProperty	Unrestricted
17	collectiveTitle		O	1	Gco:CharacterStringProperty	Unrestricted
18	date		M	*	CIDateProperty	Unrestricted
19	edition		O	1	Gco:CharacterStringProperty	Unrestricted
20	editionDate		O	1	Gco:DateProperty	Unrestricted
21	identifier		O	*	MDIdentifierProperty	Unrestricted
22	ISBN		O	1	Gco:CharacterStringProperty	Unrestricted
23	ISSN		O	1	Gco:CharacterStringProperty	Unrestricted
24	otherCitationDetails		O	*	Gco:CharacterStringProperty	Unrestricted
25	presentationForm		O	*	CIPresentationFormCodeProperty	Unrestricted
26	series		O	1	CIOnLineFunctionCode_Property	Unrestricted
27	title		M	1	Gco:CharacterStringProperty	Unrestricted
28	CICitationProperty					Lines 29 - 31
29	ciCitation		O	1	CICitation	Unrestricted
30	nilReason		M	1	Gco:nilReason	Unrestricted

31	objectReference		M	1	Gco:ObjectReference	Unrestricted
32	CIContact	Information required enabling contact with the responsible person and/or organisation				Lines 33 - 37
33	address		O	1	CIAddressProperty	Unrestricted
34	contactInstructions		O	1	Gco:CharacterStringProperty	Unrestricted
35	hoursOfService		O	1	Gco:CharacterStringProperty	Unrestricted
36	onlineResource		O	1	CIOnlineResourceProperty	Unrestricted
37	phone		O	1	CITelephoneProperty	Unrestricted
38	CIContactProperty					Lines 39 - 41
39	ciContact		O	1	CIContact	Unrestricted
40	nilReason		M	1	Gco:nilReason	Unrestricted
41	objectReference		M	1	Gco:ObjectReference	Unrestricted
42	CIDate					Lines 43 - 44
43	date		M	1	Gco:Date_Property	Unrestricted
44	dateType		M	1	CIDateTypeCodeProperty	Unrestricted
45	CIDateProperty					Lines 46 - 48
46	ciDate		O	1	CIDate	Unrestricted
47	nilReason		M	1	Gco:nilReason	Unrestricted
48	objectReference		M	1	Gco:ObjectReference	Unrestricted
49	CIDateTypeCodeProperty					Lines 50 - 51
50	ciDateTypeCode		O	1	Gco:CharacterString	Unrestricted
51	nilReason		M	1	Gco:nilReason	Unrestricted
52	CIOnLineFunctionCodeProperty					Lines 53 - 54
53	ciOnLineFunctionCode		O	1	Gco:CharacterString	Unrestricted
54	nilReason		M	1	Gco:nilReason	Unrestricted
55	CIOnlineResource	Information about online sources from which the dataset, specification, or community profile name and extended metadata elements can be obtained.				Lines 56 - 61
56	applicationProfile		O	1	Gco:CharacterStringProperty	Unrestricted
57	description		O	1	Gco:CharacterStringProperty	Unrestricted
58	function		O	1	CIOnLineFunctionCodeProperty	Unrestricted
59	linkage		M	1	URLProperty	Unrestricted
60	name		O	1	Gco:CharacterStringProperty	Unrestricted
61	protocol		O	1	Gco:CharacterStringProperty	Unrestricted

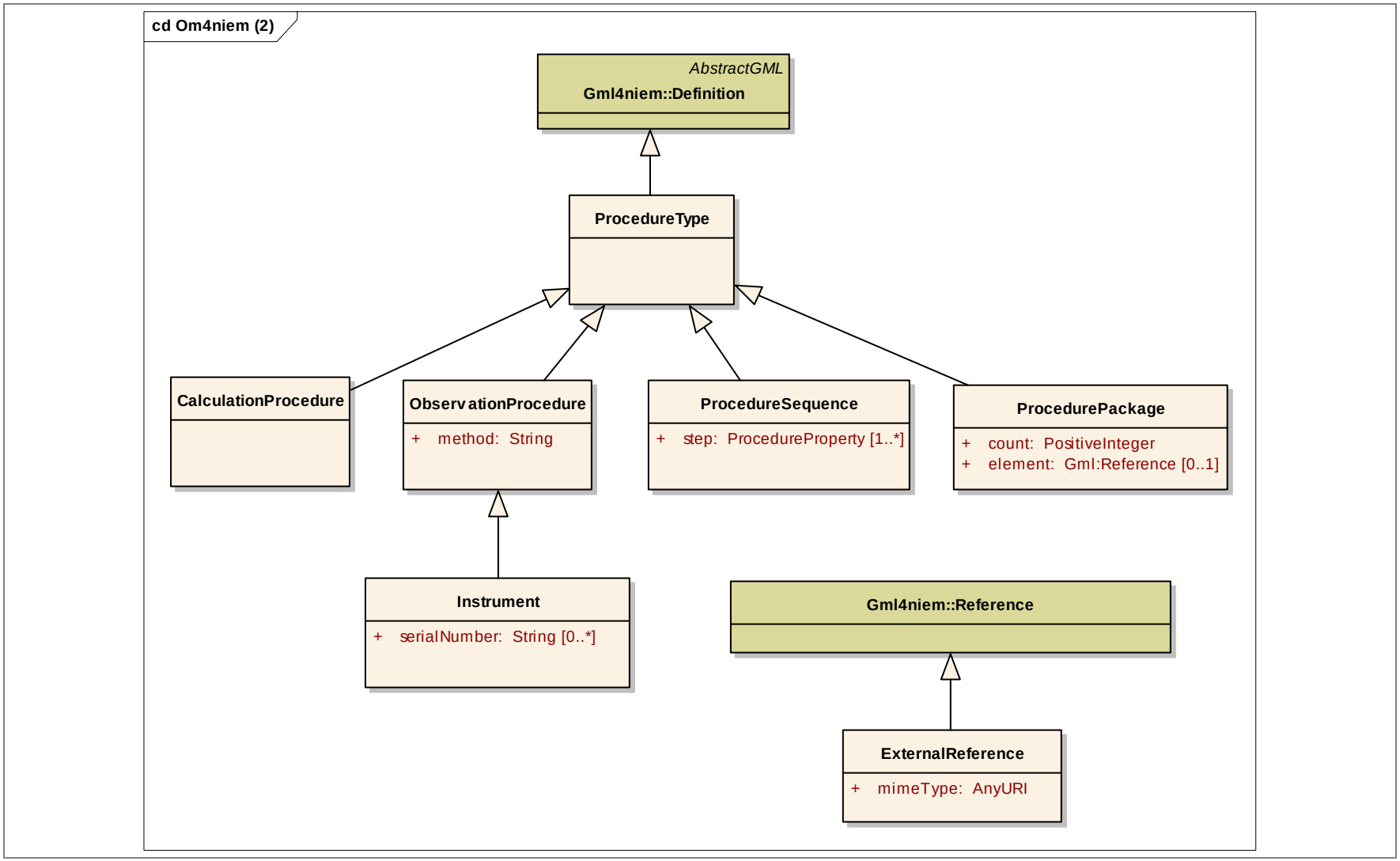
62	CIOnlineResourceProperty					Lines 63 - 65
63	ciOnlineResource		O	1	CIOnlineResource	Unrestricted
64	nilReason		M	1	Gco:nilReason	Unrestricted
65	objectReference		M	1	Gco:ObjectReference	Unrestricted
66	CIPresentationFormCodeProperty					Lines 67 - 68
67	ciPresentationFormCode		O	1	Gco:CharacterString	Unrestricted
68	nilReason		M	1	Gco:nilReason	Unrestricted
69	CIResponsibleParty	Identification of, and means of communication with, person(s) and organisations associated with the dataset				Lines 70 - 74
70	contactInfo		O	1	CIContactProperty	Unrestricted
71	individualName		M	0	Gco:CharacterStringProperty	Unrestricted
72	organisationName		M	0	Gco:CharacterStringProperty	Unrestricted
73	positionName		M	0	Gco:CharacterStringProperty	Unrestricted
74	role		M	1	CIRoleCodeProperty	Unrestricted
75	CIResponsiblePartyProperty					Lines 76 - 78
76	ciResponsibleParty		O	1	CIResponsibleParty	Unrestricted
77	nilReason		M	1	Gco:nilReason	Unrestricted
78	objectReference		M	1	Gco:ObjectReference	Unrestricted
79	CIRoleCodeProperty					Lines 80 - 81
80	ciRoleCode		O	1	Gco:CharacterString	Unrestricted
81	nilReason		M	1	Gco:nilReason	Unrestricted
82	CISeries					Lines 83 - 85
83	issueIdentification		O	1	Gco:CharacterStringProperty	Unrestricted
84	name		O	1	Gco:CharacterStringProperty	Unrestricted
85	page		O	1	Gco:CharacterStringProperty	Unrestricted
86	CISeriesProperty					Lines 87 - 89
87	ciSeries		O	1	CISeries	Unrestricted
88	nilReason		M	1	Gco:nilReason	Unrestricted
89	objectReference		M	1	Gco:ObjectReference	Unrestricted
90	CITelephone	Telephone numbers for contacting the responsible individual or organisation				Lines 91 - 92
91	facsimile		O	*	Gco:CharacterStringProperty	Unrestricted
92	voice		O	*	Gco:CharacterStringProperty	Unrestricted
93	CITelephoneProperty					Lines 94 - 96

94	ciTelephone		O	1	CITelephone	Unrestricted
95	nilReason		M	1	Gco:nilReason	Unrestricted
96	objectReference		M	1	Gco:ObjectReference	Unrestricted
97	EXGeographicDescription					Lines 98 - 98
98	geographicIdentifier		M	1	MDIdentifierProperty	Unrestricted
99	EXGeographicDescriptionProperty					Lines 100 - 102
100	exGeographicDescription		O	1	EXGeographicDescription	Unrestricted
101	nilReason		M	1	Gco:nilReason	Unrestricted
102	objectReference		M	1	Gco:ObjectReference	Unrestricted
103	EXGeographicExtentProperty					Lines 104 - 106
104	abstractEXGeographicExtent		O	1	AbstractEXGeographicExtent	Unrestricted
105	nilReason		M	1	Gco:nilReason	Unrestricted
106	objectReference		M	1	Gco:ObjectReference	Unrestricted
107	MDIdentifier					Lines 108 - 109
108	authority		M	1	CICitation_Property	Unrestricted
109	code		M	1	Gco:CharacterStringProperty	Unrestricted
110	MDIdentifierProperty					Lines 111 - 113
111	mdIdentifier		O	1	MDIdentifier	Unrestricted
112	nilReason		M	1	Gco:nilReason	Unrestricted
113	objectReference		M	1	Gco:ObjectReference	Unrestricted
114	URL				<<Simple>>	
115	URLProperty					Lines 116 - 117
116	nilReason		M	1	Gco:nilReason	Unrestricted
117	url		O	1	AnyURI	Unrestricted

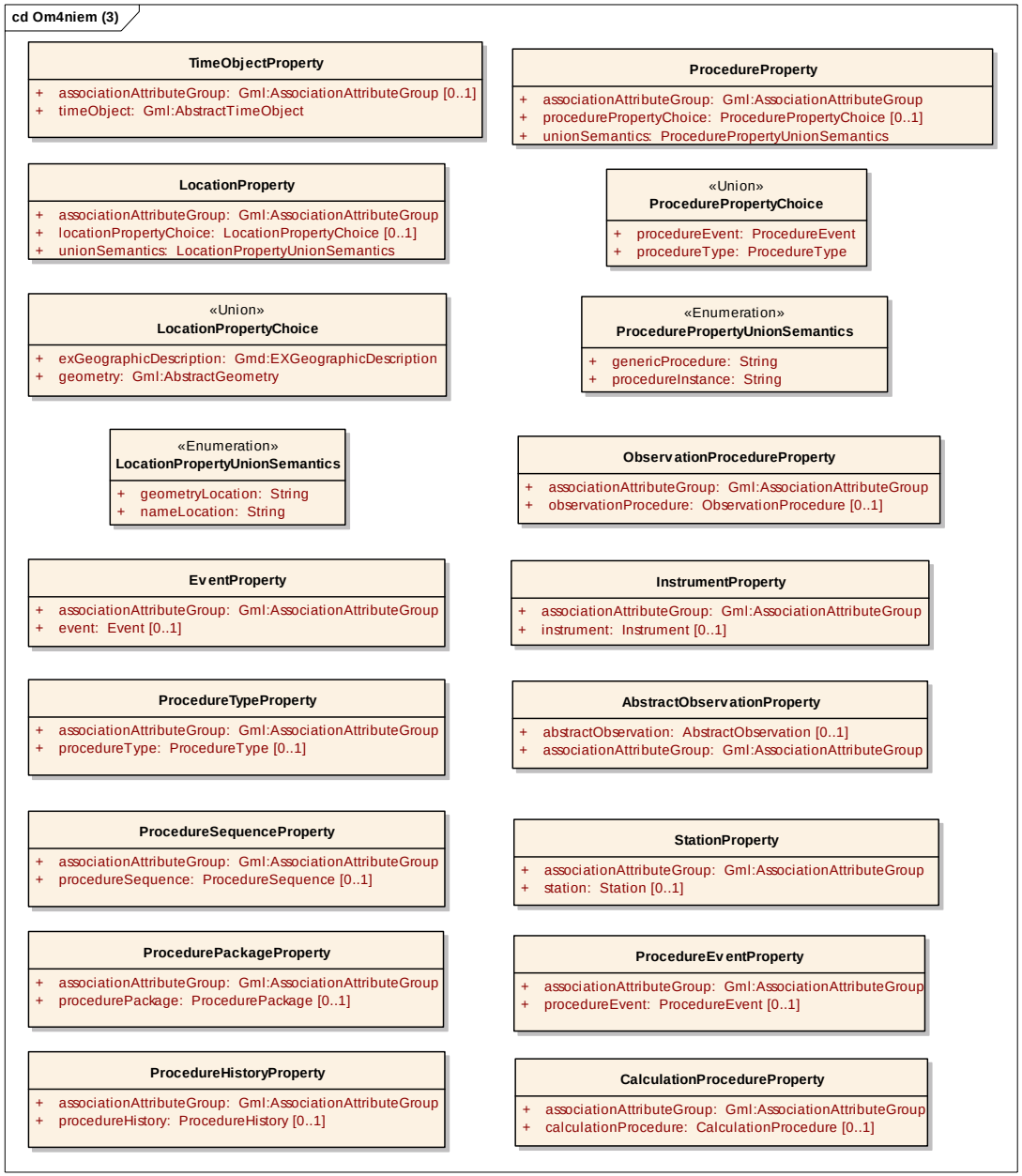
OM4NIEM (1 of 3)



OM4NIEM (2 of 3)



OM4NIEM (3 of 3)



Om4niem						
Line	**Name/RoleName**	**Definition**	**Obligation / Condition**	**Maximum Occurrence**	**Data Type**	**Domain**
1	AbstractObservation	Base type for Observations. Concrete Observation types must extend this type with a "result" of the appropriate type. In the context of an Observation, the interpretation of some of the inherited properties shall be refined as follows: time - the date/Time at which the procedure was executed location - the location of the procedure (sensor, intrument, computational engine) at the time of the observation event For "in situ" procedures the value of the location will usually be the same as the location of the featureOfInterest. For "remote" procedures the location will normally be removed from the location of the featureOfInterest			<<Abstract>>	Lines 2 - 7
2	countParameter	A numeric value, representing a count of the phenomenon identified by the property attribute.	O	*	Swe:TypedCount	Unrestricted
3	featureOfInterest	the Feature regarding which the observations are being made, sometimes called the target or subject of the observation, such as a specimen, station, tract, mountain, pixel, etc. The spatial properties (location) of the feature of interest are typically of most interest for spatial analysis of the observation result. If any of the properties are time dependent, then the values at the Observation/eventTime should appear.	M	1	Gml:FeatureProperty	Unrestricted
4	measureParameter	A numeric value, expressed using the scale indicated by the value of the (mandatory) uom attribute, and representing a description of the phenomenon identified by the property attribute.	O	*	Swe:TypedMeasure	Unrestricted
5	observedProperty	Link to a description of the property or phenomenon whose value is being described or estimated through observation for example "wavelength", "grass-species", "power", "intensity in the waveband x-y", etc. It is this feature-property that provides the (semantic) type of the observation. Note that the description of the phenomenon may be quite specific and constrained. In general the precise details of the constraints describing the observe properties require attention to the procedure used in making the observation: e.g. an optical sensor typically has a wavelength-dependent response. This property may be provided for client convenience, to allow comparison between and	M	1	Swe:PhenomenonProperty	Unrestricted

		aggregation of observations of the same property made using different procedures.				
6	procedure	Description of the procedure used to collect the observation.	M	1	ObservationProcedureProperty	Unrestricted
7	termParameter	A text value, taken from a value space identified by the value of the codeSpace attribute, and representing a description of the phenomenon identified by the property attribute.	O	*	Swe:TypedCategory	Unrestricted
8	AbstractObservationProperty	Contains or references an AbstractObservation				Lines 9 - 10
9	abstractObservation	Contained AbstractObservation	O	1	AbstractObservation	Unrestricted
10	associationAttributeGroup	XLink:href reference to an external AbstractObservation.	M	1	Gml:AssociationAttributeGroup	Unrestricted
11	CalculationProcedure	Use the "description" property to record the details of the calculation			ProcedureType	
12	CalculationProcedureProperty	Contains or references a CalculationProcedure.				Lines 13 - 14
13	associationAttributeGroup	XLink:href reference to an external CalculationProcedure.	M	1	Gml:AssociationAttributeGroup	Unrestricted
14	calculationProcedure	A Contained CalculationProcedure.	O	1	CalculationProcedure	Unrestricted
15	CategoryObservation	Observation, in which the result is a textual value from a controlled vocabulary			<<Feature>>	Lines 16 - 16
16	result	Result of the observation; a textual value from a controlled vocabulary.	M	1	Swe:ScopedName	Unrestricted
17	CommonObservation	Observation event whose "result" property contains a swe:DataValue			<<Feature>>	Lines 18 - 19
18	result	DataValue result of the observation.	M	1	Swe:DataValue	Unrestricted
19	resultDefinition	Contains value record schema, used to parse value, and an indication of the encoding	M	1	Swe:DataDefinitionProperty	Unrestricted
20	CompositeObservation	Specialization of ObservationCollection, in which the members of the collection refer to a consistent target, time etc. Functionally equivalent to ComplexObservation			<<Feature>>	Lines 21 - 21
21	sampleDesign	Description of the sample design for the observation.	M	1	String	Unrestricted
22	CountObservation	Observation, in which the result is an integer representing the count of the observed property			<<Feature>>	Lines 23 - 23
23	result	Count of the observed property.	M	1	Integer	Unrestricted
24	Event	Description of an event, particularly that causes transformation, creation or destruction of a feature. The event may be transport or administrative. Use gml:description to describe the nature of the event or action, or to point to a description of it. Specialised event types may be derived from this type.			<<Feature>>	Lines 25 - 29
25	followingEvent	Description of, or pointer to, following event(s)	O	*	Gml:StringOrRef	Unrestricted

26	location	Location where the event took place	M	1	LocationProperty	Unrestricted
27	precedingEvent	Description of, or pointer to, preceding event(s)	O	*	Gml:StringOrRef	Unrestricted
28	responsible	Person or organisation responsible for the event, if applicable. The nature of the responsibility (i.e. the role of the party with respect to the event) may be indicated using the xlink:arcrole attribute. Examples of roles are operator, sponsor, requestor, provider, processor, etc.	O	1	Gmd:CIResponsiblePartyProperty	Unrestricted
29	time	The Time when the event occurred. This may be given * in absolute terms as a TimeInstant or TimePeriod * in approximate terms or relative to an absolute position using the indeterminatePosition attribute * or using a TimeTopology element (TimeEdge or TimeNode), which provides the option of giving a time relative to other edges or nodes, either directly (gml) or indirectly (xmml) * as a TimeGeometricComplex if it is a recurring or repeating event	M	1	TimeObjectProperty	Unrestricted
30	EventProperty	Contains or references an Event.				Lines 31 - 32
31	associationAttributeGroup	XLink:href referece to an external Event.	M	1	Gml:AssociationAttributeGroup	Unrestricted
32	event	Contained Event.	O	1	Event	Unrestricted
33	ExternalReference	A GML Reference with a MIME type.				Lines 34 - 34
34	mimeType	Multipurpose Internet Mail Extension: reference to a code that specifies the extension type.	M	1	AnyURI	Unrestricted
35	Instrument	Add one or more instrument serial numbers, in order to identify specific instances or stations				Lines 36 - 36
36	serialNumber	Serial Number of an instrument used to make an observation.	O	*	String	Unrestricted
37	InstrumentProperty	Contains or references an Instrument used to make an observation.				Lines 38 - 39
38	associationAttributeGroup	XLink:href reference to an external Instrument.	M	1	Gml:AssociationAttributeGroup	Unrestricted
39	instrument	Contained Instrument.	O	1	Instrument	Unrestricted
40	LocationProperty	Contains or references a LocationChoice.				Lines 41 - 43
41	associationAttributeGroup	XLink:href reference to an external LocationChoice.	M	1	Gml:AssociationAttributeGroup	Unrestricted
42	locationPropertyChoice	A union of and choice between a GeographicDescription and a geometry used to specify a location.	O	1	LocationPropertyChoice	Unrestricted
43	unionSemantics	Semantics of associated LocationPropertyChoice.	M	1	LocationPropertyUnionSemantics	Unrestricted
44	LocationPropertyChoice	A union of and choice between a GeographicDescription and a			<<Union>>	Lines 45 -

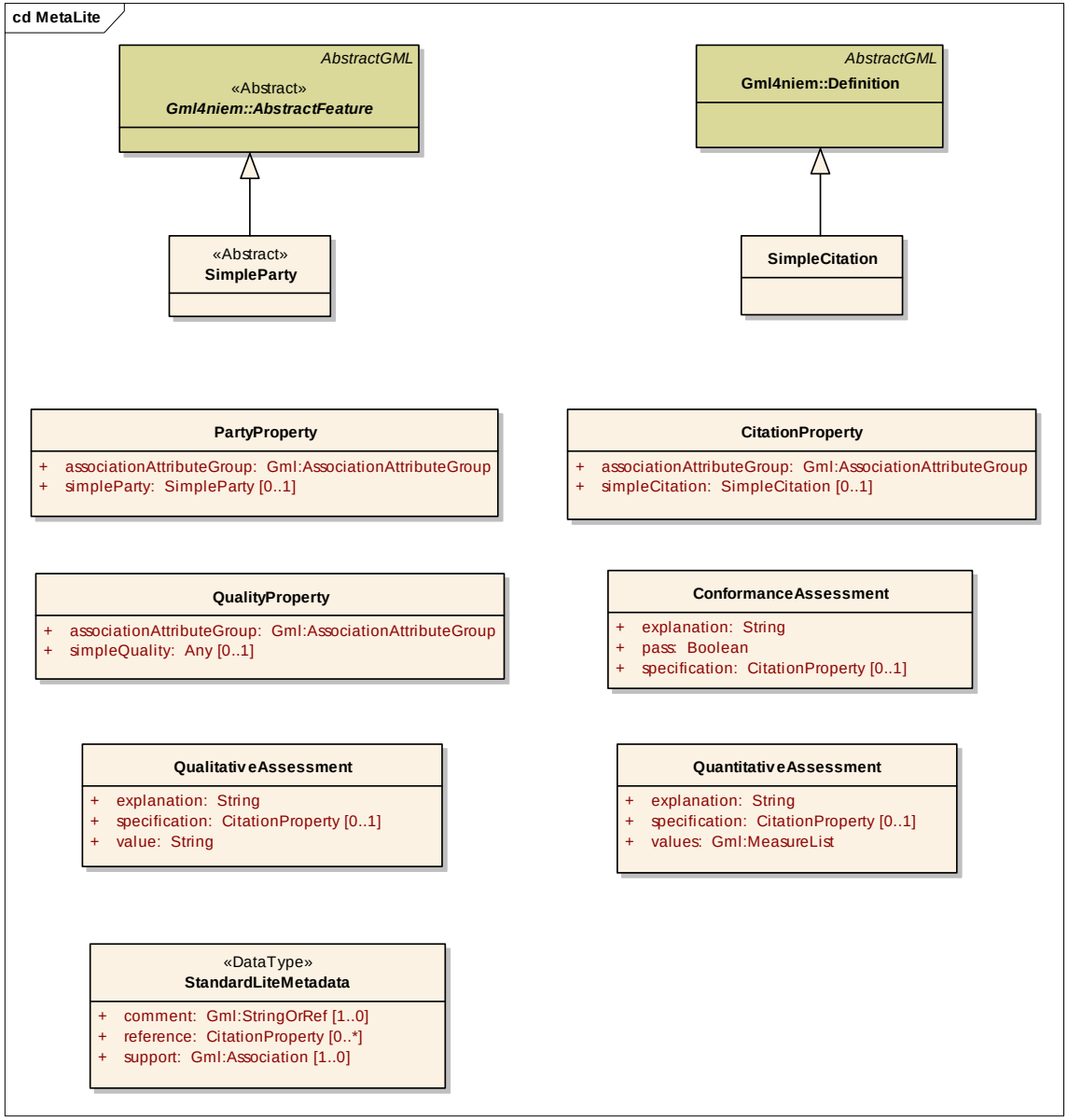
		geometry used to specify a location.				46
45	exGeographicDescription	A name or other description of a geographic location: Geographic referencing by identifier.	M	1	Gmd:EXGeographicDescription	Unrestricted
46	geometry	Any Geometry.	M	1	Gml:AbstractGeometry	Unrestricted
47	LocationPropertyUnionSemantics	Semantics of associated LocationPropertyChoice.			<<Enumeration>>	Lines 48 - 49
48	geometryLocation	Location specified by Geometry: Spatial Referencing by coordinates.	M	1	String	Unrestricted
49	nameLocation	Location specified by Name: Spatial Referencing by identifier.	M	1	String	Unrestricted
50	Measurement	Measurement event. Carries one "result" properties of type "ResultMeasureType".			<<Feature>>	Lines 51 - 51
51	result	RelativeMeasure data captured by the measurement event.	M	1	Swe:RelativeMeasure	Unrestricted
52	Observation	Observation event. carries a generic "result" properties of type "anyType".			<<Feature>>	Lines 53 - 54
53	result	an xsi:type attribute may appear in the instance to indicate the type of the result	M	1	Any	Unrestricted
54	resultDefinition	Allows additional soft-typing information concerning the result structure to be recorded locally. Typically this will be a "schema" for the result-tuple, needed to complete the description of the result structure where its type is Record or NumericRecord.	O	1	Swe:SWERecordSchemaProperty	Unrestricted
55	ObservationCollection	Observation collection, using the "Composite" patter			<<Feature>>	Lines 56 - 56
56	member	An observation in an observation collection.	M	*	AbstractObservationProperty	Unrestricted
57	ObservationProcedure	Use gml:description element to describe the procedure or link to a definitive description.				Lines 58 - 58
58	method	Code for the particular procedure type. Usually an item from a list or registry of procedures, methods, instrument-types, etc.	M	1	String	Unrestricted
59	ObservationProcedureProperty	Contains or references an ObservationProcedure				Lines 60 - 61
60	associationAttributeGroup	An XLink:href reference to an external ObservationProcedure.	M	1	Gml:AssociationAttributeGroup	Unrestricted
61	observationProcedure	A contained ObservationProcedure.	O	1	ObservationProcedure	Unrestricted
62	ProcedureEvent	Description of an event involving a procedure.			<<Feature>>	Lines 63 - 66
63	countParameter	A count parameter used during execution of a ProcedureEvent.	M	0	Swe:TypedCount	Unrestricted
64	measureParameter	A measure parameter used during execution of a ProcedureEvent.	M	0	Swe:TypedMeasure	Unrestricted

65	procedureUsed	The procedure used used during execution of a ProcedureEvent.	M	1	ProcedureTypeProperty	Unrestricted
66	termParameter	A term parameter used during execution of a ProcedureEvent.	M	0	Swe:TypedCategory	Unrestricted
67	ProcedureEventProperty	Contains or references a ProcedureEvent.				Lines 68 - 69
68	associationAttributeGroup	An XLink:href reference to an external ProcedureEvent.	M	1	Gml:AssociationAttributeGroup	Unrestricted
69	procedureEvent	A contained ProcedureEvent.	O	1	ProcedureEvent	Unrestricted
70	ProcedureHistory	An ordered sequence of ProcedureEvents.			<<Feature>>	Lines 71 - 71
71	step	One ProcedureEvent in an ordered sequence.	M	*	ProcedureEventProperty	Unrestricted
72	ProcedureHistoryProperty	Contains or references a ProcedureHistory.				Lines 73 - 74
73	associationAttributeGroup	An XLink:href reference to an external ProcedureHistory.	M	1	Gml:AssociationAttributeGroup	Unrestricted
74	procedureHistory	A contained ProcedureHistory.	O	1	ProcedureHistory	Unrestricted
75	ProcedurePackage	A ProcedurePackage is a single procedure composed of elements each responsible for a different observed property. A ProcedurePackage generates a complex observation representing a compound phenomenon.				Lines 76 - 77
76	count	Number of procedures in the package.	M	1	PositiveInteger	Unrestricted
77	element	Reference to an observed property.	O	1	Gml:Reference	Unrestricted
78	ProcedurePackageProperty	Contains or references a ProcedurePackage.				Lines 79 - 80
79	associationAttributeGroup	XLink:href referece to an external ProcedurePackage.	M	1	Gml:AssociationAttributeGroup	Unrestricted
80	procedurePackage	A contained ProcedurePackage.	O	1	ProcedurePackage	Unrestricted
81	ProcedureProperty	Contains or references a ProcedurePropertyChoice.				Lines 82 - 84
82	associationAttributeGroup	An XLink:href reference to an external ProcedurePropertyChoice.	M	1	Gml:AssociationAttributeGroup	Unrestricted
83	procedurePropertyChoice	A contained ProcedurePropertyChoice.	O	1	ProcedurePropertyChoice	Unrestricted
84	unionSemantics	Semantics of associated ProcedurePropertyChoice.	M	1	ProcedurePropertyUnionSemantics	Unrestricted
85	ProcedurePropertyChoice	A union of and choice between a ProcedureEvent and a ProcedureType.			<<Union>>	Lines 86 - 87
86	procedureEvent	Description of an event involving a procedure.	M	1	ProcedureEvent	Unrestricted
87	procedureType	A description of a procedure.	M	1	ProcedureType	Unrestricted
88	ProcedurePropertyUnionSemantics	Semantics of associated ProcedurePropertyChoice.			<<Enumeration>>	Lines 89 - 90
89	genericProcedure	Procedure specified by description of procedure event	M	1	String	Unrestricted

90	procedureInstance	Procedure is specified by description of procedure.	M	1	String	Unrestricted
91	ProcedureSequence	A ProcedureSequence is a single procedure composed of an ordered set of processingSteps, the value of each being a Procedure. A ProcedureSequence generates a single observation.				Lines 92 - 92
92	step	One processing step (procedure) in a sequence.	M	*	ProcedureProperty	Unrestricted
93	ProcedureSequenceProperty	Contains or references a ProcedureSequence.				Lines 94 - 95
94	associationAttributeGroup	An XLink:href refernce to an external ProcedureSequence.	M	1	Gml:AssociationAttributeGroup	Unrestricted
95	procedureSequence	A contained ProcedureSequence.	O	1	ProcedureSequence	Unrestricted
96	ProcedureType	Use gml:description element to describe the procedure or link to a definitive description.				
97	ProcedureTypeProperty	Contains or references a ProcedureType.				Lines 98 - 99
98	associationAttributeGroup	An XLink:href reference to an external ProcedureType.	M	1	Gml:AssociationAttributeGroup	Unrestricted
99	procedureType	A contained ProcedureType.	O	1	ProcedureType	Unrestricted
100	Station	A "Station" is an identified position (0-D geospatial feature). It may be revisited for various purposes, in particular to retrieve multiple specimens or make repeated or complementary observations. The position property of the station provides the value of the position property of observations an specimens associated with the station. The procedureHosted property allows the user to point to one or more sensors or other procedures that are relevant to this station. By using the Station feature, this position information and any metadata associated with it may be encoded in one place, i.e. normalised, and then re-used _by reference_ on other feature instances associated with it.			<<Feature>>	Lines 101 - 102
101	position	Point location of the station.	M	1	Gml:PointProperty	Unrestricted
102	procedureHosted	One or more sensors or other procedures that are relevant to this station.	M	*	Gml:Reference	Unrestricted
103	StationProperty	Contains or references a Station.				Lines 104 - 105
104	associationAttributeGroup	An XLink:href reference to an external Station.	M	1	Gml:AssociationAttributeGroup	Unrestricted
105	station	A contained Station.	O	1	Station	Unrestricted
106	TimeObjectProperty	Contains or references a TimeObject.				Lines 107 - 108

107	associationAttributeGroup	An XLink:href reference to a TimeObject.	O	1	Gml:AssociationAttributeGroup	Unrestricted
108	timeObject	A contained TimeObject.	M	1	Gml:AbstractTimeObject	Unrestricted
109	TruthObservation	Observation, in which the result is a boolean value representing the truth value (usually existence) of the observed property			<<Feature>>	Lines 110 - 110
110	result	true, 1, false, 0 result of the observation.	M	1	Boolean	Unrestricted

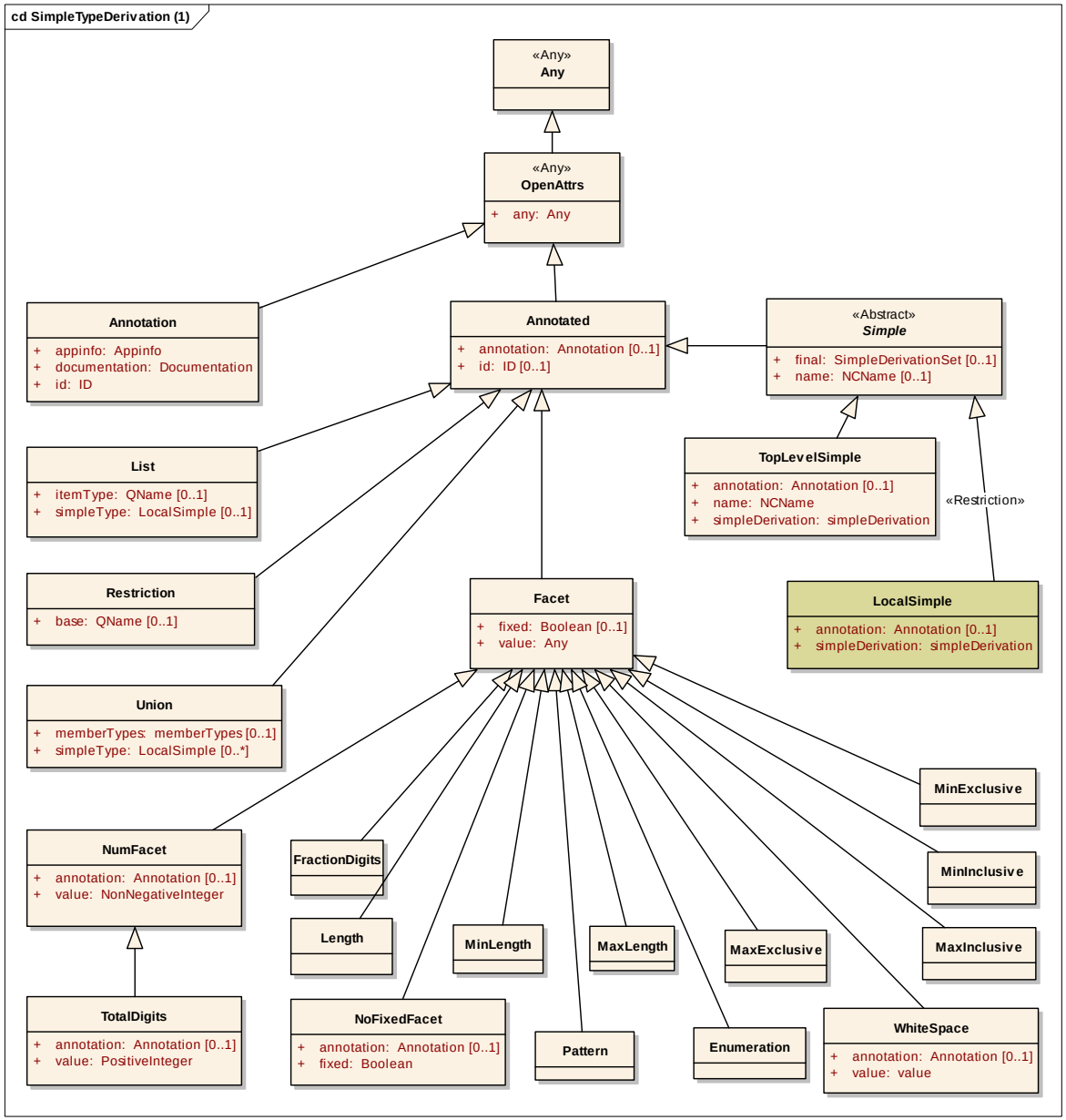
Metalite


cd MetaLite
AbstractGML
«Abstract»
Gml4niem::AbstractFeature
AbstractGML
Gml4niem::Definition
«Abstract»
SimpleParty
SimpleCitation
PartyProperty
+ associationAttributeGroup: Gml:AssociationAttributeGroup
+ simpleParty: SimpleParty [0..1]
CitationProperty
+ associationAttributeGroup: Gml:AssociationAttributeGroup
+ simpleCitation: SimpleCitation [0..1]
QualityProperty
+ associationAttributeGroup: Gml:AssociationAttributeGroup
+ simpleQuality: Any [0..1]
ConformanceAssessment
+ explanation: String
+ pass: Boolean
+ specification: CitationProperty [0..1]
QualitativeAssessment
+ explanation: String
+ specification: CitationProperty [0..1]
+ value: String
QuantitativeAssessment
+ explanation: String
+ specification: CitationProperty [0..1]
+ values: Gml:MeasureList
«DataType»
StandardLiteMetadata
+ comment: Gml:StringOrRef [1..0]
+ reference: CitationProperty [0..*]
+ support: Gml:Association [1..0]

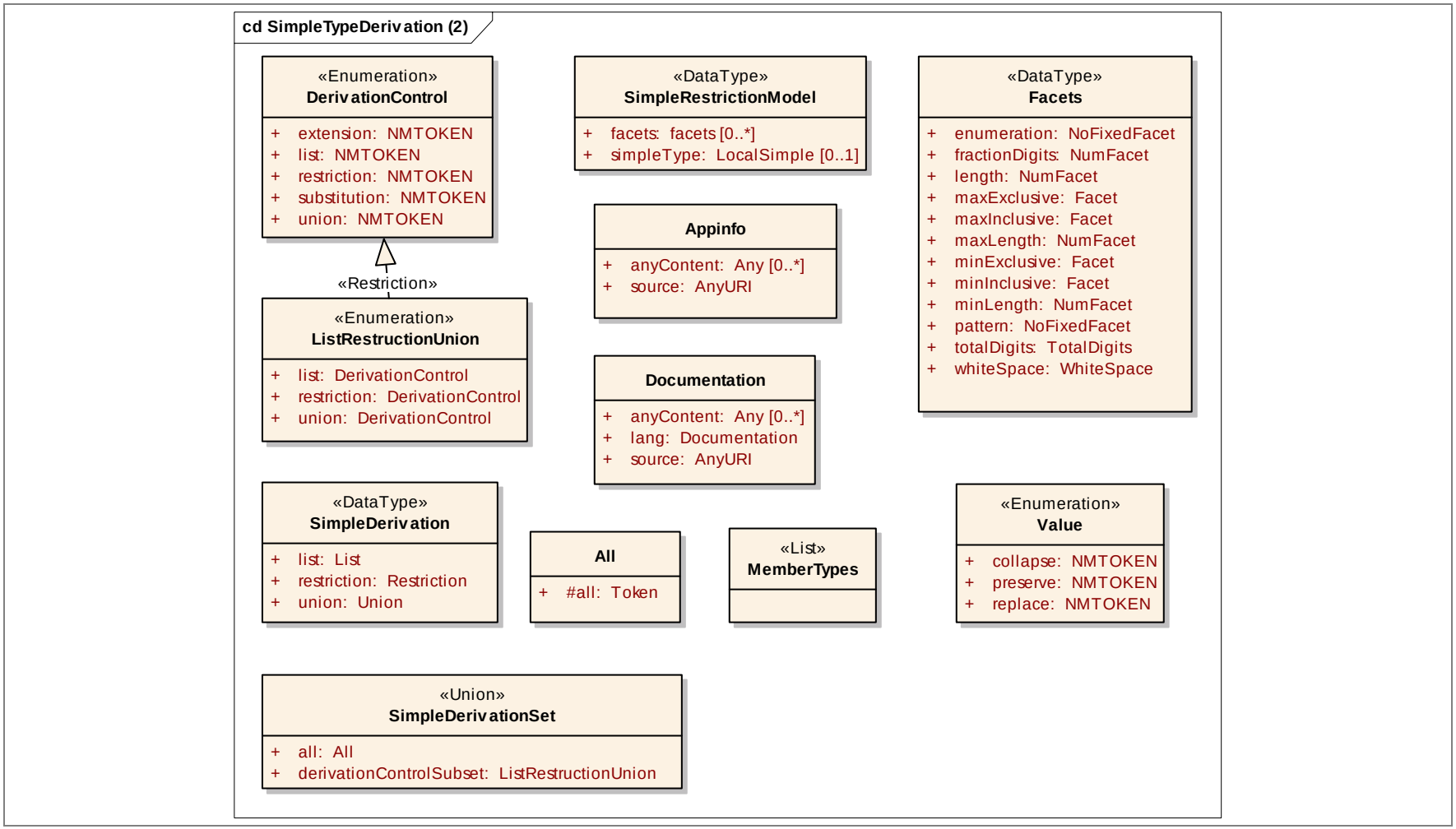
MetaLite						
Line	**Name/RoleName**	**Definition**	**Obligation / Condition**	**Maximum Occurrence**	**Data Type**	**Domain**
1	CitationProperty	Holds or points to a Citation.				Lines 2 - 3
2	associationAttributeGroup	XLink:href reference to an external Citation.	M	1	Gml:AssociationAttributeGroup	Unrestricted
3	simpleCitation	A Contained Citation.	O	1	SimpleCitation	Unrestricted
4	ConformanceAssessment	Descriptive assessment of data conformance				Lines 5 - 7
5	explanation	Descriptive assessment of data conformance	M	1	String	Unrestricted
6	pass	Conformance Acceptance Passed; true, 1, false, or 0.	M	1	Boolean	Unrestricted
7	specification	Holds or points to a Citation.	O	1	CitationProperty	Unrestricted
8	PartyProperty	Contains or references a SimpleParty.				Lines 9 - 10
9	associationAttributeGroup	Xlink:href reference to an external SimpleParty.	M	1	Gml:AssociationAttributeGroup	Unrestricted
10	simpleParty	A contained SimpleParty.	O	1	SimpleParty	Unrestricted
11	QualitativeAssessment	Descriptive assessment of data quality				Lines 12 - 14
12	explanation	Descriptive assessment of data quality	M	1	String	Unrestricted
13	specification	Holds or points to a Citation.	O	1	CitationProperty	Unrestricted
14	value	Conclusion of qualititative assessment.	M	1	String	Unrestricted
15	QualityProperty	Contains or references a SimpleQuality				Lines 16 - 17
16	associationAttributeGroup	Xlink:href reference to a SimpleQuality.	M	1	Gml:AssociationAttributeGroup	Unrestricted
17	simpleQuality	SimpleQuality or extension thereof.	O	1	Any	Unrestricted
18	QuantitativeAssessment	Quantitative assessment of data quality				Lines 19 - 21
19	explanation	Quantitative assessment of data quality	M	1	String	Unrestricted
20	specification	Holds or points to a Citation.	O	1	CitationProperty	Unrestricted
21	values	Results of a quantative assessment of data quality.	M	1	Gml:MeasureList	Unrestricted
22	SimpleCitation	A SimpleCitation used to record the details of an external source of information, such as a scholarly paper, technical report, or other publication, where the details are encoded as a text description. It is substitutable for gml:_MetaData, so may appear as the value of a gml:metaDataProperty on most objects and features.			gml:Definition	
23	SimpleParty	A Party represented by a gml:Feature			<<Abstract>>	
24	StandardLiteMetadata	Lightweight Metadata structures for sensors and observations.			<<DataType>>	Lines 25 - 27
25	comment	Container for commentary that may not be strictly part of	M	0	Gml:StringOrRef	Unrestricted

		a "description".				
26	reference	Holds or points to a Citation. If a URN for the cited work is known then this should appear as the value of a href attribute on the reference element. There are several systems available for assigning URN's to bibliographic resources - see review here: http://www.nla.gov.au/initiatives/persistence/PIcontents.html Probably the best developed is DOI, described here: http://www.doi.org/ also see http://www.crossref.org/01company/15doi_info.html Note that the DOI/crossref service is free to users, but not to publishers.	O	*	CitationProperty	Unrestricted
27	support	A place to attach components that are required to be listed someplace in order that they can be "used" by-reference elsewhere in (usually) the same instance document.	M	0	Gml:Association	Unrestricted

SimpleTypeDerivation (1 of 2)



SimpleTypeDerivation (2 of 2)



SimpleTypeDerivation						
Line	**Name/RoleName**	**Definition**	**Obligation / Condition**	**Maximum Occurrence**	**Data Type**	**Domain**
1	All	Block all derivation				Lines 2 - 2
2	#all	Token	M	1	Token	Unrestricted
3	Annotated	This type is extended by all types which allow annotation other than <schema> itself				Lines 4 - 5
4	annotation	XML/Schema <annotation> element definition.	O	1	Annotation	Unrestricted
5	id	XML ID	O	1	ID	Unrestricted
6	Annotation	XML/Schema <annotation> element definition.				Lines 7 - 9
7	appinfo	XML Schema <appinfo> element definition.	M	1	Appinfo	Unrestricted
8	documentation	XML Schema <documentation> element definition.	M	1	Documentation	Unrestricted
9	id	XML ID	M	1	ID	Unrestricted
10	Any	Any Content.			<<Any>>	
11	Appinfo	XML Schema <appinfo> element definition.				Lines 12 - 13
12	anyContent	Any Content.	O	*	Any	Unrestricted
13	source	source attribute on XML Schema appinfo element.	M	1	AnyURI	Unrestricted
14	DerivationControl	A utility type, not for public use			<<Enumeration>>	Lines 15 - 19
15	extension	Control derivation by extension.	M	1	NMTOKEN	Unrestricted
16	list	Control derivation by list.	M	1	NMTOKEN	Unrestricted
17	restriction	Control derivation by restriction.	M	1	NMTOKEN	Unrestricted
18	substitution	Control derivation by substittion.	M	1	NMTOKEN	Unrestricted
19	union	Control derivation by union.	M	1	NMTOKEN	Unrestricted
20	Documentation	XML Schema <documentaiton> element definition.				Lines 21 - 23
21	anyContent	Any content.	O	*	Any	Unrestricted
22	lang	XML language attribute to specify human language of document.	M	1	Documentation	Unrestricted
23	source	source attribute	M	1	AnyURI	Unrestricted
24	Enumeration	XML Schema <enumeration> element definition.				
25	Facet	A facet is a single defining aspect of a ·value space·. Generally speaking, each facet characterizes a ·value space· along independent axes or dimensions.				Lines 26 - 27
26	fixed	Immutable; if true, this facet cannot be overriden.	O	1	Boolean	Unrestricted
27	value	Value	M	1	Any	Unrestricted

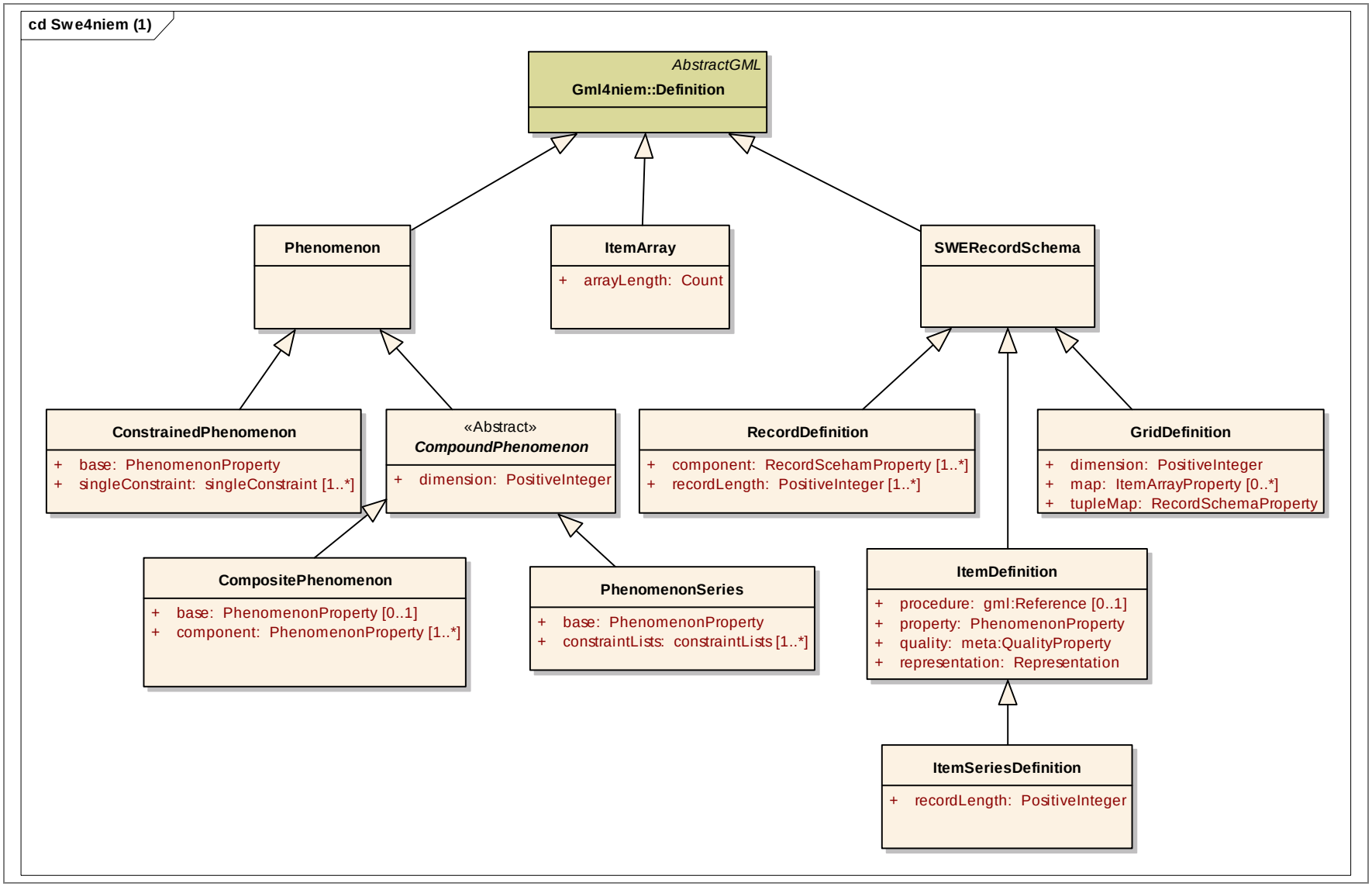
28	Facets	We should use a substitution group for facets, but that's ruled out because it would allow users to add their own, which we're not ready for yet.			<<DataType>>	Lines 29 - 40
29	enumeration	Enumeration of allowed values.	M	1	NoFixedFacet	Unrestricted
30	fractionDigits	fractionDigits controls the size of the minimum difference between values in the ·value space· of datatypes ·derived· from decimal, by restricting the ·value space· to numbers that are expressible as i × 10^-n where i and n are integers and 0 <= n <= fractionDigits. The value of fractionDigits ·must· be a nonNegativeInteger.	M	1	NumFacet	Unrestricted
31	length	Length of a list datatype.	M	1	NumFacet	Unrestricted
32	maxExclusive	maxExclusive is the ·exclusive upper bound· of the ·value space· for a datatype with the ·ordered· property.	M	1	Facet	Unrestricted
33	maxInclusive	maxInclusive is the ·inclusive upper bound· of the ·value space· for a datatype with the ·ordered· property.	M	1	Facet	Unrestricted
34	maxLength	Constrains a ·value space· to values with at most a specific number of units of length, where units of length varies depending on the base type definition.	M	1	NumFacet	Unrestricted
35	minExclusive	minExclusive is the ·exclusive lower bound· of the ·value space· for a datatype with the ·ordered· property.	M	1	Facet	Unrestricted
36	minInclusive	minInclusive is the ·inclusive lower bound· of the ·value space· for a datatype with the ·ordered· property.	M	1	Facet	Unrestricted
37	minLength	Constrains a ·value space· to values with at least a specific number of units of length, where units of length varies depending on the base type definition.	M	1	NumFacet	Unrestricted
38	pattern	pattern is a constraint on the ·value space· of a datatype which is achieved by constraining the ·lexical space· to literals which match a specific pattern. The value of pattern ·must· be a ·regular expression·.	M	1	NoFixedFacet	Unrestricted
39	totalDigits	totalDigits controls the maximum number of values in the ·value space· of datatypes ·derived· from decimal, by restricting it to numbers that are expressible as i × 10^-n where i and n are integers such that |i| < 10^totalDigits and 0 <= n <= totalDigits. The value of totalDigits ·must· be a positiveInteger.	M	1	TotalDigits	Unrestricted
40	whiteSpace	whiteSpace constrains the ·value space· of types ·derived· from string. The value of whiteSpace must be one of {preserve, replace, collapse}.	M	1	WhiteSpace	Unrestricted
41	FractionDigits	fractionDigits controls the size of the minimum difference between values in the ·value space· of datatypes ·derived· from decimal, by restricting the ·value space· to numbers that are expressible as i × 10^-n where i and n are integers and 0 <= n <= fractionDigits. The value of fractionDigits ·must· be a nonNegativeInteger.				
42	Length	List Length.				
43	List	source="./XML Schema Part 2 Datatypes.htm#element-list" itemType attribute and simpleType child are mutually exclusive, but one or other is required				Lines 44 - 45
44	itemType	The ·atomic· or ·union· datatype that participates in the definition of a ·list· datatype is	O	1	QName	Unrestricted

		known as the itemType of that ·list· datatype.				
45	simpleType	XML Schema <simpleType> element definition.	O	1	LocalSimple	Unrestricted
46	ListRestructionUnion	An enumeration of list, restriction, union simple types.			<<Enumeration>>	Lines 47 - 49
47	list	List simple type.	M	1	DerivationControl	Unrestricted
48	restriction	Restriction simple type.	M	1	DerivationControl	Unrestricted
49	union	Union simple type.	M	1	DerivationControl	Unrestricted
50	LocalSimple	Local definition of a simple type.				Lines 51 - 52
51	annotation	XML/Schema <annotation> element definition.	O	1	Annotation	Unrestricted
52	simpleDerivation	Derivation by list, restriction, or union.	M	1	SimpleDerivation	Unrestricted
53	MaxExclusive	maxExclusive is the ·exclusive upper bound· of the ·value space· for a datatype with the ·ordered· property.				
54	MaxInclusive	maxInclusive is the ·inclusive upper bound· of the ·value space· for a datatype with the ·ordered· property.				
55	MaxLength	Constrains a ·value space· to values with at most a specific number of units of length, where units of length varies depending on the base type definition.				
56	MemberTypes	The datatypes that participate in the definition of a ·union· datatype are known as the memberTypes of that ·union· datatype.			<<List>>	
57	MinExclusive	minExclusive is the ·exclusive lower bound· of the ·value space· for a datatype with the ·ordered· property.				
58	MinInclusive	minInclusive is the ·inclusive lower bound· of the ·value space· for a datatype with the ·ordered· property.				
59	MinLength	Constrains a ·value space· to values with at least a specific number of units of length, where units of length varies depending on the base type definition.				
60	NoFixedFacet	XML Schema <NoFixedFacet> element definition.				Lines 61 - 62
61	annotation	XML/Schema <annotation> element definition.	O	1	Annotation	Unrestricted
62	fixed	Immutable; if true, this facet cannot be overriden.	M	1	Boolean	Unrestricted
63	NumFacet	XML Schema <NumFacet> element definition.				Lines 64 - 65
64	annotation	XML/Schema <annotation> element definition.	O	1	Annotation	Unrestricted
65	value	Number of facets.	M	1	NonNegativeInteger	Unrestricted
66	OpenAttrs	This type is extended by almost all schema types to allow attributes from other namespaces to be added to user schemas.			<<Any>>	Lines 67 - 67
67	any	Any value type.	M	1	Any	Unrestricted

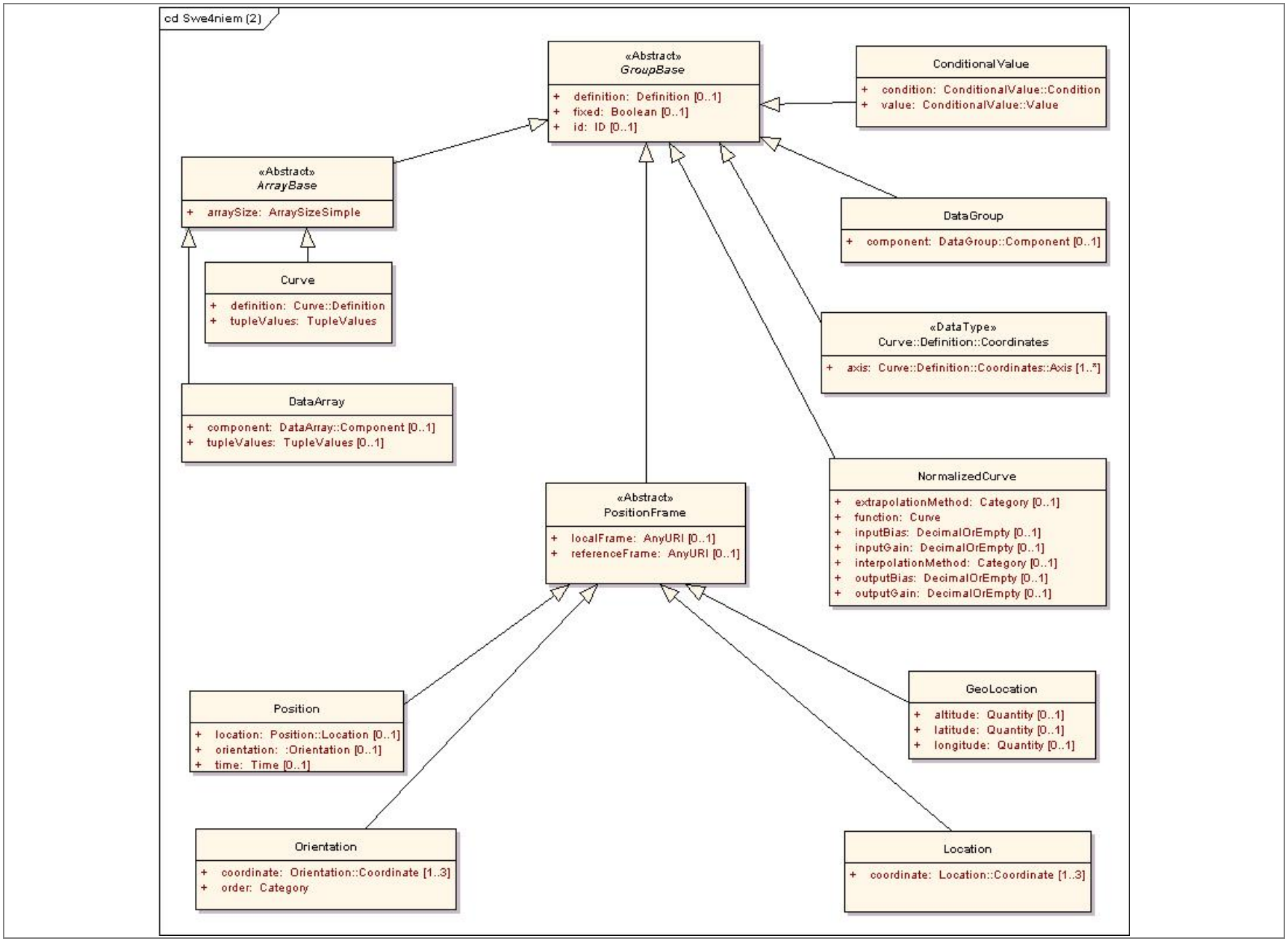
68	Pattern	pattern is a constraint on the ·value space· of a datatype which is achieved by constraining the ·lexical space· to literals which match a specific pattern. The value of pattern ·must· be a ·regular expression·.				
69	Restriction	source="./XML Schema Part 2 Datatypes.htm#element-restriction" base attribute and simpleType child are mutually exclusive, but one or other is required				Lines 70 - 70
70	base	Base type for derivation.	O	1	QName	Unrestricted
71	Simple	Simple type.			<<Abstract>>	Lines 72 - 73
72	final	Restriction on further derivation.	O	1	SimpleDerivationSet	Unrestricted
73	name	Can be restricted to required or forbidden	O	1	NCName	Unrestricted
74	SimpleDerivation	List, Restriction, Union.			<<DataType>>	Lines 75 - 77
75	list	Derivation by List.	M	1	List	Unrestricted
76	restriction	Derivation by restriction.	M	1	Restriction	Unrestricted
77	union	Derivation by Union.	M	1	Union	Unrestricted
78	SimpleDerivationSet	#all or (possibly empty) subset of {restriction, union, list}			<<Union>>	Lines 79 - 80
79	all	All.	M	1	All	Unrestricted
80	derivationControlSubset	List, Restriction, or Union.	M	1	ListRestructionUnion	Unrestricted
81	SimpleRestrictionModel	XML Schema group definition.			<<DataType>>	Lines 82 - 83
82	facets	We should use a substitution group for facets, but that's ruled out because it would allow users to add their own, which we're not ready for yet.	O	*	facets	Unrestricted
83	simpleType	Simple type derivation.	O	1	LocalSimple	Unrestricted
84	TopLevelSimple	Global siimple type definition.				Lines 85 - 87
85	annotation	XML/Schema <annotation> element definition.	O	1	Annotation	Unrestricted
86	name	Required at the top level	M	1	NCName	Unrestricted
87	simpleDerivation	List, Restriction, or Union	M	1	simpleDerivation	Unrestricted
88	TotalDigits	totalDigits controls the maximum number of values in the ·value space· of datatypes ·derived· from decimal, by restricting it to numbers that are expressible as i × 10^-n where i and n are integers such that |i| < 10^totalDigits and 0 <= n <= totalDigits. The value of totalDigits ·must· be a positiveInteger.				Lines 89 - 90
89	annotation	XML/Schema <annotation> element definition.	O	1	Annotation	Unrestricted
90	value	Number of total digits.	M	1	PositiveInteger	Unrestricted
91	Union	source="./XML Schema Part 2 Datatypes.htm#element-union" memberTypes attribute				Lines 92 -

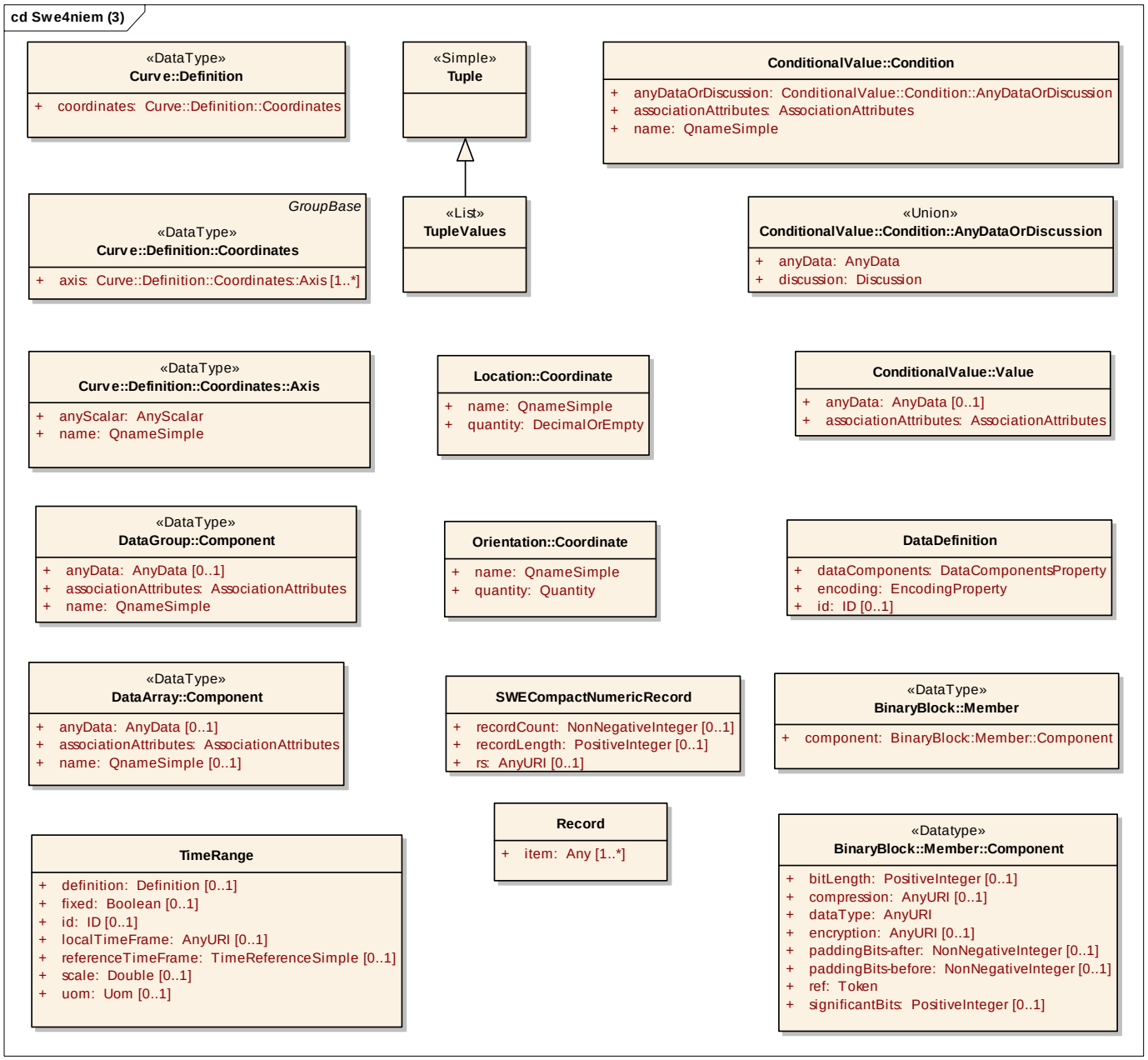
		must be non-empty or there must be at least one simpleType child				93
92	memberTypes	Member types in a Union.	O	1	memberTypes	Unrestricted
93	simpleType	Local simple type definition.	O	*	LocalSimple	Unrestricted
94	Value	Whitespace treatment.			<<Enumeration>>	Lines 95 - 97
95	collapse	Collapse adjacent whitespace.	M	1	NMTOKEN	Unrestricted
96	preserve	Preserve whitespace as is.	M	1	NMTOKEN	Unrestricted
97	replace	Replace tabs and newlines with spaces.	M	1	NMTOKEN	Unrestricted
98	WhiteSpace	whiteSpace constrains the ·value space· of types ·derived· from string.				Lines 99 - 100
99		XML/Schema <annotation> element definition.	O	1	Annotation	Unrestricted
100	value	The value of whiteSpace must be one of {preserve, replace, collapse}.	M	1	value	Unrestricted

SWE4NIEM (1 of 10)

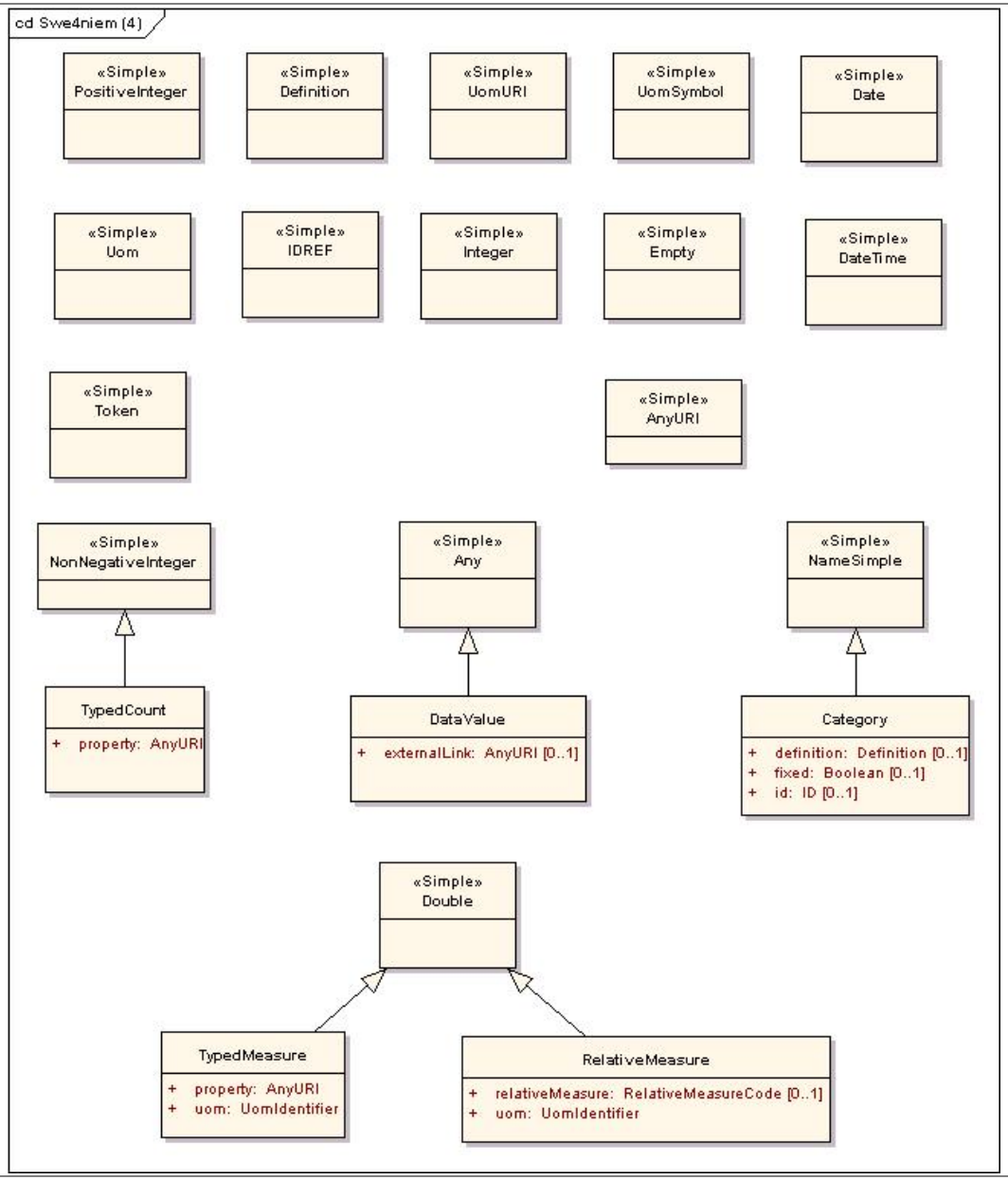


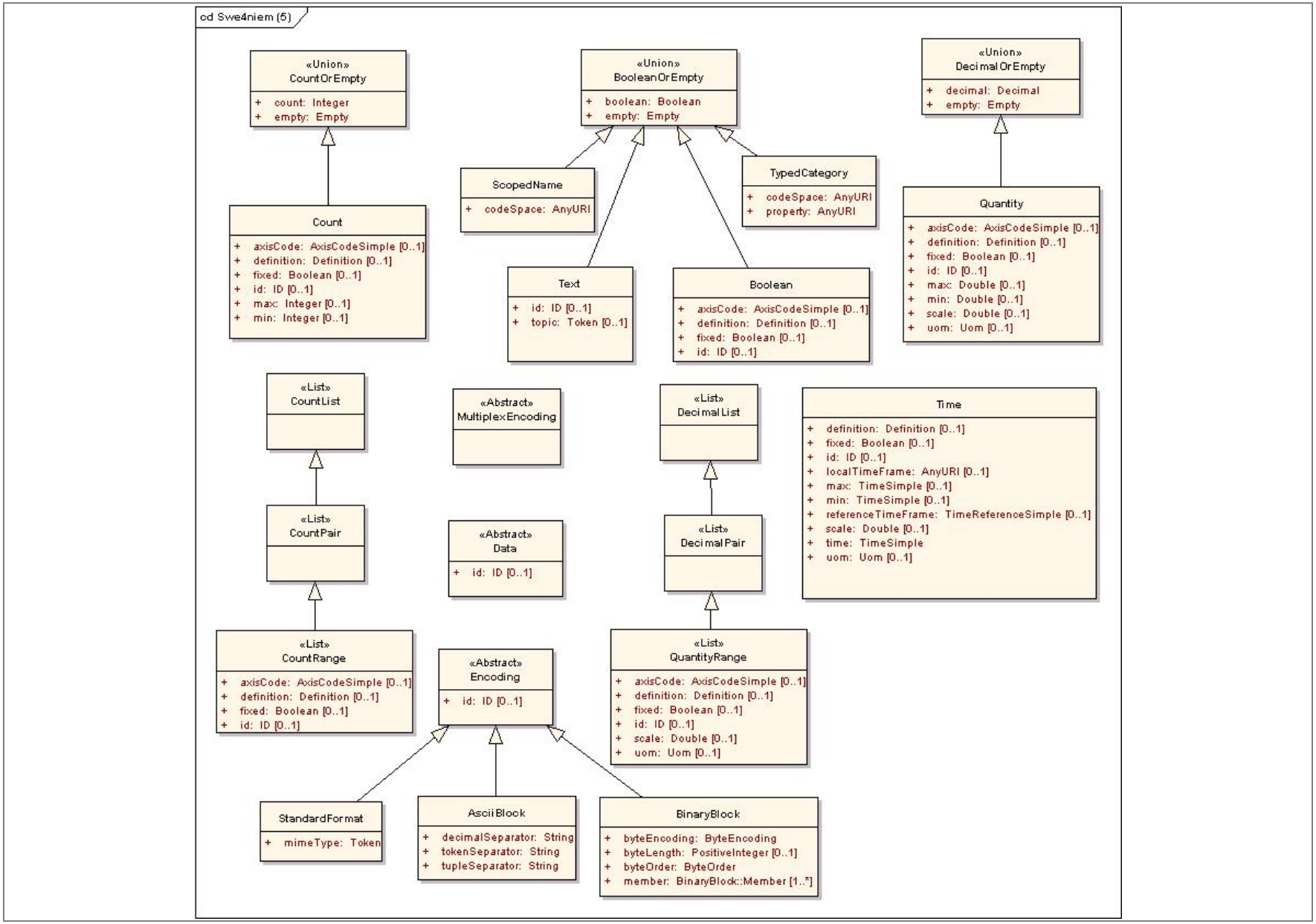
SWE4NIEM (2 of 10)

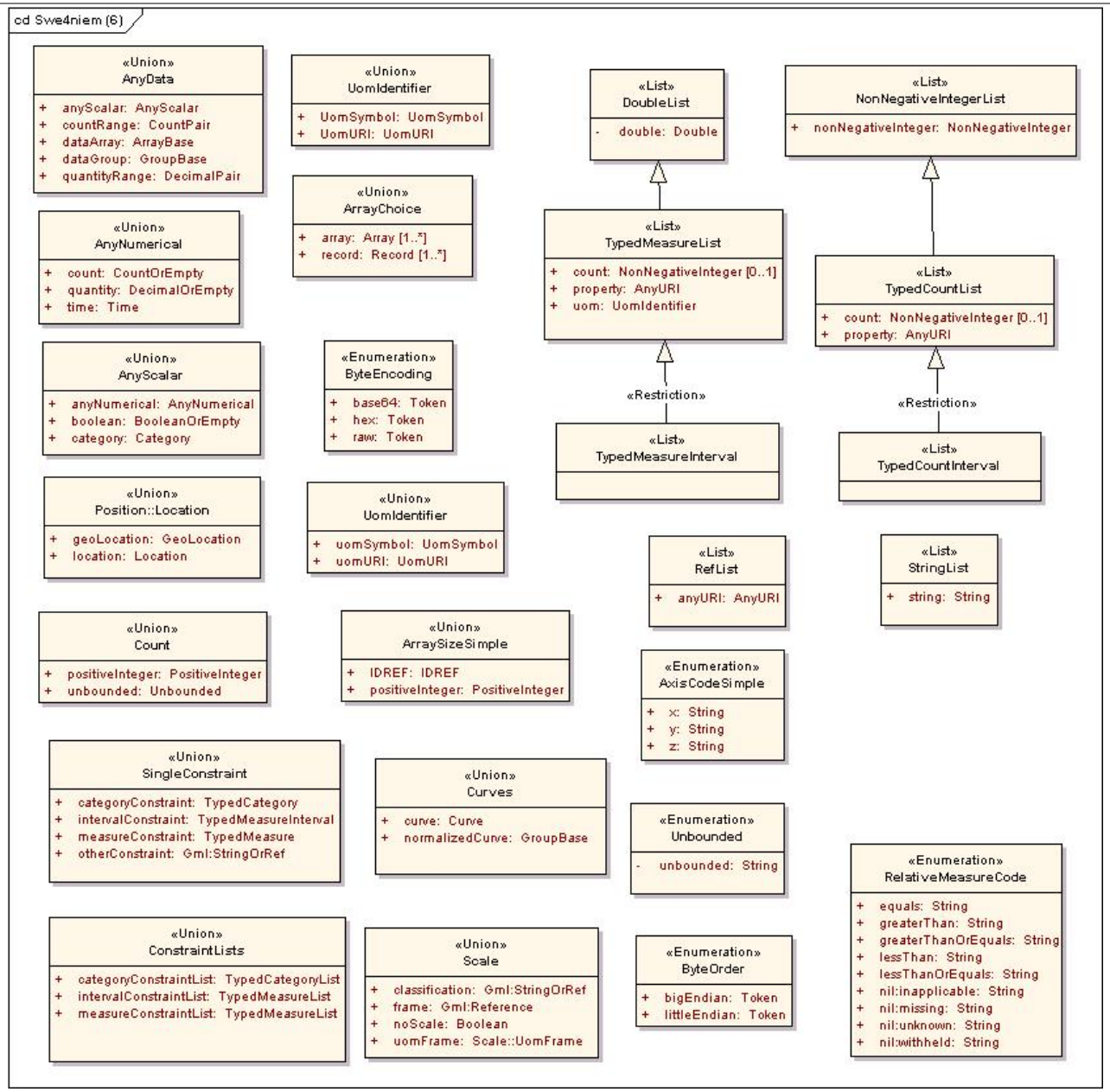



cd Swe4niem (3)
«DataType»
Curve::Definition
+ coordinates: Curve::Definition::Coordinates
«Simple»
Tuple
ConditionalValue::Condition
+ anyDataOrDiscussion: ConditionalValue::Condition::AnyDataOrDiscussion
+ associationAttributes: AssociationAttributes
+ name: QnameSimple
GroupBase
«DataType»
Curve::Definition::Coordinates
+ axis: Curve::Definition::Coordinates::Axis [1..*]
«List»
TupleValues
«Union»
ConditionalValue::Condition::AnyDataOrDiscussion
+ anyData: AnyData
+ discussion: Discussion
«DataType»
Curve::Definition::Coordinates::Axis
+ anyScalar: AnyScalar
+ name: QnameSimple
Location::Coordinate
+ name: QnameSimple
+ quantity: DecimalOrEmpty
ConditionalValue::Value
+ anyData: AnyData [0..1]
+ associationAttributes: AssociationAttributes
«DataType»
DataGroup::Component
+ anyData: AnyData [0..1]
+ associationAttributes: AssociationAttributes
+ name: QnameSimple
Orientation::Coordinate
+ name: QnameSimple
+ quantity: Quantity
DataDefinition
+ dataComponents: DataComponentsProperty
+ encoding: EncodingProperty
+ id: ID [0..1]
«DataType»
DataArray::Component
+ anyData: AnyData [0..1]
+ associationAttributes: AssociationAttributes
+ name: QnameSimple [0..1]
SWECompactNumericRecord
+ recordCount: NonNegativeInteger [0..1]
+ recordLength: PositiveInteger [0..1]
+ rs: AnyURI [0..1]
«DataType»
BinaryBlock::Member
+ component: BinaryBlock:Member::Component
Record
+ item: Any [1..*]
TimeRange
+ definition: Definition [0..1]
+ fixed: Boolean [0..1]
+ id: ID [0..1]
+ localTimeFrame: AnyURI [0..1]
+ referenceTimeFrame: TimeReferenceSimple [0..1]
+ scale: Double [0..1]
+ uom: Uom [0..1]
«Datatype»
BinaryBlock::Member::Component
+ bitLength: PositiveInteger [0..1]
+ compression: AnyURI [0..1]
+ dataType: AnyURI
+ encryption: AnyURI [0..1]
+ paddingBits-after: NonNegativeInteger [0..1]
+ paddingBits-before: NonNegativeInteger [0..1]
+ ref: Token
+ significantBits: PositiveInteger [0..1]

SWE4NIEM (4 of 10)




cd Swe4niem (5)
«Union»
CountOrEmpty
+ count: Integer
+ empty: Empty
«Union»
BooleanOrEmpty
+ boolean: Boolean
+ empty: Empty
«Union»
DecimalOrEmpty
+ decimal: Decimal
+ empty: Empty
ScopedName
+ codeSpace: AnyURI
TypedCategory
+ codeSpace: AnyURI
+ property: AnyURI
Count
+ axisCode: AxisCodeSimple [0..1]
+ definition: Definition [0..1]
+ fixed: Boolean [0..1]
+ id: ID [0..1]
+ max: Integer [0..1]
+ min: Integer [0..1]
Text
+ id: ID [0..1]
+ topic: Token [0..1]
Boolean
+ axisCode: AxisCodeSimple [0..1]
+ definition: Definition [0..1]
+ fixed: Boolean [0..1]
+ id: ID [0..1]
Quantity
+ axisCode: AxisCodeSimple [0..1]
+ definition: Definition [0..1]
+ fixed: Boolean [0..1]
+ id: ID [0..1]
+ max: Double [0..1]
+ min: Double [0..1]
+ scale: Double [0..1]
+ uom: Uom [0..1]
«List»
CountList
«Abstract»
MultiplexEncoding
«List»
DecimalList
Time
+ definition: Definition [0..1]
+ fixed: Boolean [0..1]
+ id: ID [0..1]
+ localTimeFrame: AnyURI [0..1]
+ max: TimeSimple [0..1]
+ min: TimeSimple [0..1]
+ referenceTimeFrame: TimeReferenceSimple [0..1]
+ scale: Double [0..1]
+ time: TimeSimple
+ uom: Uom [0..1]
«List»
CountPair
«Abstract»
Data
+ id: ID [0..1]
«List»
DecimalPair
«List»
CountRange
+ axisCode: AxisCodeSimple [0..1]
+ definition: Definition [0..1]
+ fixed: Boolean [0..1]
+ id: ID [0..1]
«Abstract»
Encoding
+ id: ID [0..1]
«List»
QuantityRange
+ axisCode: AxisCodeSimple [0..1]
+ definition: Definition [0..1]
+ fixed: Boolean [0..1]
+ id: ID [0..1]
+ scale: Double [0..1]
+ uom: Uom [0..1]
StandardFormat
+ mimeType: Token
AsciiBlock
+ decimalSeparator: String
+ tokenSeparator: String
+ tupleSeparator: String
BinaryBlock
+ byteEncoding: ByteEncoding
+ byteLength: PositiveInteger [0..1]
+ byteOrder: ByteOrder
+ member: BinaryBlock::Member [1..*]


cd Swe4niem (6)
«Union»
AnyData
+ anyScalar: AnyScalar
+ countRange: CountPair
+ dataArray: ArrayBase
+ dataGroup: GroupBase
+ quantityRange: DecimalPair
«Union»
UomIdentifier
+ UomSymbol: UomSymbol
+ UomURI: UomURI
«List»
DoubleList
- double: Double
«List»
NonNegativeIntegerList
+ nonNegativeInteger: NonNegativeInteger
«Union»
ArrayChoice
+ array: Array [1..*]
+ record: Record [1..*]
«Union»
AnyNumerical
+ count: CountOrEmpty
+ quantity: DecimalOrEmpty
+ time: Time
«List»
TypedMeasureList
+ count: NonNegativeInteger [0..1]
+ property: AnyURI
+ uom: UomIdentifier
«List»
TypedCountList
+ count: NonNegativeInteger [0..1]
+ property: AnyURI
«Union»
AnyScalar
+ anyNumerical: AnyNumerical
+ boolean: BooleanOrEmpty
+ category: Category
«Enumeration»
ByteEncoding
+ base64: Token
+ hex: Token
+ raw: Token
«Restriction»
«List»
TypedMeasureInterval
«Restriction»
«List»
TypedCountInterval
«Union»
Position::Location
+ geoLocation: GeoLocation
+ location: Location
«Union»
UomIdentifier
+ uomSymbol: UomSymbol
+ uomURI: UomURI
«List»
RefList
+ anyURI: AnyURI
«List»
StringList
+ string: String
«Union»
Count
+ positiveInteger: PositiveInteger
+ unbounded: Unbounded
«Union»
ArraySizeSimple
+ IDREF: IDREF
+ positiveInteger: PositiveInteger
«Enumeration»
AxisCodeSimple
+ x: String
+ y: String
+ z: String
«Union»
SingleConstraint
+ categoryConstraint: TypedCategory
+ intervalConstraint: TypedMeasureInterval
+ measureConstraint: TypedMeasure
+ otherConstraint: Gml:StringOrRef
«Union»
Curves
+ curve: Curve
+ normalizedCurve: GroupBase
«Enumeration»
Unbounded
- unbounded: String
«Enumeration»
RelativeMeasureCode
+ equals: String
+ greaterThan: String
+ greaterThanOrEquals: String
+ lessThan: String
+ lessThanOrEquals: String
+ nil:inapplicable: String
+ nil:missing: String
+ nil:unknown: String
+ nil:withheld: String
«Union»
ConstraintLists
+ categoryConstraintList: TypedCategoryList
+ intervalConstraintList: TypedMeasureList
+ measureConstraintList: TypedMeasureList
«Union»
Scale
+ classification: Gml:StringOrRef
+ frame: Gml:Reference
+ noScale: Boolean
+ uomFrame: Scale::UomFrame
«Enumeration»
ByteOrder
+ bigEndian: Token
+ littleEndian: Token

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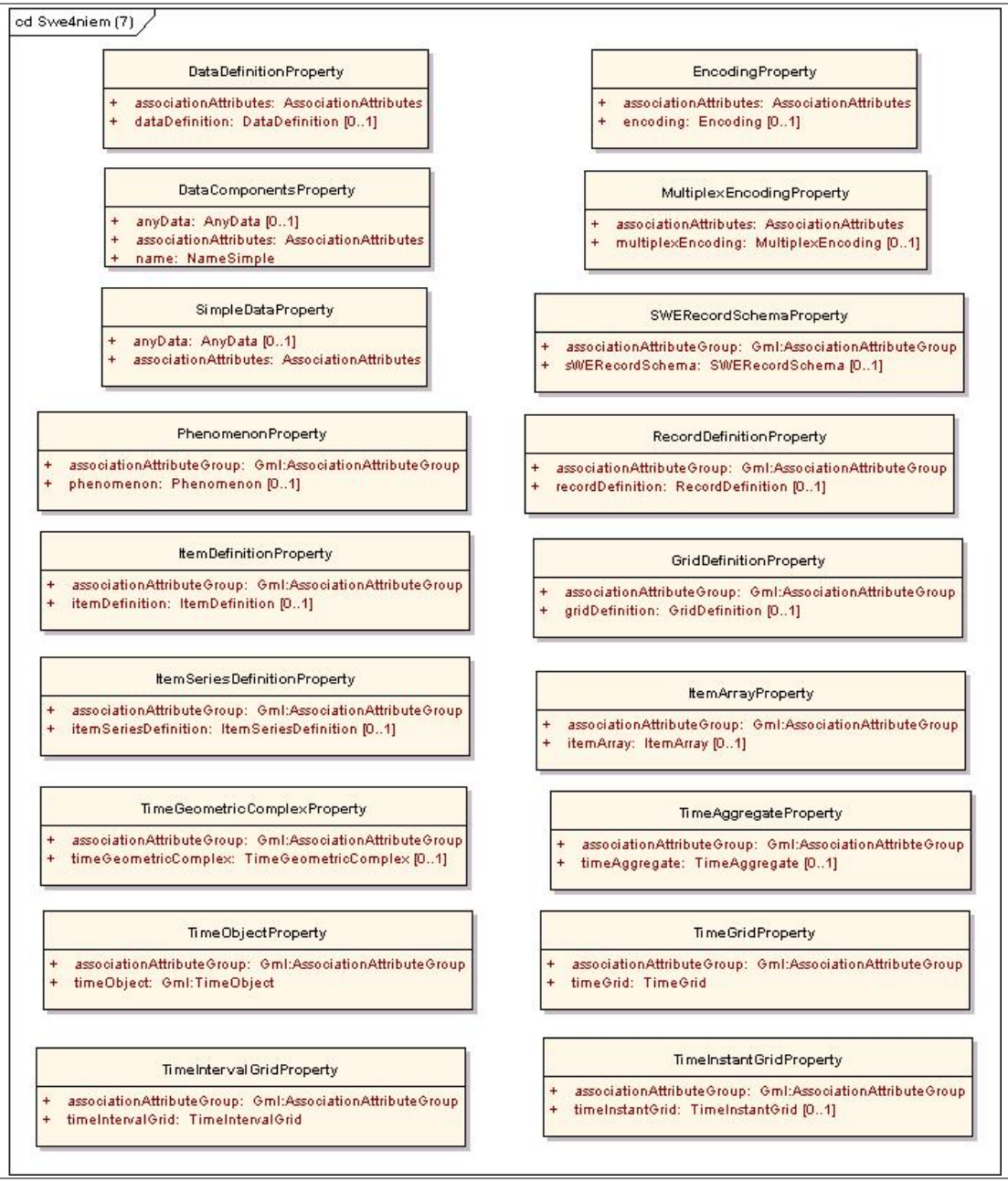

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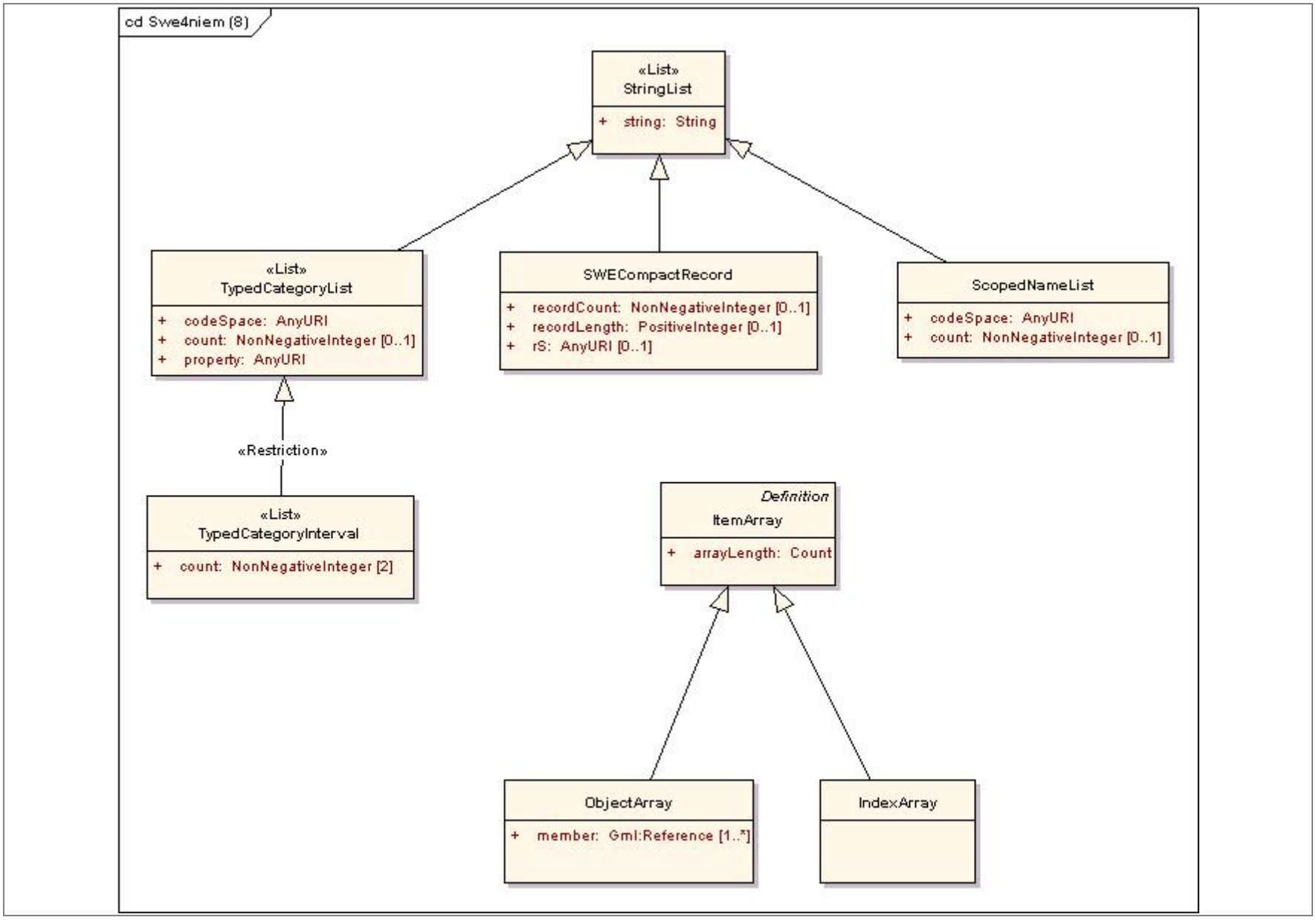

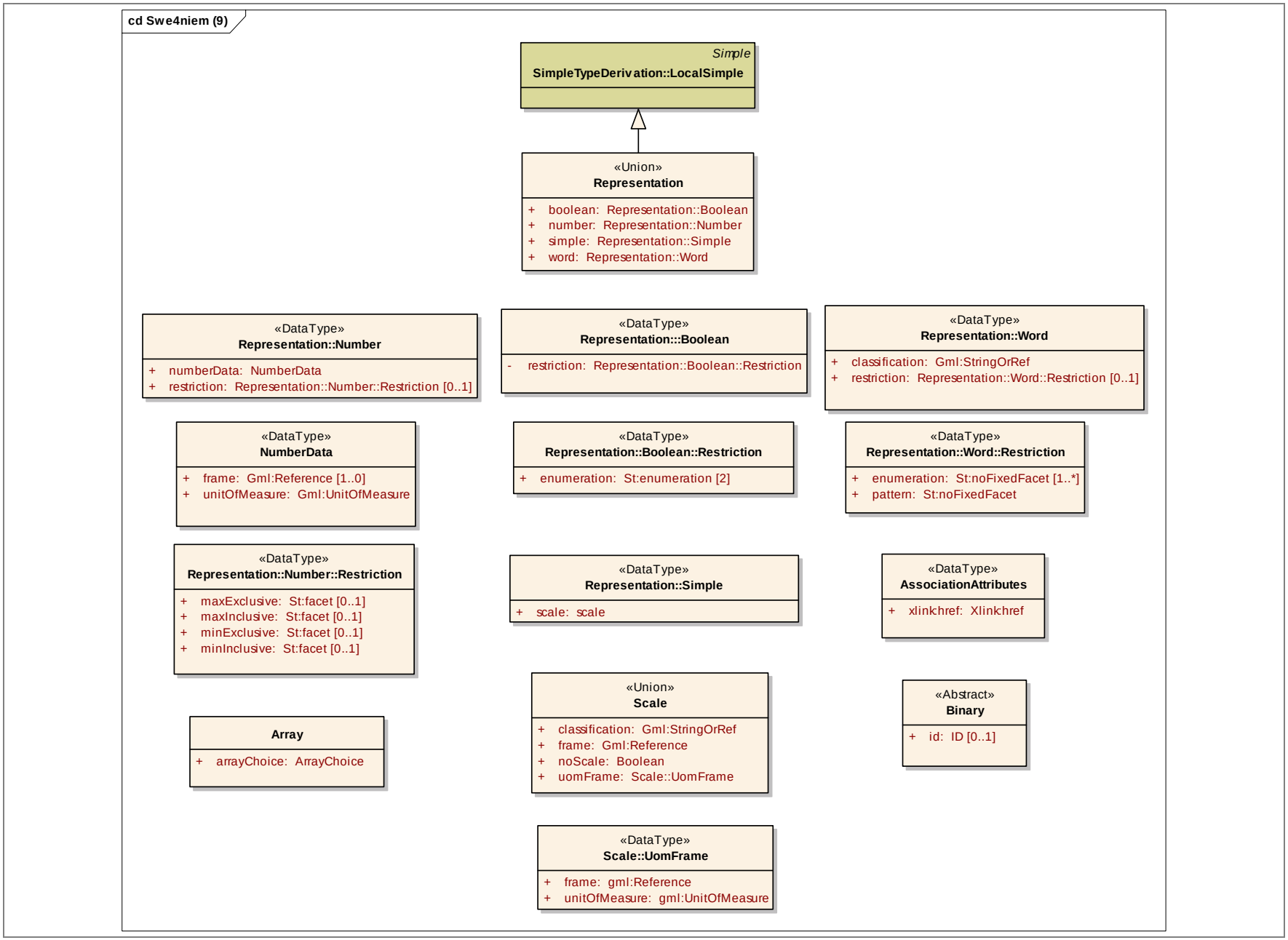
cd Swe4niem (9)
Simple
SimpleTypeDerivation::LocalSimple
«Union»
Representation
+ boolean: Representation::Boolean
+ number: Representation::Number
+ simple: Representation::Simple
+ word: Representation::Word
«DataType»
Representation::Number
+ numberData: NumberData
+ restriction: Representation::Number::Restriction [0..1]
«DataType»
Representation:::Boolean
- restriction: Representation::Boolean::Restriction
«DataType»
Representation::Word
+ classification: Gml:StringOrRef
+ restriction: Representation::Word::Restriction [0..1]
«DataType»
NumberData
+ frame: Gml:Reference [1..0]
+ unitOfMeasure: Gml:UnitOfMeasure
«DataType»
Representation::Boolean::Restriction
+ enumeration: St:enumeration [2]
«DataType»
Representation::Word::Restriction
+ enumeration: St:noFixedFacet [1..*]
+ pattern: St:noFixedFacet
«DataType»
Representation::Number::Restriction
+ maxExclusive: St:facet [0..1]
+ maxInclusive: St:facet [0..1]
+ minExclusive: St:facet [0..1]
+ minInclusive: St:facet [0..1]
«DataType»
Representation::Simple
+ scale: scale
«DataType»
AssociationAttributes
+ xlinkhref: Xlinkhref
Array
+ arrayChoice: ArrayChoice
«Union»
Scale
+ classification: Gml:StringOrRef
+ frame: Gml:Reference
+ noScale: Boolean
+ uomFrame: Scale::UomFrame
«Abstract»
Binary
+ id: ID [0..1]
«DataType»
Scale::UomFrame
+ frame: gml:Reference
+ unitOfMeasure: gml:UnitOfMeasure

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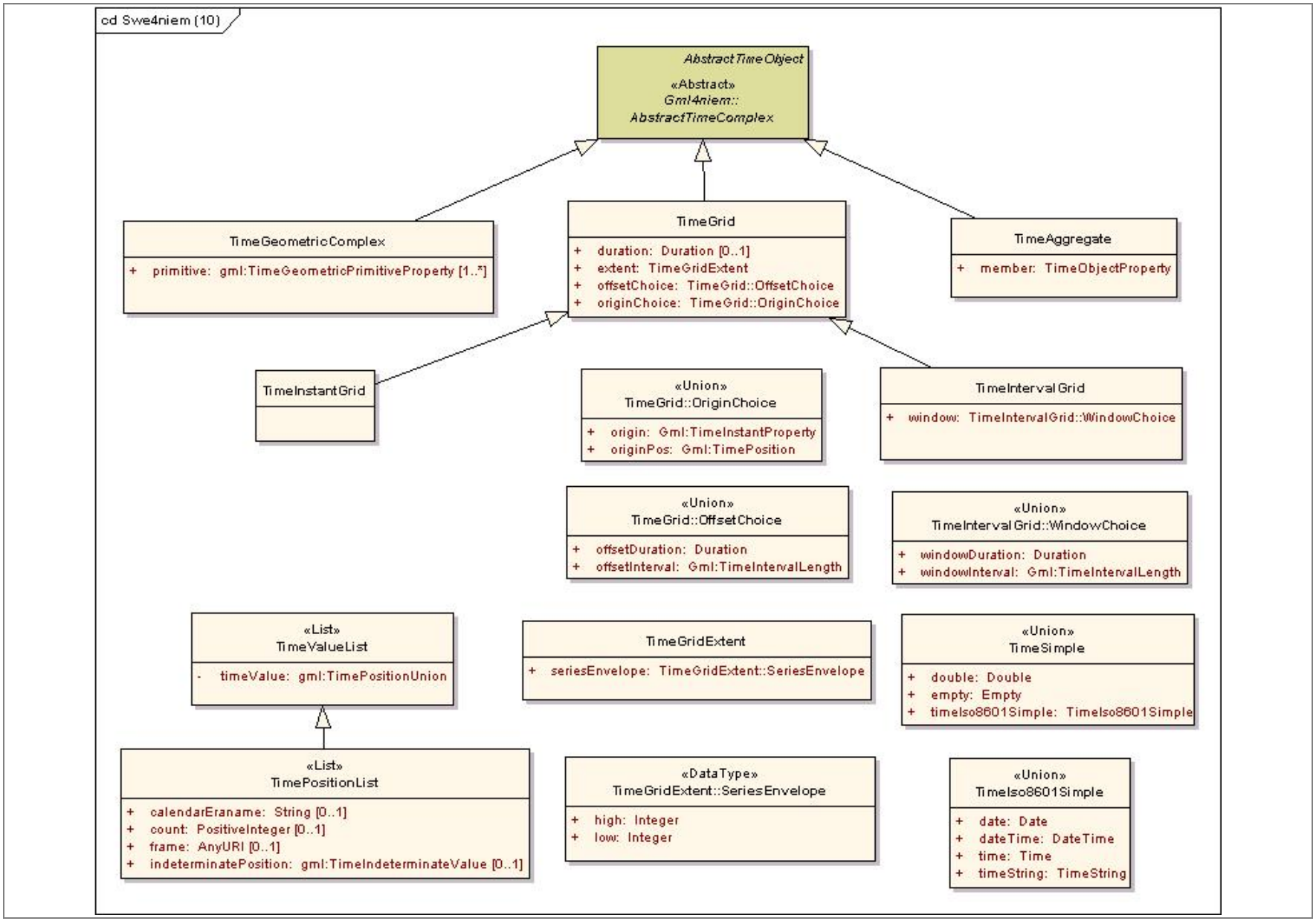


Swe4niem						
Line	**Name/RoleName**	**Definition**	**Obligation / Condition**	**Maximum Occurrence**	**Data Type**	**Domain**
1	Any				<<Simple>>	
2	AnyData	Data element that is any one of the specified types.			<<Union>>	Lines 3 - 7
3	anyScalar	Data element that may be anyNumerical or a boolean or a category.	M	1	AnyScalar	Unrestricted
4	countRange	Two integers expressed in the same reference frame.	M	1	CountPair	Unrestricted
5	dataArray	Array of other data components with a size.	M	1	ArrayBase	Unrestricted
6	dataGroup	Some logical collection of data values of any type, including scalars, ranges, groups and arrays. Like scalar data values, the DataGroup itself can contain definition and fixed attributes.	M	1	GroupBase	Unrestricted
7	quantityRange	Two decimal values separated by white space, which represent the minimum and maximum values, in that order.	M	1	DecimalPair	Unrestricted
8	AnyNumerical	Union of and choice among a count, a quantity, and a time.			<<Union>>	Lines 9 - 11
9	count	A count.	M	1	CountOrEmpty	Unrestricted
10	quantity	Decimal number with optional unit and bounds.	M	1	DecimalOrEmpty	Unrestricted
11	time	Time	M	1	Time	Unrestricted
12	AnyScalar	Representation of a scalar number.			<<Union>>	Lines 13 - 15
13	anyNumerical	Representation of a numeric value.	M	1	AnyNumerical	Unrestricted
14	boolean	A boolean value or an empty string.	M	1	BooleanOrEmpty	Unrestricted
15	category	A Category value.	M	1	Category	Unrestricted
16	AnyURI	AnyURI represents a Uniform Resource Identifier Reference (URI). An anyURI value can be absolute or relative, and may have an optional fragment identifier (i.e., it may be a URI Reference). This type should be used to specify the intention that the value fulfills the role of a URI as defined by [RFC 2396], as amended by			<<Simple>>	

		[RFC 2732].				
17	Array	An indexed collection of objects.				Lines 18 - 18
18	arrayChoice	An Array or a Record	M	1	ArrayChoice	Unrestricted
19	ArrayBase	A GroupBase with an arraySize; base for non-abstract array classes.			<<Abstract>>	Lines 20 - 20
20	arraySize		M	1	ArraySizeSimple	Unrestricted
21	ArrayChoice	An Array or a Record			<<Union>>	Lines 22 - 23
22	array	Array	M	*	Array	Unrestricted
23	record	Record	M	*	Record	Unrestricted
24	ArraySizeSimple	A positive integer or a reference to a positive integer that specifies the size of an array.			<<Union>>	Lines 25 - 26
25	IDREF	A reference to a positive integer that specifies the size of an array.	M	1	IDREF	Unrestricted
26	positiveInteger	Positive integer that specifies the size of an array.	M	1	PositiveInteger	Unrestricted
27	AsciiBlock	Encoding type used to describe a data stream of ASCII values separated by specific characters, and given in the order specified by a dataComponents structure.				Lines 28 - 30
28	decimalSeparator	String used to denote the decimal in a number.	M	1	String	Unrestricted
29	tokenSeparator	String used between values in a data structure.	M	1	String	Unrestricted
30	tupleSeparator	String used to separate consecutive blocks of values (each block corresponds to one instance of the data structure specified by a dataComponents structure.	M	1	String	Unrestricted
31	AssociationAttributes	An XLink locator attribute that supplies the data that allows an XLink application to find a remote resource (or resource fragment).			<<DataType>>	Lines 32 - 32
32	xlink:href	The locator attribute that supplies the data that allows an XLink application to find a remote resource (or resource fragment).	M	1	Xlink:href	Unrestricted
33	AxisCodeSimple	SImple definition of an axis.			<<Enumeration>>	Lines 34 - 36
34	x	The x axis.	M	1	String	Unrestricted
35	y	The y axis.	M	1	String	Unrestricted
36	z	The z axis.	M	1	String	Unrestricted
37	Binary	A binary value with identity.			<<Abstract>>	Lines 38 - 38

38	id	XML ID	O	1	ID	Unrestricted
39	BinaryBlock	Encoding type is used to describe a binary data stream containing values of quantities listed in a dataComponents structure.				Lines 40 - 43
40	byteEncoding	Specifies a binary stream's byte encoding method, which can be raw binary if data is available in an out of band fashion, but also base64 or base16 (hex) in order to allow the data to be encapsulated in an XML document.	M	1	ByteEncoding	Unrestricted
41	byteLength	Length of a logical byte.	O	1	PositiveInteger	Unrestricted
42	byteOrder	Specifies if multiple bytes data types are written with the Most Significant Byte first (bigEndian) or Least Significant Byte first (littleEndian).	M	1	ByteOrder	Unrestricted
43	member	Property of a BinaryBlock containing a Component description of its encoding.	M	*	BinaryBlock::Member	Unrestricted
44	BinaryBlock::Member	Property of a BinaryBlock containing a Component description of its encoding.			<<DataType>>	Lines 45 - 45
45	component	Description of the encoding of one member range of a BinaryBlock.	M	1	BinaryBlock::Member::Component	Unrestricted
46	BinaryBlock::Member::Component	Description of the encoding of one member range of a BinaryBlock.			<<Datatype>>	Lines 47 - 54
47	bitLength	Number of bits.	O	1	PositiveInteger	Unrestricted
48	compression	Compression scheme used on binary stream.	O	1	AnyURI	Unrestricted
49	dataType	Data type contained in a binary stream (i.e. byte, short, int, long, float, double, ASCII-string, UTF-string, etc…)	M	1	AnyURI	Unrestricted
50	encryption	Encryption scheme used on binary stream.	O	1	AnyURI	Unrestricted
51	paddingBits-after	Number of padding bits after a value in a binary block.	O	1	NonNegativeInteger	Unrestricted
52	paddingBits-before	Number of padding bits before a value in a binary block.	O	1	NonNegativeInteger	Unrestricted
53	ref	Attribute used to point to the desired element in a binary data structure. Can be set on scalar values as well as on groups and arrays of values.	M	1	Token	Unrestricted
54	significantBits	Number of significant bits in a member range of a BinaryBlock.	O	1	PositiveInteger	Unrestricted
55	Boolean	Represents a property that can be true or false			<<Simple>>	Lines 56 - 59

		and takes definition, axisCode, fixed and ID as attributes.				
56	axisCode	Code to indicate the axis in 3D.	O	1	AxisCodeSimple	"X", "Y", "Z"
57	definition	A reference to a definition of this item.	O	1	Definition	Unrestricted
58	fixed	true or 1 if this item has a fixed value.	O	1	Boolean	Unrestricted
59	id	ID of this item.	O	1	ID	Unrestricted
60	BooleanOrEmpty	true or 1 or false or 0 or an empty string			<<Union>>	Lines 61 - 62
61	boolean	true or 1 or false or 0	M	1	Boolean	Unrestricted
62	empty	an empty string	M	1	Empty	Unrestricted
63	ByteEncoding	Byte encoding method.			<<Enumeration>>	Lines 64 - 66
64	base64	Type is base64 encoding.	M	1	Token	Unrestricted
65	hex	Type is hexadecimal encoding.	M	1	Token	Unrestricted
66	raw	Type is raw encoding.	M	1	Token	Unrestricted
67	ByteOrder	Order of 8-bit bytes within a computer word to represent numerical values.			<<Enumeration>>	Lines 68 - 69
68	bigEndian	Bytes ordered from left to right; leftmost byte contains least significant portion of numeric value.	M	1	Token	Unrestricted
69	littleEndian	Btes ordered from right to left; rightmost byte contains least significant portion of numeric value.	M	1	Token	Unrestricted
70	Category	Represents data that is a subset of some larger grouping of values as defined in the definition attribute (e.g. dog may be the value of a category defined by mammal). It usually takes a token (i.e. simple string) as its value.				Lines 71 - 73
71	definition	A reference to a definition of this item.	O	1	Definition	Unrestricted
72	fixed	true or 1 if this item has a fixed value.	O	1	Boolean	Unrestricted
73	id	ID of this item.	O	1	ID	Unrestricted
74	CompositePhenomenon	Phenomenon comprised of component Phenomena.			CompountPhenomenon	Lines 75 - 76
75	base	Phenomenon that forms the basis for generating more specialized composite Phenomenon by adding more components	O	1	PhenomenonProperty	Unrestricted
76	component	Phenomenon component(s) in addition to the base one.	M	*	PhenomenonProperty	Unrestricted

77	CompoundPhenomenon	Description of a set of Phenomena. A Phenomenon set may defined as either 1. a set of explicitly enumerated components which may or may not be related to one another 2. a base property convolved with a set of constraints. The set of constraints may be either an explicit set of soft-typed measures, intervals and categories one or more lists of soft-typed measures, intervals and categories one or more sequences of soft-typed measures and intervals.			<<Abstract>>	Lines 78 - 78
78	dimension	The number of components in the tuple.	M	1	PositiveInteger	Unrestricted
79	ConditionalValue	A special type of DataGroup whose value is based on one or more condition properties. Each condition can take another quantity value (e.g. an atmospheric pressure measured at 25 degrees Celsius), a textual description of the condition (e.g. sensitivity measured with a given method), or a time (e.g. calibration curve measured at a given time).			GroupBase	Lines 80 - 81
80	condition	Condition(s) under which the value applies.	M	*	ConditionalValue::Condition	Unrestricted
81	value	Value that applies under specified conditions.	O	1	ConditionalValue::Value	Unrestricted
82	ConditionalValue::Condition	Named condition or reference to condition.				Lines 83 - 85
83	anyDataOrDiscussion	Union of and choice between AnyData or a Discussion	M	1	ConditionalValue::Condition::AnyDataOrDiscussion	Unrestricted
84	associationAttributes	An XLink locator attribute reference to AnyDataOrDiscussion.	M	1	AssociationAttributes	Unrestricted
85	name	Name of the condition.	M	1	QnameSimple	Unrestricted
86	ConditionalValue::Condition::AnyDataOrDiscussion	Union of and choice between AnyData or a Discussion			<<Union>>	Lines 87 - 88
87	anyData	Any data that constrain the condition.	M	1	AnyData	Unrestricted
88	discussion	A descriptive text with an optional topic describing the condition.	M	1	Discussion	Unrestricted
89	ConditionalValue::Value	Value that applies under specified condition(s).				Lines 90 - 91
90	anyData	Any data value.	O	1	AnyData	Unrestricted
91	associationAttributes	An XLink:href reference to any data value.	M	1	AssociationAttributes	Unrestricted
92	ConstrainedPhenomenon	A scalar Phenomenon defined by adding constraints to an existing property.				Lines 93 - 94

93	base	Property that forms the basis for generating a set of more refined Phenomena; e.g. Chemical Composition, Radiance	M	1	PhenomenonProperty	Unrestricted
94	singleConstraint		M	*	singleConstraint	Unrestricted
95	ConstraintLists	Constraint sets expressed in compact form. The base property is associated with each value or interval in turn			<<Union>>	Lines 96 - 98
96	categoryConstraintList	A list of values from a classification ; e.g. Chemical Species	M	1	TypedCategoryList	Unrestricted
97	intervalConstraintList	A list of *pairs* of numeric values each defining an interval of some property; e.g. Wavelength band	M	1	TypedMeasureList	Unrestricted
98	measureConstraintList	A list of numeric values of some property; e.g. Wavelength	M	1	TypedMeasureList	Unrestricted
99	Count	A Count or Empty that takes definition, axisCode, fixed and ID as attributes.				Lines 100 - 105
100	axisCode	Attribute that allows one to relate a quantity to the axis of a defined reference frame.	O	1	AxisCodeSimple	"X", "Y", "Z"
101	definition	A reference to a definition of this item.	O	1	Definition	Unrestricted
102	fixed	true or 1 if this item has a fixed value.	O	1	Boolean	Unrestricted
103	id	ID of this item.	O	1	ID	Unrestricted
104	max	Maximum value for this item.	O	1	Integer	Unrestricted
105	min	Minimum value for this item.	O	1	Integer	Unrestricted
106	CountList	A list of counts.			<<List>>	
107	CountOrEmpty	A Count or an empty string.			<<Union>>	Lines 108 - 109
108	count	A count	M	1	Integer	Unrestricted
109	empty	An empty string.	M	1	Empty	Unrestricted
110	CountPair	A list of two counts.			<<List>>	
111	CountRange	A list of two integers used for specifying a count range.			CountPair	Lines 112 - 115
112	axisCode	Code to indicate the axis in 3D.	O	1	AxisCodeSimple	"X", "Y", "Z"
113	definition	A reference to a definition of this item.	O	1	Definition	Unrestricted
114	fixed	true or 1 if this item has a fixed value.	O	1	Boolean	Unrestricted
115	id	ID of this item.	O	1	ID	Unrestricted
116	Curve	Definition of a parameter curve (1-dimensional				Lines 117 -

		geometric primitive, representing the continuous image of a line) with specified axes, e.g. temperature and resistance.				118
117	definition	The definition of the axes of a curve.	M	1	Curve::Definition	Unrestricted
118	tupleValues	List of space separated tuples.	M	1	TupleValues	Unrestricted
119	Curve::Definition	Definition of a curve by specification of its axes and coordinates.			<<DataType>>	Lines 120 - 120
120	coordinates	Coordinates that define a curve.	M	1	Curve::Definition::Coordinates	Unrestricted
121	Curve::Definition::Coordinates	Coordinates that define a Curve.			<<DataType>>	Lines 122 - 122
122	axis	Axis of a Curve.	M	*	Curve::Definition::Coordinates::Axis	Unrestricted
123	Curve::Definition::Coordinates::Axis	Axis of a Curve.			<<DataType>>	Lines 124 - 125
124	anyScalar	Definition of the acis of a curve.	M	1	AnyScalar	Unrestricted
125	name	Name of the axis of a curve.	M	1	QnameSimple	Unrestricted
126	Curves	Choice between a Curve and a NormalizedCurve			<<Union>>	Lines 127 - 128
127	curve	Definition of a parameter curve (1-dimensional geometric primitive, representing the continuous image of a line) with specified axes, e.g. temperature and resistance.	M	1	Curve	Unrestricted
128	normalizedCurve	A NormalizedCurve takes a Curve as the value of its function property, but adds inputGain, inputBias, outputGain, and outputBias as additional properties. These properties alter the mapping of input values to output values according to the equation, based on the following algorithm: normalizedInput = input * inputGain + inputBias. obtain normalizedOutput from the Curve Look-up-table based on normalizedInput; output = normalizedOutput * outputGain + outputBias. Using a normalized curve allows one to reuse a general curve form, while allowing the curve values to be altered within a process chain by changing bias and gain values. A NormalizedCurve should not have more than two Coordinates.	M	1	GroupBase	Unrestricted
129	Data	Data with identity.			<<Abstract>>	Lines 130 -

						130
130	id	ID of this item.	O	1	ID	Unrestricted
131	DataArray	Array of other data components with a size. Defines an array of values of the type specified in component. Since component is of the type anyData, DataArray may be used to define a simple array of anyScalar value (e.g. temperature).				Lines 132 - 133
132	component	Data element that is any one of the specified types.	O	1	DataArray::Component	Unrestricted
133	tupleValues	Property that provides a value of the DataArray listing all values contained in the array.	O	1	TupleValues	Unrestricted
134	DataArray::Component	Data element that is a container of or reference to any one of the specified types.			<<DataType>>	Lines 135 - 137
135	anyData	Data element that is any one of the specified types.	O	1	AnyData	Unrestricted
136	associationAttributes	XLink:href Reference to anyData.	M	1	AssociationAttributes	Unrestricted
137	name	name of the component.	O	1	QnameSimple	Unrestricted
138	DataComponentsProperty	DataComponents or a reference thereto.				Lines 139 - 141
139	anyData	Data element that is any one of the specified types.	O	1	AnyData	Unrestricted
140	associationAttributes	XLink:href Reference to anyData.	M	1	AssociationAttributes	Unrestricted
141	name	name of the component.	M	1	NameSimple	Unrestricted
142	DataDefinition	Schema that explicitly describes data components in a structure and the encoding of expected values.				Lines 143 - 145
143	dataComponents	Uses scalar and aggregate components to describe the nature and the meaning of elements within a data structure	M	1	DataComponentsProperty	Unrestricted
144	encoding	Specifies if the actual data is encoded as an ASCII block, a binary block, or as a simple, standard format defined by a MIME-type (e.g. jpeg image).	M	1	EncodingProperty	Unrestricted
145	id	ID of this item.	O	1	ID	Unrestricted
146	DataDefinitionProperty	Container of or reference to a DataDefinition				Lines 147 - 148

147	associationAttributes	XLink:href reference to a DataDefinition.	M	1	AssociationAttributes	Unrestricted
148	dataDefinition	Contained Data Definition.	O	1	DataDefinition	Unrestricted
149	DataGroup	Derived from abstract _DataGroup, defines some logical collection of data values of any type, including scalars, ranges, groups and arrays. Like scalar data values, the DataGroup itself can contain definition and fixed attributes.				Lines 150 - 150
150	component	Data element that is any one of the specified types.	O	1	DataGroup::Component	Unrestricted
151	DataGroup::Component	Data element that is a container of or reference to any one of the specified types.			<<DataType>>	Lines 152 - 154
152	anyData	Data element that is any one of the specified types.	O	1	AnyData	Unrestricted
153	associationAttributes	XLink:href Reference to anyData.	M	1	AssociationAttributes	Unrestricted
154	name	name of the component	M	1	QnameSimple	Unrestricted
155	DataValue	supports data values as a string, as with tuple and base64 blocks; can also allow an external link to out-of-band data; can also support multiplex data that takes XML elements, such as TML				Lines 156 - 156
156	externalLink	XLink:href to remote DataValue.	O	1	AnyURI	Unrestricted
157	Date	Date			<<Simple>>	
158	DateTime	DateTime			<<Simple>>	
159	DecimalList	A list of decimals.			<<List>>	
160	DecimalOrEmpty	Choice between a decimal or an empty string.			<<Union>>	Lines 161 - 162
161	decimal	Decimal	M	1	Decimal	Unrestricted
162	empty	An empty string.	M	1	Empty	Unrestricted
163	DecimalPair	A list of two cecimals			<<List>>	
164	Definition	A reference to a definition of this item.			<<Simple>>	
165	Double	A double precision value.			<<Simple>>	
166	DoubleList	A list of double precision numbers.			<<List>>	Lines 167 - 167
167	double	A double precision number.	M	1	Double	Unrestricted
168	Empty	An empty string.			<<Simple>>	
169	Encoding	Base Encoding Type.			<<Abstract>>	Lines 170 -

						170
170	id	ID of this item.	O	1	ID	Unrestricted
171	EncodingProperty	Contains or references an Encoding.				Lines 172 - 173
172	associationAttributes	XLink:href reference to an Encoding.	M	1	AssociationAttributes	Unrestricted
173	encoding	Encoding type.	O	1	Encoding	Unrestricted
174	GeoLocation	Position given by latitude, longitude, altitude				Lines 175 - 177
175	altitude	Altitude	O	1	Quantity	Unrestricted
176	latitude	Latitude.	O	1	Quantity	Unrestricted
177	longitude	Longitude	O	1	Quantity	Unrestricted
178	GridDefinition	Definition of how to unpack an array and assign atomic values to components of map vectors.				Lines 179 - 181
179	dimension	The number of axes in the grid	M	1	PositiveInteger	Unrestricted
180	map	describes the values of the independent variable for one axis of the grid	O	*	ItemArrayProperty	Unrestricted
181	tupleMap	Container of or reference to axis and record definitions.	M	1	RecordSchemaProperty	Unrestricted
182	GridDefinitionProperty	Container of or reference to a GridDefinition.				Lines 183 - 184
183	associationAttributeGroup	XLink:href reference to a GridDefinition.	M	1	Gml:AssociationAttributeGroup	Unrestricted
184	gridDefinition	A contained GridDefinition.	O	1	GridDefinition	Unrestricted
185	GroupBase	Abstract base type with ID, definition and fixed attributes.			<<Abstract>>	Lines 186 - 188
186	definition	A reference to a definition of this item.	O	1	Definition	Unrestricted
187	fixed	true or 1 if this item has a fixed value.	O	1	Boolean	Unrestricted
188	id	ID of this item.	O	1	ID	Unrestricted
189	IDREF	Reference to an item with identity.			<<Simple>>	
190	IndexArray	Ordered array whose members are simply index numbers				
191	Integer	Integer			<<Simple>>	
192	ItemArray	Basic ordered array type.				Lines 193 - 193
193	arrayLength	The length of a basic ordered array.	M	1	Count	Unrestricted
194	ItemArrayProperty	Contains or references an ItemArray.				Lines 195 - 196

195	associationAttributeGroup	XLink:href reference to an ItemArray.	M	1	Gml:AssociationAttributeGroup	Unrestricted
196	itemArray	Contained ItemArray.	O	1	ItemArray	Unrestricted
197	ItemDefinition	Description of a scalar property with its representation and scale and (optional) quality indicators.				Lines 198 - 201
198	procedure	Procedure by which this item is observed.	O	1	gml:Reference	Unrestricted
199	property	Description of a property in a gml:Definition	M	1	PhenomenonProperty	Unrestricted
200	quality	Quality indicators for this item.	M	1	meta:QualityProperty	Unrestricted
201	representation	Describes the "value-space" in terms of a base type and facets, or a composite such as a union.	M	1	Representation	Unrestricted
202	ItemDefinitionProperty	A structure that associates attributes to item defintions.				Lines 203 - 204
203	associationAttributeGroup	The attribute group that is associated with an itemDefinition.	M	1	Gml:AssociationAttributeGroup	Unrestricted
204	itemDefinition	A definition of an item.	O	1	ItemDefinition	Unrestricted
205	ItemSeriesDefinition	Description of a series of scalar properties with a common representation and scale and (optional) quality indicators.				Lines 206 - 206
206	recordLength	The number of components in the tuple.	M	1	PositiveInteger	Unrestricted
207	ItemSeriesDefinitionProperty	Contains or references a SeriesDefinition.				Lines 208 - 209
208	associationAttributeGroup	XLink:href reference to a SeriesDefinition	M	1	Gml:AssociationAttributeGroup	Unrestricted
209	itemSeriesDefinition	Contained ItemSeriesDefinition.	O	1	ItemSeriesDefinition	Unrestricted
210	Location	The translational relationship of a point in space to some reference frame.				Lines 211 - 211
211	coordinate	Named Coordinate Axis specified by a quantity.	M	3	Location::Coordinate	Unrestricted
212	Location::Coordinate	Named Coordinate Axis specified by a quantity.				Lines 213 - 214
213	name	Name of the coordinate axis.	M	1	QnameSimple	Unrestricted
214	quantity	Position on the axis.	M	1	DecimalOrEmpty	Unrestricted
215	MultiplexEncoding	Indicator for encoding of a multiplexed stream of data.			<<Abstract>>	
216	MultiplexEncodingProperty	Contains or references a MultiplexEncoding.				Lines 217 - 218
217	associationAttributes	XLink:href reference to a MultiplexEncoding.	M	1	AssociationAttributes	Unrestricted
218	multiplexEncoding	Contained MultiplexEncoding.	O	1	MultiplexEncoding	Unrestricted

219	NameSimple	An unqualified name token.			<<Simple>>	
220	NonNegativeInteger	NonNegativeInteger			<<Simple>>	
221	NonNegativeIntegerList	List of NonNegativeIntegers.			<<List>>	Lines 222 - 222
222	nonNegativeInteger	List item.	M	1	NonNegativeInteger	Unrestricted
223	NormalizedCurve	A NormalizedCurve takes a Curve as the value of its function property, but adds inputGain, inputBias, outputGain, and outputBias as additional properties. These properties alter the mapping of input values to output values according to the equation, based on the following algorithm: normalizedInput = input * inputGain + inputBias. obtain normalizedOutput from the Curve Look-up-table based on normalizedInput; output = normalizedOutput * outputGain + outputBias. Using a normalized curve allows one to reuse a general curve form, while allowing the curve values to be altered within a process chain by changing bias and gain values. A NormalizedCurve should not have more than two Coordinates.				Lines 224 - 230
224	extrapolationMethod	Category of extrapolation method.	O	1	Category	Unrestricted
225	function	Base curve subject ot normalization.	M	1	Curve	Unrestricted
226	inputBias	Value added to input values after they scaled by the input gain.	O	1	DecimalOrEmpty	Unrestricted
227	inputGain	Factor multiplied to all input values.	O	1	DecimalOrEmpty	Unrestricted
228	interpolationMethod	Category of interpolation method.	O	1	Category	Unrestricted
229	outputBias	Value added to all output values.	O	1	DecimalOrEmpty	Unrestricted
230	outputGain	Scale factor applied to all output values.	O	1	DecimalOrEmpty	Unrestricted
231	NumberData	Numeric values with a reference system and unit of measure.			<<DataType>>	Lines 232 - 233
232	frame	Use this element to indicate the description of a reference system for numeric values on an interval scale.	M	0	Gml:Reference	Unrestricted
233	unitOfMeasure	Use this element to indicate an unit of measure for numeric values on a ratio scale.	M	1	Gml:UnitOfMeasure	Unrestricted
234	ObjectArray	Ordered array whose members are references to items defined elsewhere				Lines 235 - 235

235	member	Member of an ordered array.	M	*	Gml:Reference	Unrestricted
236	Orientation	The rotational relationship of one spatial reference frame to another. Given by euler angle with an order of rotation.				Lines 237 - 238
237	coordinate	Position on a named coordinate axis specified by a quantity.	M	3	Orientation::Coordinate	Unrestricted
238	order	Order specified by category.	M	1	Category	Unrestricted
239	Orientation::Coordinate	Position on a named coordinate axis specified by a quantity.				Lines 240 - 241
240	name	Name of coordinate axis.	M	1	QnameSimple	Unrestricted
241	quantity	Coordinate position.	M	1	Quantity	Unrestricted
242	Phenomenon	An or physical property that can be observed and measured, such as temperature, gravity, chemical concentration, orientation, number-of-individuals.			Gml:Definition	
243	PhenomenonProperty	Contains or references a Phenomenon				Lines 244 - 245
244	associationAttributeGroup	Refeence to a Phenomenon	M	1	Gml:AssociationAttributeGroup	Unrestricted
245	phenomenon	A contained Phenomenon.	O	1	Phenomenon	Unrestricted
246	PhenomenonSeries	Applies one or more constraintLists to the base phenomenon, each providing a set of values for a single secondary axis.				Lines 247 - 248
247	base	Phenomenon that forms the basis for generating a set of more refined Phenomena; e.g. Chemical Composition, Radiance	M	1	PhenomenonProperty	Unrestricted
248	constraintLists	List of constraints specified in compact form.	M	*	ConstraintLists	Unrestricted
249	Position	Location and Orientation given by a sequence of rotations or translations. Transformations are applied in the order listed				Lines 250 - 254
250	localFrame	Position of a local coordinate frame to an external reference coordinate frame.	O	1	AnyURI	Unrestricted
251	location	The translational relationship of a point in space to some reference frame.	O	1	Position::Location	Unrestricted
252	orientation	The rotational relationship of one spatial reference frame to another.	O	1	:Orientation	Unrestricted
253	referenceFrame	A coordinate system by which the position (location and orientation) of an object can be	O	1	AnyURI	Unrestricted

		referenced.				
254	time	Time	O	1	Time	Unrestricted
255	Position::Location	Union of and choice between a position and a location			<<Union>>	Lines 256 - 257
256	geoLocation	Position given by latitude, longitude, altitude.	M	1	GeoLocation	Unrestricted
257	location	The translational relationship of a point in space to some reference frame.	M	1	Location	Unrestricted
258	PositionFrame	The location and orientation of one reference frame to another.			<<Abstract>>	Lines 259 - 263
259	localFrame	Position of a local coordinate frame to an external reference coordinate frame.	O	1	AnyURI	Unrestricted
260	location	The translational relationship of a point in space to some reference frame.	O	1	Position::Location	Unrestricted
261	orientation	The rotational relationship of one spatial reference frame to another.	O	1	:Orientation	Unrestricted
262	referenceFrame	A coordinate system by which the position (location and orientation) of an object can be referenced.	O	1	AnyURI	Unrestricted
263	time	Time	O	1	Time	Unrestricted
264	PositiveInteger	PositiveInteger			<<Simple>>	
265	Quantity	Structure that represents a property (or phenomenon) that can be quantified using a decimal value. Quantities represent a real continuous value along some defined axis, and thus are usually encoded using a decimal number (floating-point).				Lines 266 - 273
266	axisCode	Allows one to relate the Quantity to the axis of a defined reference frame.	O	1	AxisCodeSimple	"X","Y","Z"
267	definition	Identifies the phenomenon (or other context) of the value and takes anyURI as its value.	O	1	Definition	Unrestricted
268	fixed	When set to true, signifies that the value cannot be changed dynamically.	O	1	Boolean	Unrestricted
269	id	ID of this item.	O	1	ID	Unrestricted
270	max	Maximum allowed value.	O	1	Double	Unrestricted
271	min	Minimum allowed value.	O	1	Double	Unrestricted
272	scale	Factor to multiply the Value by to place it in the laisted units. Example: if the unit is m (meter) and	O	1	Double	Unrestricted

		the scale factor is 1e-3 or 0.001, one can interpret the value as being given in m x 1e-3 = mm or multiply the value by the scale factor before asserting it is given in meters.				
273	uom	Units of measure expressed as anyURI or a standard unit symbol.	O	1	Uom	Unrestricted
274	QuantityRange	Decimal pair for specifying a quantity range, with additional attributes.			QuantityPair	Lines 275 - 280
275	axisCode	Code to indicate the axis in 3D.	O	1	AxisCodeSimple	"X", "Y", "Z"
276	definition	A reference to a definition of this item.	O	1	Definition	Unrestricted
277	fixed	true or 1 if this item has a fixed value.	O	1	Boolean	Unrestricted
278	id	ID of this item.	O	1	ID	Unrestricted
279	scale	Scale for this QuantityRange.	O	1	Double	Unrestricted
280	uom	Unit of Measure for this QuantityRange.	O	1	Uom	Unrestricted
281	Record	Structure containing one complete element of a data series.				Lines 282 - 282
282	item	One component of a logical record.	M	*	Any	Unrestricted
283	RecordDefinition	A stucture used to define a records content.				Lines 284 - 285
284	component	A logical segment of a record definition.	M	*	RecordScehamProperty	Unrestricted
285	recordLength	The length of a logical record.	M	*	PositiveInteger	Unrestricted
286	RecordDefinitionProperty	Contains or references a RecordDefinition.				Lines 287 - 288
287	associationAttributeGroup	An XLink:href reference to a RecordDefinition.	M	1	Gml:AssociationAttributeGroup	Unrestricted
288	recordDefinition	A contained RecordDefinition.	O	1	RecordDefinition	Unrestricted
289	RefList	A structure that contains a list of references.			<<List>>	Lines 290 - 290
290	anyURI	Type of string that represents a Uniform Resource Identifier (URI), and, in turn, the resource identified by that URI.	M	1	AnyURI	Unrestricted
291	RelativeMeasure	Structure containing a measure referenced to a datum.				Lines 292 - 293
292	relativeMeasure	A measurement made relative to a datum.	O	1	RelativeMeasureCode	Unrestricted
293	uom	Unit of measure.	M	1	UomIdentifier	Unrestricted
294	RelativeMeasureCode	This enumerated data type specifies values for relative measures.			<<Enumeration>>	Lines 295 - 303

295	equals	Has the same value as.	M	1	String	Unrestricted
296	greaterThan	Has greater magnitude than.	M	1	String	Unrestricted
297	greaterThanOrEquals	Is of a greater or the same magnitude as.	M	1	String	Unrestricted
298	lessThan	Is of a lesser magnitude.	M	1	String	Unrestricted
299	lessThanOrEquals	Has the same or less magnitude as.	M	1	String	Unrestricted
300	nil:inapplicable	No value - inapplicable.	M	1	String	Unrestricted
301	nil:missing	No value - missing.	M	1	String	Unrestricted
302	nil:unknown	Value not known.	M	1	String	Unrestricted
303	nil:withheld	No value: withheld.	M	1	String	Unrestricted
304	Representation	Uses components copied from XML Schema to describe the "value-space" in terms of a base type and facets, or a composite such as a union. For numeric types this will normally indicate integer, double etc and (optionally) facets to describe one or more intervals or a precision. For textual types this will normally indicate string, token etc and (optionally) facets will indicate a pattern, enumeration, length etc.			<<Union>>	Lines 305 - 308
305	boolean	Representation of a boolean with a restricted domain.	M	1	Representation::Boolean	Unrestricted
306	number	Representation of a number with a restricted domain.	M	1	Representation::Number	Unrestricted
307	simple	Representation of a simple type with a restricted domain.	M	1	Representation::Simple	Unrestricted
308	word	Representation of a word with a restricted domain.	M	1	Representation::Word	Unrestricted
309	Representation:::Boolean	Representation of a boolean with a restricted domain.			<<DataType>>	Lines 310 - 310
310	restriction	Restriction on the domain of Boolean.	M	1	Representation::Boolean::Restrictio n	Unrestricted
311	Representation::Boolean::Restriction	Restriction on the domain of Boolean.			<<DataType>>	Lines 312 - 312
312	enumeration	Enumerated values of restriction.	M	2	St:enumeration	Unrestricted
313	Representation::Number	Restriction on the domain of Number.			<<DataType>>	Lines 314 - 315
314	numberData	Frame and Unit of Measure.	M	1	NumberData	Unrestricted
315	restriction	Restriction on the domain of Number.	O	1	Representation::Number::Restrictio	Unrestricted

					n	
316	Representation::Number::Restriction	Restriction on the domain of Number.			<<DataType>>	Lines 317 - 320
317	maxExclusive	Maximim exclusive value.	O	1	St:facet	Unrestricted
318	maxInclusive	Maximum inclusive value.	O	1	St:facet	Unrestricted
319	minExclusive	Minimum exclusive value.	O	1	St:facet	Unrestricted
320	minInclusive	Minimum inclusive value.	O	1	St:facet	Unrestricted
321	Representation::Simple	Restriction on the domain of Simple.			<<DataType>>	Lines 322 - 322
322	scale	Restricted sacle	M	1	scale	Unrestricted
323	Representation::Word	Restriction on the representation of Word.			<<DataType>>	Lines 324 - 325
324	classification	Means of specifying classification values with types such as "sensorType", "intendedApplication", etc., whose terms can be defined in a dictionary.	M	1	Gml:StringOrRef	Unrestricted
325	restriction	Restriction on the representation of Word.	O	1	Representation::Word::Restriction	Unrestricted
326	Representation::Word::Restriction	Restriction on the representation of Word.			<<DataType>>	Lines 327 - 328
327	enumeration	Enumerated values of restriction.	M	*	St:noFixedFacet	Unrestricted
328	pattern	REGular EXpression pattern of restriction	M	1	St:noFixedFacet	Unrestricted
329	Scale	Informally or externally described classification scheme for values on an Ordinal or Nominal scale			<<Union>>	Lines 330 - 333
330	classification	Use this element to indicate an informally or externally described classification scheme for values on an Ordinal or Nominal scale.	M	1	Gml:StringOrRef	Unrestricted
331	frame	Use this element to indicate the description of a reference system for numeric values on an interval scale.	M	1	Gml:Reference	Unrestricted
332	noScale	Indicator that there is no scale.	M	1	Boolean	true
333	uomFrame	Frame and Unit Of Measure	M	1	Scale::UomFrame	Unrestricted
334	Scale::UomFrame	Frame and Unit Of Measure			<<DataType>>	Lines 335 - 336
335	frame	Reference to a Frame.	M	1	gml:Reference	Unrestricted
336	unitOfMeasure	Unit Of Measure.	M	1	gml:UnitOfMeasure	Unrestricted

337	ScopedName	Extension of string which also carries a codeSpace attribute.				Lines 338 - 338
338	codeSpace	Reference to the Code Space for a string	M	1	AnyURI	Unrestricted
339	ScopedNameList	Extension of stringList which also carries a codeSpace attribute.				Lines 340 - 341
340	codeSpace	Reference to the Code Space for a string	M	1	AnyURI	Unrestricted
341	count	Number of items in list.	O	1	NonNegativeInteger	Unrestricted
342	SimpleDataProperty	Supports a DataGroup/DataArray with inline data values				Lines 343 - 344
343	anyData	Contained data element that is any one of the specified types.	O	1	AnyData	Unrestricted
344	associationAttributes	XLink:href reference to AnyData.	M	1	AssociationAttributes	Unrestricted
345	SingleConstraint	Constraints expressed in fully explicit form. The base Phenomenon is associated with each value or interval in turn			<<Union>>	Lines 346 - 349
346	categoryConstraint	A value from a classification that constrains the base Phenomenon; e.g. Chemical Species	M	1	TypedCategory	Unrestricted
347	intervalConstraint	An interval or range of some property that constrains the base Phenomenon; e.g. Wavelength band	M	1	TypedMeasureInterval	Unrestricted
348	measureConstraint	A numeric value of some property that constrains the base Phenomenon; e.g. Wavelength	M	1	TypedMeasure	Unrestricted
349	otherConstraint	Some other type of consraint on the base Phenomenon.	M	1	Gml:StringOrRef	Unrestricted
350	StandardFormat	Encoding type that allows one to encapsulate data presented in well-known formats such as jpeg or gif. This is done by specifying the mimeType of the corresponding format. Note that in this case, the MIME type applies to the whole data structure.				Lines 351 - 351
351	mimeType	Mime type of a Standard Format structure.	M	1	Token	Unrestricted
352	StringList	When appearing in a list context, internal whitespace is interpreted as an item separator. Strings may be represented in a list by escaping spaces as a (non-breaking space) entity.			<<List>>	Lines 353 - 353
353	string	String item in list.	M	1	String	Unrestricted
354	SWECompactNumericRecord	A set of numeric values, representing a list of				Lines 355 -

		Records or a table. A single record is a list with just one member. Generalises the approach used for gml:DirectPositionType, replacing "srsName" with "RS" (record schema). This allows a table of values to be recorded in compact form, as a whitespace-separated list of doubles. In general, Record components increment fastest, followed by Record instances, so if you think of this as a table in which the rows are Records, then the representation is left-to-right followed by down the table. To assist direct inspection of the data, good practice is to use * linefeed between Records, and * tab between components in a Record. However any whitespace character sequence is a valid separator between items.				357
355	recordCount	The number of Records in the list.	O	1	NonNegativeInteger	Unrestricted
356	recordLength	The number of components in the Record. Should this be mandatory?	O	1	PositiveInteger	Unrestricted
357	rs	Pointer to record definition or schema. The RS description should indicate the semantics/label and units of measure for each component, and the order in which the components appear in the Record. RS may be omitted, in which case it is the same as the previous value in the current context or document.	O	1	AnyURI	Unrestricted
358	SWECompactRecord	A set of values, representing a Record. Generalises the approach used for swe:NumericRecordType. This allows a Record to be recorded in compact form, as a list of tokens. Note that XML "token" may contain embedded single spaces, so item separators should be tabs, linefeeds, or two or more consecutive spaces.				Lines 359 - 361
359	recordCount	The number of Records in the list.	O	1	NonNegativeInteger	Unrestricted
360	recordLength	The number of components in the Record. Should this be mandatory?	O	1	PositiveInteger	Unrestricted
361	RS	Pointer to definition of the reference system for the Record. The RS description should indicate the semantics/label and units of measure or	O	1	AnyURI	Unrestricted

		value-space (if appropriate) for each component, and the order in which the components appear in the Record. RS may be omitted, in which case it is the same as the previous value in the current context or document.				
362	SWERecordSchema	Extension of a GML Definition with axis and record definitions.			Gml:Definition	
363	SWERecordSchemaProperty	Container of or reference to axis and record definitions.				Lines 364 - 365
364	associationAttributeGroup	Xlink:href reference to an external SWERecordSchema	M	1	Gml:AssociationAttributeGroup	Unrestricted
365	sWERecordSchema	A contained SWERecordSchema	O	1	SWERecordSchema	Unrestricted
366	Text	String with ID and topic.				Lines 367 - 368
367	id	ID of this item.	O	1	ID	Unrestricted
368	topic	Topic of this item.	O	1	Token	Unrestricted
369	Time	Either ISO 8601 (e.g. 2004-04-18T12:03:04.6Z) or time relative to a time origin.			TimeSimple	Lines 370 - 382
370	definition	A reference to a definition of this item.	O	1	Definition	Unrestricted
371	double	Unix processor time as a Double	O	1	Double	Unrestricted
372	empty	An empty string.	O	1	Boolean	Unrestricted
373	fixed	true or 1 if this item has a fixed value.	O	1	Boolean	Unrestricted
374	id	ID of this item.	O	1	ID	Unrestricted
375	iso8601TimeSimple	Iso8601TimeSimple	O	1	Iso8601TimeSimple	Unrestricted
376	localTimeFrame	Reference to local time frame.	O	1	AnyURI	Unrestricted
377	max	Maximum Time.	O	1	TimeSimple	Unrestricted
378	min	Minimum Time.	O	1	TimeSimple	Unrestricted
379	referenceTimeFrame	Simple Time Reference	O	1	TimeReferenceSimple	Unrestricted
380	scale	Time scale.	O	1	Double	Unrestricted
381	time	Time origin for relative time.	M	1	TimeSimple	Unrestricted
382	uom	Unit of Measure.	O	1	Uom	Unrestricted
383	TimeAggregate	A GML AbstractTimeObject extended with one or more TimeObjectProperty members.				Lines 384 - 384
384	member	Time object(s) that are members of the aggregate.	M	*	TimeObjectProperty	Unrestricted
385	TimeAggregateProperty	Contains or references a TimgeAggregate				Lines 386 -

						387
386	associationAttributeGroup	XLink:href reference to an external TimeAggregate	M	1	Gml:AssociationAttribteGroup	Unrestricted
387	timeAggregate	A contained TimeAggregate.	O	1	TimeAggregate	Unrestricted
388	TimeGeometricComplex	Extended GML AbstractTimeComplex with a reference to an identified time primitive.				Lines 389 - 389
389	primitive	Reference to an identified time primitive.	M	*	gml:TimeGeometricPrimitivePropert y	Unrestricted
390	TimeGeometricComplexProperty	Contains or references a TimeGeometricComplex.				Lines 391 - 392
391	associationAttributeGroup	XLink:href reference to an external TimeGeometricComplex.	M	1	Gml:AssociationAttributeGroup	Unrestricted
392	timeGeometricComplex	Contained TimeGeometricComplex.	O	1	TimeGeometricComplex	Unrestricted
393	TimeGrid	Regular "grid" of time-points. Follow pattern of (ISO 19123) spatial grids: these have (dimension,axisName,extent(,origin,offsetVector)) For temporal case, dimension is fixed (1), axisName is fixed ("time")				Lines 394 - 397
394	duration	Grid temporal extent.	O	1	Duration	Unrestricted
395	extent	Grid extent specified in grid coordinates - i.e. 2 integers	M	1	TimeGridExtent	Unrestricted
396	offsetChoice	Union of and choice between an offsetDuration and an offsetInterval.	M	1	TimeGrid::OffsetChoice	Unrestricted
397	originChoice	Union of and choice between a simple-content time position and an identified time instant.	M	1	TimeGrid::OriginChoice	Unrestricted
398	TimeGrid::OffsetChoice	Union of and choice between an offsetDuration and an offsetInterval.			<<Union>>	Lines 399 - 400
399	offsetDuration	XML Schema built-in simple type for duration: e.g. P1Y (1 year) P1M (1 month) P1DT12H (1 day 12 hours) PT5M (5 minutes) PT0.007S (7 milliseconds)	M	1	Duration	Unrestricted
400	offsetInterval	representation of the ISO 11404 model of a time interval length: e.g. value=1, unit="year" value=1, unit="other:month" (or see next) value=1, unit="year" radix="12" factor="1" (1/12 year) value=1.5, unit="day" value=36, unit="hour" value=5, unit="minute" value=7, unit="second" radix="10" factor="3" (7 milliseconds)	M	1	Gml:TimeIntervalLength	Unrestricted

401	TimeGrid::OriginChoice	Union of and choice between a simple-content time position and an identified time instant.			<<Union>>	Lines 402 - 403
402	origin	Reference to an identified time instant	M	1	Gml:TimeInstantProperty	Unrestricted
403	originPos	Simple-content time position	M	1	Gml:TimePosition	Unrestricted
404	TimeGridExtent	Grid extent specified in grid coordinates - i.e. 2 integers				Lines 405 - 405
405	seriesEnvelope	Low and high grid coordinates.	M	1	TimeGridExtent::SeriesEnvelope	Unrestricted
406	TimeGridExtent::SeriesEnvelope	Low and high grid coordinates.			<<DataType>>	Lines 407 - 408
407	high	High grid coordinate.	M	1	Integer	Unrestricted
408	low	Low grid coordinate.	M	1	Integer	Unrestricted
409	TimeGridProperty	A structure that associates a timeGrid to an AttributeGroup.				Lines 410 - 411
410	associationAttributeGroup	Attribute group associated to a timeGrid.	M	1	Gml:AssociationAttributeGroup	Unrestricted
411	timeGrid	A time grid.	M	1	TimeGrid	Unrestricted
412	TimeInstantGrid	Extended time grid with window size property			TimeGrid	
413	TimeInstantGridProperty	Contains or references a TimeInsantGrid				Lines 414 - 415
414	associationAttributeGroup	XLink:href reference to an external TimeInstantGrid	M	1	Gml:AssociationAttributeGroup	Unrestricted
415	timeInstantGrid	Contained TimeInstantGrid	O	1	TimeInstantGrid	Unrestricted
416	TimeIntervalGrid	Extend time instant grid with window size property.				Lines 417 - 417
417	window	A temporal window.	M	1	TimeIntervalGrid::WindowChoice	Unrestricted
418	TimeIntervalGrid::WindowChoice	Structure that defines a chosen temporal window.			<<Union>>	Lines 419 - 420
419	windowDuration	The duration of a window choice.	M	1	Duration	Unrestricted
420	windowInterval	The interval of a chosen temporal window.	M	1	Gml:TimeIntervalLength	Unrestricted
421	TimeIntervalGridProperty	Contains or references a TimeIntervalGrid				Lines 422 - 423
422	associationAttributeGroup	XLink:href eference to an external TimeIntervalGrid.	M	1	Gml:AssociationAttributeGroup	Unrestricted
423	timeIntervalGrid	A contained TimeIntervalGrid.	M	1	TimeIntervalGrid	Unrestricted
424	TimeIso8601Simple	A union of and choice among a date, time, dateTime or timeString.			<<Union>>	Lines 425 - 428
425	date	Date	M	1	Date	Unrestricted

426	dateTime	Date and Time.	M	1	DateTime	Unrestricted
427	time	Time.	M	1	Time	Unrestricted
428	timeString	TimeString.	M	1	TimeString	Unrestricted
429	TimeObjectProperty	Contains or references a TimeObject.				Lines 430 - 431
430	associationAttributeGroup	Reference to an external TimeObject	M	1	Gml:AssociationAttributeGroup	Unrestricted
431	timeObject	Contained TimeObject.	M	1	Gml:TimeObject	Unrestricted
432	TimePositionList	TimePositionList instances hold a sequence of time positions within the same frame.			<<List>>	Lines 433 - 436
433	calendarEraname	Name of the calendar era for the time frame.	O	1	String	Unrestricted
434	count	Number of items in the list.	O	1	PositiveInteger	Unrestricted
435	frame	Reference time frame.	O	1	AnyURI	Unrestricted
436	indeterminatePosition	Indeterminate time value for use when determinate time position cannot be obtained.	O	1	gml:TimeIndeterminateValue	Unrestricted
437	TimeRange	Time value pair for specifying a time range (can be a decimal or ISO 8601).				Lines 438 - 444
438	definition	A reference to a definition of this item.	O	1	Definition	Unrestricted
439	fixed	true or 1 if this item has a fixed value.	O	1	Boolean	Unrestricted
440	id	ID of this item.	O	1	ID	Unrestricted
441	localTimeFrame	Reference to the time frame for the locale.	O	1	AnyURI	Unrestricted
442	referenceTimeFrame	Reference to a wider time frame.	O	1	TimeReferenceSimple	Unrestricted
443	scale	Time scale.	O	1	Double	Unrestricted
444	uom	Unit of Measure.	O	1	Uom	Unrestricted
445	TimeSimple	Union of and choice among time representations.			<<Union>>	Lines 446 - 458
446	definition	A reference to a definition of this item.	O	1	Definition	Unrestricted
447	double	Unix processor time as a Double	O	1	Double	Unrestricted
448	empty	An empty string.	O	1	Boolean	Unrestricted
449	fixed	true or 1 if this item has a fixed value.	O	1	Boolean	Unrestricted
450	id	ID of this item.	O	1	ID	Unrestricted
451	iso8601TimeSimple	Iso8601TimeSimple	O	1	Iso8601TimeSimple	Unrestricted
452	localTimeFrame	Reference to local time frame.	O	1	AnyURI	Unrestricted
453	max	Maximum Time.	O	1	TimeSimple	Unrestricted
454	min	Minimum Time.	O	1	TimeSimple	Unrestricted
455	referenceTimeFrame	Simple Time Reference	O	1	TimeReferenceSimple	Unrestricted

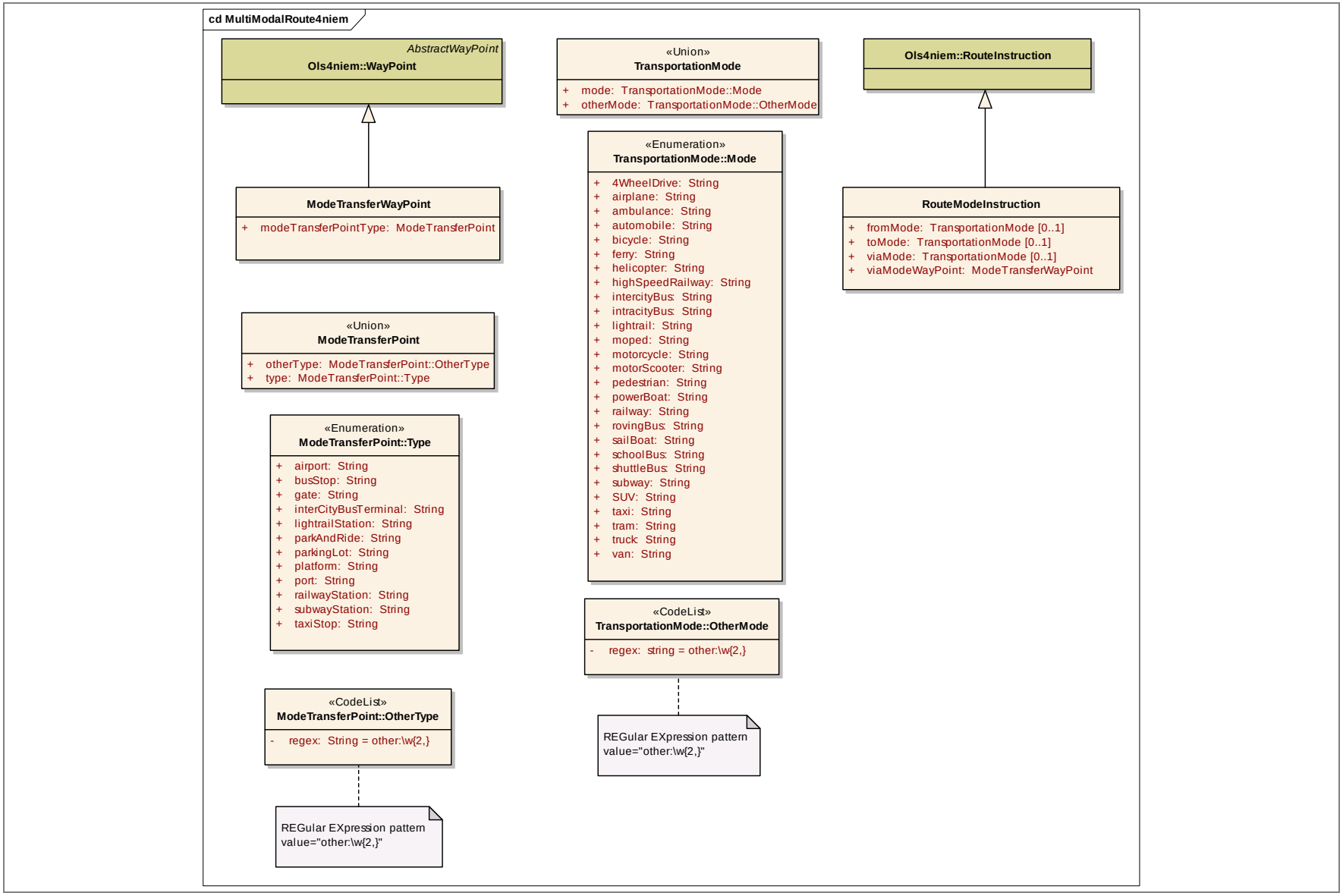
456	scale	Time scale.	O	1	Double	Unrestricted
457	time	Time origin for relative time.	M	1	TimeSimple	Unrestricted
458	uom	Unit of Measure.	O	1	Uom	Unrestricted
459	TimeValueList	Structure containing a list of time values.			<<List>>	Lines 460 - 460
460	timeValue	A time/position value on a TimeValueList.	M	1	gml:TimePositionUnion	Unrestricted
461	Token	The ·value space· of token is the set of strings that do not contain the carriage return (#xD), line feed (#xA) nor tab (#x9) characters, that have no leading or trailing spaces (#x20) and that have no internal sequences of two or more spaces. The ·lexical space· of token is the set of strings that do not contain the carriage return (#xD), line feed (#xA) nor tab (#x9) characters, that have no leading or trailing spaces (#x20) and that have no internal sequences of two or more spaces. The ·base type· of token is normalizedString.			<<Simple>>	
462	Tuple	An ordered set of values.			<<Simple>>	
463	TupleValues	A list of values stored as tuples.			<<List>>	
464	TypedCategory	A text value, taken from a value space identified by the value of the codeSpace attribute, and representing a description of the phenomenon identified by the property attribute.				Lines 465 - 466
465	codeSpace	Value space to which the category belongs.	M	1	AnyURI	Unrestricted
466	property	This attribute holds a reference to or label for the property being described. This will usually refer to a classification or phenomenon described on a nominal scale, such as lithology type, material colour.	M	1	AnyURI	Unrestricted
467	TypedCategoryInterval	A pair of text values, representing an interval of the phenomenon identified by the property attribute.				Lines 468 - 468
468	count	Fixed value of 2 for number of values.	M	2	NonNegativeInteger	Unrestricted
469	TypedCategoryList	A list of text values, taken from a value space identified by the value of the codeSpace attribute, and representing a set of descriptions of the phenomenon identified by the property attribute.				Lines 470 - 472
470	codeSpace	Value space for items in the list.	M	1	AnyURI	Unrestricted

471	count	Number of items in the list.	O	1	NonNegativeInteger	Unrestricted
472	property	This attribute holds a reference to or label for the property being described.	M	1	AnyURI	Unrestricted
473	TypedCount	A numeric value, representing a count of the phenomenon identified by the property attribute.				Lines 474 - 474
474	property	This attribute holds a reference to or label for the property being described.	M	1	AnyURI	Unrestricted
475	TypedCountInterval	A pair of numeric values, representing an interval of the phenomenon identified by the property attribute.			<<List>>	
476	TypedCountList	A pair of numeric values, representing a set of counts of the phenomenon identified by the property attribute.			<<List>>	Lines 477 - 478
477	count	Number of items in the list.	O	1	NonNegativeInteger	Unrestricted
478	property	This attribute holds a reference to or label for the property being described.	M	1	AnyURI	Unrestricted
479	TypedMeasure	A numeric value, expressed using the scale indicated by the value of the (mandatory) uom attribute, attribute, and representing a description of the phenomenon identified by the property attribute.				Lines 480 - 481
480	property	This attribute holds a reference to or label for the property being described. This will usually refer to a measure described on a ratio or interval scale, such as temperature, wavelength, concentration.	M	1	AnyURI	Unrestricted
481	uom	Unit of Measure	M	1	UomIdentifier	Unrestricted
482	TypedMeasureInterval	A pair of numeric values, expressed using the scale indicated by the value of the (mandatory) uom attribute, attribute, and representing an interval of the phenomenon identified by the property attribute.			<<List>>	
483	TypedMeasureList	A list of numeric values, expressed using the scale indicated by the value of the (mandatory) uom attribute, attribute, and representing a set of descriptions of the phenomenon identified by the property attribute.			<<List>>	Lines 484 - 486
484	count	Number of items in the list.	O	1	NonNegativeInteger	Unrestricted
485	property	This attribute holds a reference to or label for the	M	1	AnyURI	Unrestricted

		property being described.				
486	uom	Unit of Measure	M	1	UomIdentifier	Unrestricted
487	Unbounded	Maximum occurrence is unlimited.			<<Enumeration>>	Lines 488 - 488
488	unbounded	Enumeration token; maximum occurrence is unlimited.	M	1	String	Unrestricted
489	Uom	Unit Of Measure			<<Simple>>	
490	UomIdentifier	Unit of measure identifier.			<<Union>>	Lines 491 - 492
491	UomSymbol	Unit of measure symbol.	M	1	UomSymbol	Unrestricted
492	UomURI	Unit of measure universal resource identifier.	M	1	UomURI	Unrestricted
493	UomSymbol	Standard unit symbol (i.e. m for meter, kg for kilogram, m.s-1 for meter per second.			<<Simple>>	
494	UomURI	URI which identifies the definition of the scale or units by which the numeric value must be multiplied.			<<Simple>>	

Route

Multimodal Route

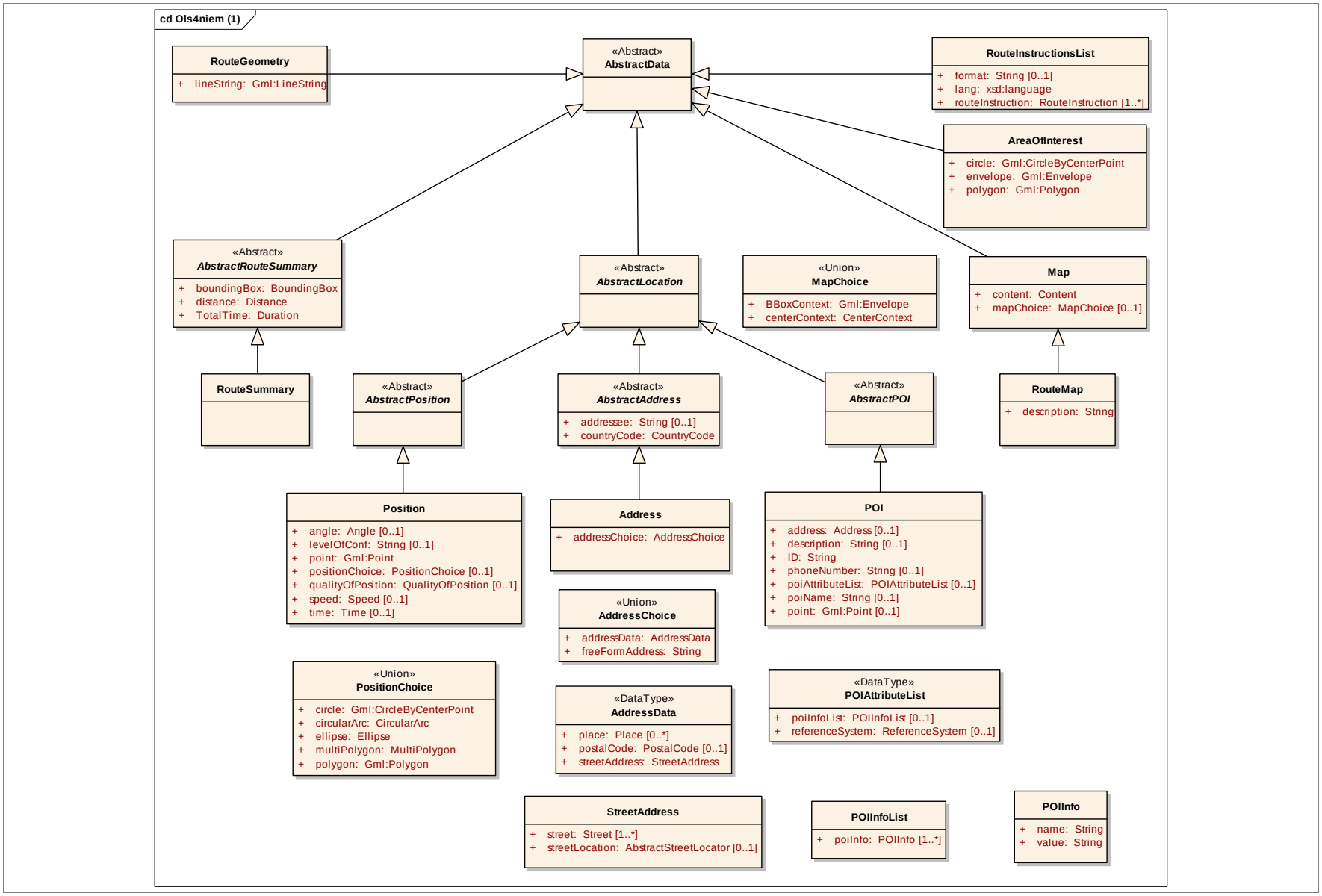


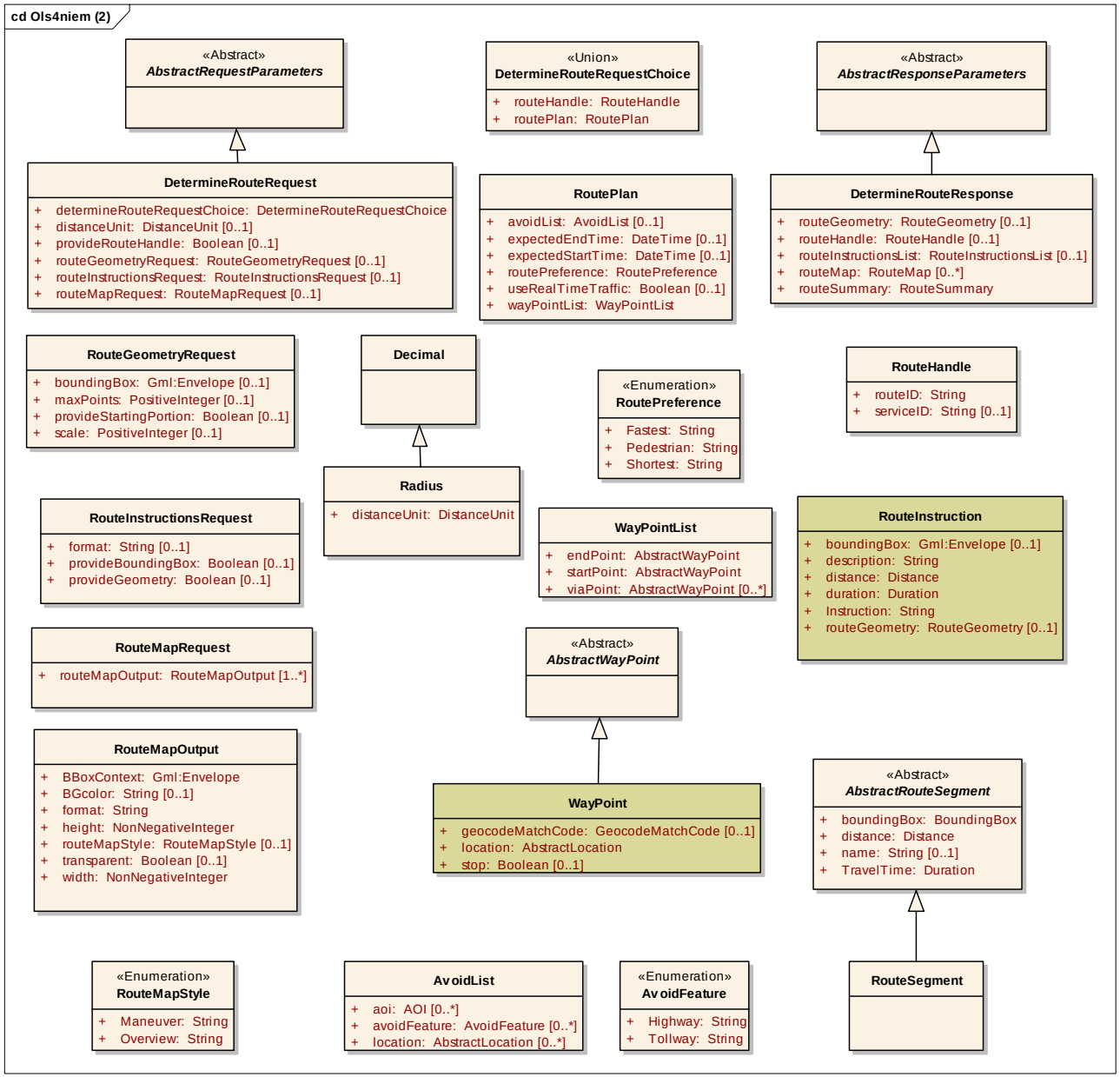
MultiModalRoute4niem						
Line	**Name/RoleName**	**Definition**	**Obligation / Condition**	**Maximum Occurrence**	**Data Type**	**Domain**
1	ModeTransferPoint	A union allowing either a ModeTransferPoint::Type or an "other:transfer point type name" allowing for extension of the trasnfer point types			<<Union>>	Lines 2 - 3
2	otherType	A transfer point other than those listed in the ModeTransferPoint::Type enumeration	M	1	ModeTransferPoint::OtherType	Unrestricted
3	type	A transfer point from the ModeTransferPoint::Type enumeration	M	1	ModeTransferPoint::Type	Unrestricted
4	ModeTransferPoint::OtherType				<<CodeList>>	Lines 5 - 5
5	regex	A type allowing for extensible transfer point types with a fixed syntax (i.e., "other: transfer point type name"	M	1	String	other:\w{2,}
6	ModeTransferPoint::Type	An enumeration of all transfer point types			<<Enumeration>>	Lines 7 - 18
7	airport	An airport	M	1	String	Unrestricted
8	busStop	A bus stop	M	1	String	Unrestricted
9	gate	A passageway, as in an airport terminal, through which passengers proceed when boarding or leaving an airplane	M	1	String	Unrestricted
10	interCityBusTerminal	A bus terminal that serves intercity busses	M	1	String	Unrestricted
11	lightrailStation	A light rail station	M	1	String	Unrestricted
12	parkAndRide	A park and ride location, typically for transfer from automobiles to subway or bus and vice versa	M	1	String	Unrestricted
13	parkingLot	A place to park an automobile, typically	M	1	String	Unrestricted
14	platform	A horizontal surface raised above the level of the adjacent area, as a landing alongside railroad tracks	M	1	String	Unrestricted
15	port	A place on a waterway with facilities for loading and unloading ships	M	1	String	Unrestricted
16	railwayStation	A railway station	M	1	String	Unrestricted
17	subwayStation	A subway station	M	1	String	Unrestricted
18	taxiStop	A place deisgnated for taxi pickups and setdowns	M	1	String	Unrestricted
19	ModeTransferWayPoint	A WayPoint that is also a transfer point between different modes of transportation.				Lines 20 - 20
20	modeTransferPointType	A location providing a change of travelling mode from one to another and/or between the same mode.	M	1	ModeTransferPoint	Unrestricted
21	RouteModeInstruction	Extended route instruction with mode information.				Lines 22 -

						25
22	fromMode in a modal transfer manuever	from mode	O	1	TransportationMode	Unrestricted
23	toMode	to mode in a modal transfer manuever	O	1	TransportationMode	Unrestricted
24	viaMode	mode used in a modal transfer manuever	O	1	TransportationMode	Unrestricted
25	viaModeWayPoint	the location of a waypoint in a modal transfer manuever	M	1	ModeTransferWayPoint	Unrestricted
26	TransportationMode	A union allowing either a Transportation::Mode or an "other:mode name" allowing for extension of the mode types			<<Union>>	Lines 27 - 28
27	mode	A member of the Transportation::Mode enumeration	M	1	TransportationMode::Mode	Unrestricted
28	otherMode	A mode other than those defined in Transportation::Mode	M	1	TransportationMode::OtherMode	Unrestricted
29	TransportationMode::Mode	An enumeration of all transportation modes			<<Enumeration>>	Lines 30 - 56
30	4WheelDrive	A four wheel drive vehicle	M	1	String	Unrestricted
31	airplane	An airplane	M	1	String	Unrestricted
32	ambulance	An ambulance	M	1	String	Unrestricted
33	automobile	An automobile	M	1	String	Unrestricted
34	bicycle	A bicycle	M	1	String	Unrestricted
35	ferry	A ferry	M	1	String	Unrestricted
36	helicopter	A helicopter	M	1	String	Unrestricted
37	highSpeedRailway	A high-speed railway	M	1	String	Unrestricted
38	intercityBus	An intercity bus	M	1	String	Unrestricted
39	intracityBus	An intracity bus	M	1	String	Unrestricted
40	lightrail	A light railway	M	1	String	Unrestricted
41	moped	A lightweight motorized bicycle that can be pedaled as well as driven by a low-powered gasoline engine.	M	1	String	Unrestricted
42	motorcycle	A motorcycle	M	1	String	Unrestricted
43	motorScooter	A usually two-wheeled vehicle with small wheels and a low-powered gasoline engine geared to the rear wheel.	M	1	String	Unrestricted
44	pedestrian	A person traveling on foot; a walker.	M	1	String	Unrestricted
45	powerBoat	A boat propelled by an internal-combustion engine or other motor.	M	1	String	Unrestricted
46	railway	A railroad, especially one operated over a limited area	M	1	String	Unrestricted
47	rovingBus	RovingBus like a taxi that carries multiple passengers, but with pickups and setdowns restricted to nominated points, such as bus stops.	M	1	String	Unrestricted

48	sailBoat	A small boat propelled partially or wholly by sail	M	1	String	Unrestricted
49	schoolBus	A publicly or privately owned vehicle that is used for taking schoolchildren to and from school or school-related activities	M	1	String	Unrestricted
50	shuttleBus	Shuttle consisting of a bus that travels between two points	M	1	String	Unrestricted
51	subway	An underground urban railroad, usually operated by electricity	M	1	String	Unrestricted
52	SUV	Sport Utility Vehicle. A four-wheel-drive vehicle with a roomy body, designed for off-road travel.	M	1	String	Unrestricted
53	taxi	An automobile that carries passengers for a fare, usually calculated by a taximeter	M	1	String	Unrestricted
54	tram	A streetcar	M	1	String	Unrestricted
55	truck	A truck	M	1	String	Unrestricted
56	van	A van	M	1	String	Unrestricted
57	TransportationMode::OtherMode	A type allowing for extensible transportation modes with a fixed syntax (i.e., "other: mode name"			<<CodeList>>	Lines 58 - 58
58	regex		M	1	string	other:\w{2,}

OLS4NIEM (1 of 5)




cd Ols4niem (2)
«Abstract»
AbstractRequestParameters
«Union»
DetermineRouteRequestChoice
+ routeHandle: RouteHandle
+ routePlan: RoutePlan
«Abstract»
AbstractResponseParameters
DetermineRouteRequest
+ determineRouteRequestChoice: DetermineRouteRequestChoice
+ distanceUnit: DistanceUnit [0..1]
+ provideRouteHandle: Boolean [0..1]
+ routeGeometryRequest: RouteGeometryRequest [0..1]
+ routeInstructionsRequest: RouteInstructionsRequest [0..1]
+ routeMapRequest: RouteMapRequest [0..1]
RoutePlan
+ avoidList: AvoidList [0..1]
+ expectedEndTime: DateTime [0..1]
+ expectedStartTime: DateTime [0..1]
+ routePreference: RoutePreference
+ useRealTimeTraffic: Boolean [0..1]
+ wayPointList: WayPointList
DetermineRouteResponse
+ routeGeometry: RouteGeometry [0..1]
+ routeHandle: RouteHandle [0..1]
+ routeInstructionsList: RouteInstructionsList [0..1]
+ routeMap: RouteMap [0..*]
+ routeSummary: RouteSummary
RouteGeometryRequest
+ boundingBox: Gml:Envelope [0..1]
+ maxPoints: PositiveInteger [0..1]
+ provideStartingPortion: Boolean [0..1]
+ scale: PositiveInteger [0..1]
Decimal
«Enumeration»
RoutePreference
+ Fastest: String
+ Pedestrian: String
+ Shortest: String
RouteHandle
+ routeID: String
+ serviceID: String [0..1]
Radius
+ distanceUnit: DistanceUnit
RouteInstructionsRequest
+ format: String [0..1]
+ provideBoundingBox: Boolean [0..1]
+ provideGeometry: Boolean [0..1]
WayPointList
+ endPoint: AbstractWayPoint
+ startPoint: AbstractWayPoint
+ viaPoint: AbstractWayPoint [0..*]
RouteInstruction
+ boundingBox: Gml:Envelope [0..1]
+ description: String
+ distance: Distance
+ duration: Duration
+ Instruction: String
+ routeGeometry: RouteGeometry [0..1]
RouteMapRequest
+ routeMapOutput: RouteMapOutput [1..*]
«Abstract»
AbstractWayPoint
RouteMapOutput
+ BBoxContext: Gml:Envelope
+ BGcolor: String [0..1]
+ format: String
+ height: NonNegativeInteger
+ routeMapStyle: RouteMapStyle [0..1]
+ transparent: Boolean [0..1]
+ width: NonNegativeInteger
WayPoint
+ geocodeMatchCode: GeocodeMatchCode [0..1]
+ location: AbstractLocation
+ stop: Boolean [0..1]
«Abstract»
AbstractRouteSegment
+ boundingBox: BoundingBox
+ distance: Distance
+ name: String [0..1]
+ TravelTime: Duration
«Enumeration»
RouteMapStyle
+ Maneuver: String
+ Overview: String
AvoidList
+ aoi: AOI [0..*]
+ avoidFeature: AvoidFeature [0..*]
+ location: AbstractLocation [0..*]
«Enumeration»
AvoidFeature
+ Highway: String
+ Tollway: String
RouteSegment

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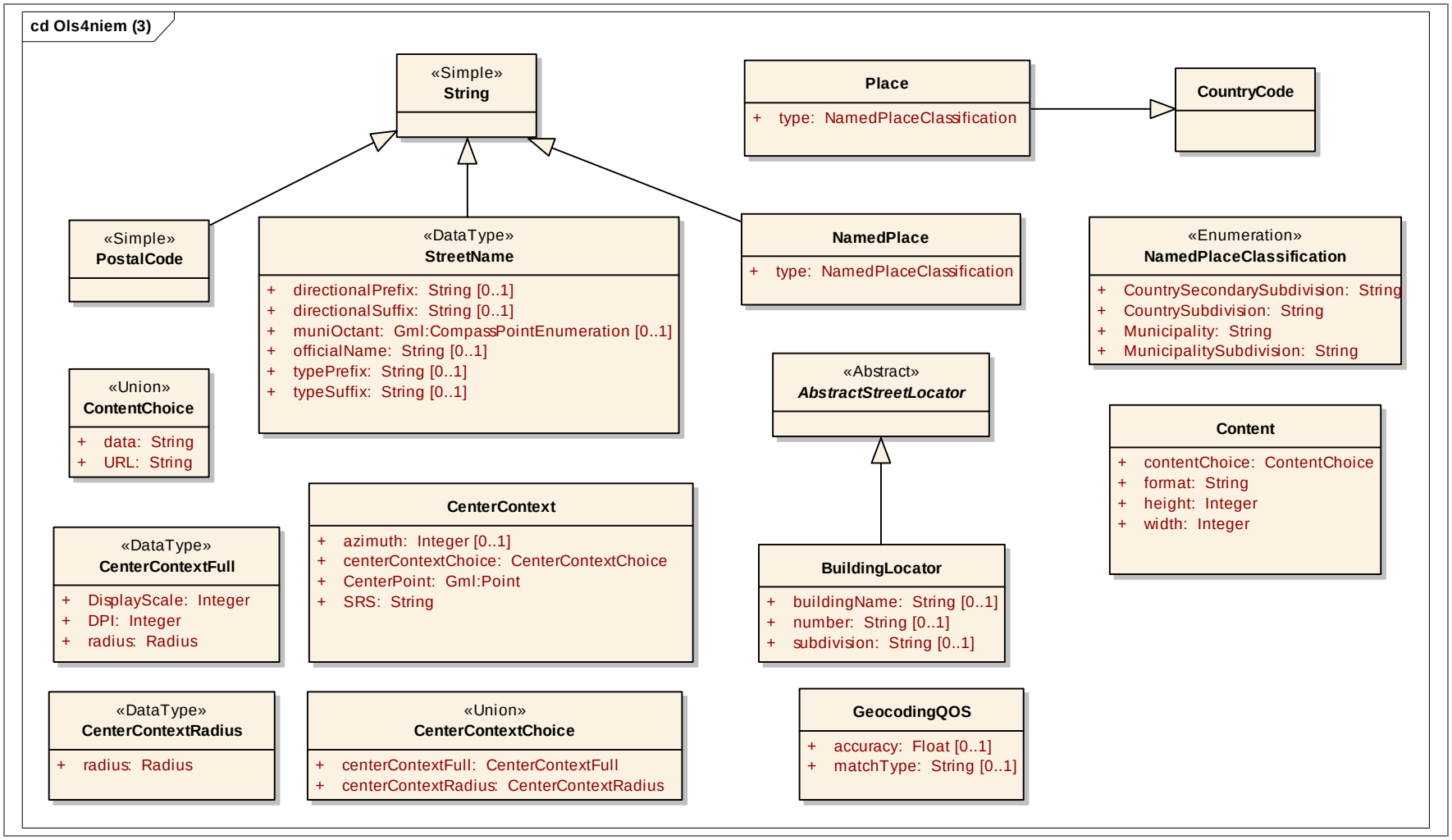

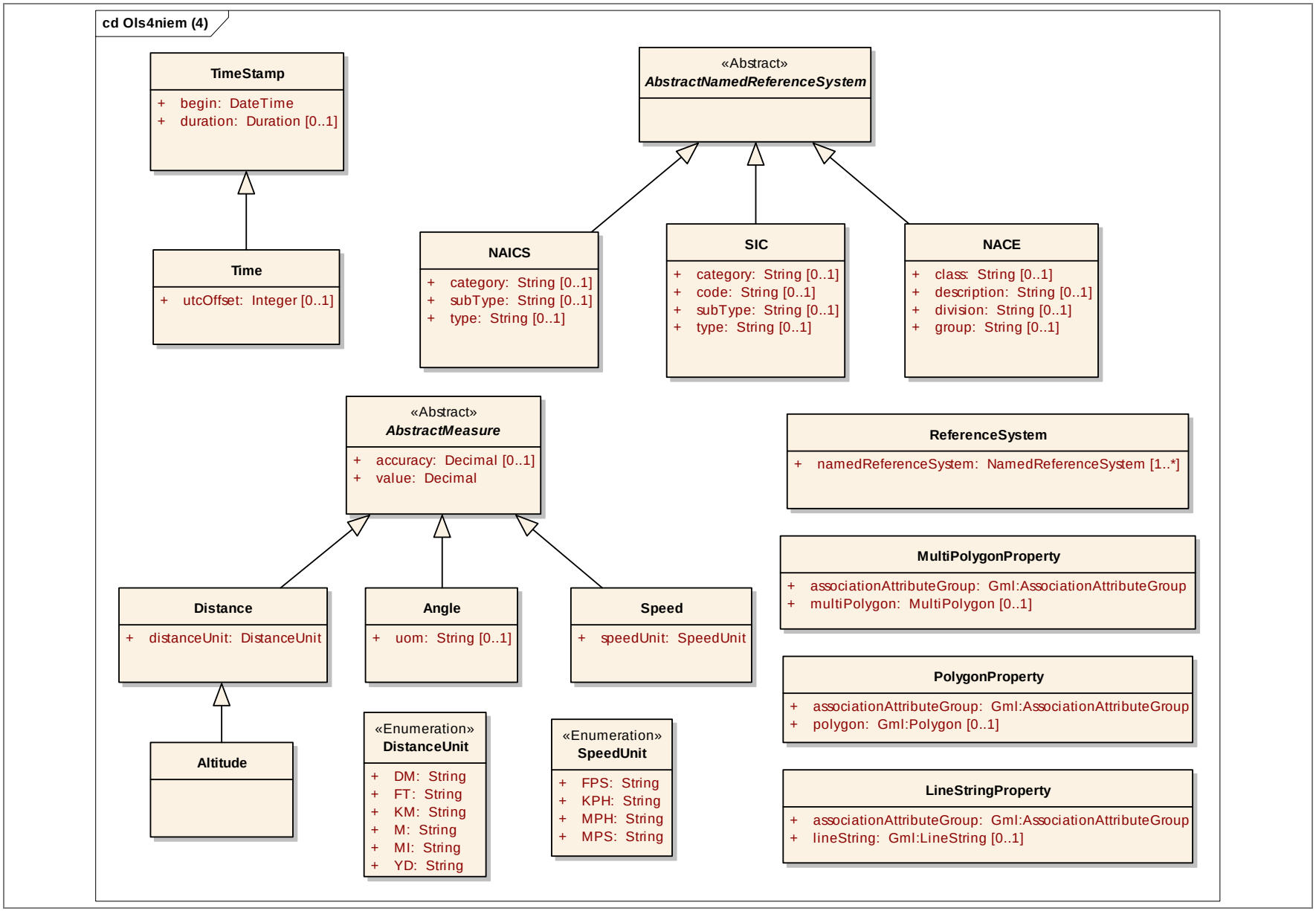
cd Ols4niem (4)
TimeStamp
+ begin: DateTime
+ duration: Duration [0..1]
Time
+ utcOffset: Integer [0..1]
«Abstract»
AbstractNamedReferenceSystem
NAICS
+ category: String [0..1]
+ subType: String [0..1]
+ type: String [0..1]
SIC
+ category: String [0..1]
+ code: String [0..1]
+ subType: String [0..1]
+ type: String [0..1]
NACE
+ class: String [0..1]
+ description: String [0..1]
+ division: String [0..1]
+ group: String [0..1]
«Abstract»
AbstractMeasure
+ accuracy: Decimal [0..1]
+ value: Decimal
ReferenceSystem
+ namedReferenceSystem: NamedReferenceSystem [1..*]
MultiPolygonProperty
+ associationAttributeGroup: Gml:AssociationAttributeGroup
+ multiPolygon: MultiPolygon [0..1]
Distance
+ distanceUnit: DistanceUnit
Angle
+ uom: String [0..1]
Speed
+ speedUnit: SpeedUnit
PolygonProperty
+ associationAttributeGroup: Gml:AssociationAttributeGroup
+ polygon: Gml:Polygon [0..1]
Altitude
«Enumeration»
DistanceUnit
+ DM: String
+ FT: String
+ KM: String
+ M: String
+ MI: String
+ YD: String
«Enumeration»
SpeedUnit
+ FPS: String
+ KPH: String
+ MPH: String
+ MPS: String
LineStringProperty
+ associationAttributeGroup: Gml:AssociationAttributeGroup
+ lineString: Gml:LineString [0..1]

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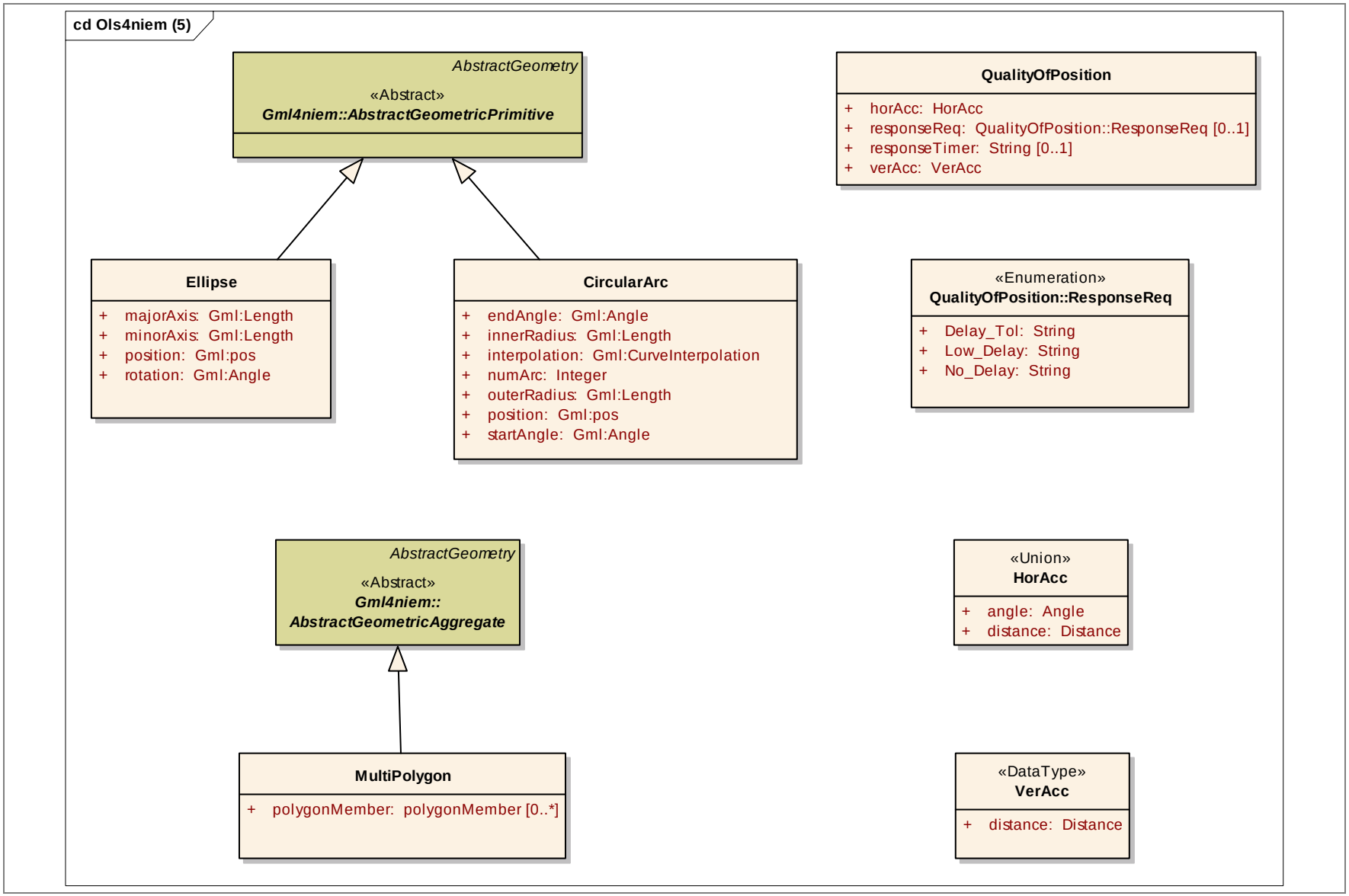


Ols4niem						
Line	**Name/RoleName**	**Definition**	**Obligation / Condition**	**Maximum Occurrence**	**Data Type**	**Domain**
1	AbstractAddress	The AddressType is the Address_ADT for OpenLS and it supports the concepts of the OGC Geocoder document 01-026r1 with some modifications which resulted in both simplifications and improved handling capability. The definition is also broad enough to handle some of the more obscure occurrences of street addressing as well as handling the case of when all you have is an un-parsed string representing the complete address. We could generalize this even further to handle non-street addressing schemes found in other industries, such as the Municipal Survey Addressing schemes that are used by Municipalities to address the lots on which a building may be placed but that is probably a future requirement outside the scope of OLS1.			<<Abstract>>	Lines 2 - 3
2	addressee	The name of a person, organization or other entity at the address	O	1	String	Unrestricted
3	countryCode	the country code	M	1	CountryCode	Unrestricted
4	AbstractData	Abstract type representing data			<<Abstract>>	
5	AbstractLocation	Location can be one of four things: Position, POI, Address or Point. Each of those types has been defined in the XLS namespace with this in condiseration.			<<Abstract>>	
6	AbstractMeasure	An abstract type for measures providing for the accuracy and value			<<Abstract>>	Lines 7 - 8
7	accuracy	The accuracy of the measure	O	1	Decimal	Unrestricted
8	value	The value of the measure	M	1	Decimal	Unrestricted
9	AbstractNamedReferenceSystem	Abstract superclass for named reference systems (like classification systems)			<<Abstract>>	
10	AbstractPOI	Abract type representing a Point of Interest			<<Abstract>>	
11	AbstractPosition	Abstract type representing a Position			<<Abstract>>	
12	AbstractRequestParameters	Abstract type representing the set of parameters for a service request.			<<Abstract>>	
13	AbstractResponseParameters	Abstract type representing the response information returned from a service request.			<<Abstract>>	
14	AbstractRouteSegment	Defines the characteristics of a segment along a route.			<<Abstract>>	Lines 15 - 18
15	boundingBox	Rectangular area bounding the segment.	M	1	BoundingBox	Unrestricted
16	distance	Distance along the segment.	M	1	Distance	Unrestricted

17	name	Name of segment, e.g.: street name, or the name of the public transit line. When the name is unknown, this should be an empty string. When not specified, the name is assumed to be the same as the previous segment.	O	1	String	Unrestricted
18	TravelTime	Estimated time to travel the complete route, Expressed as a duration as defined by W3C. reference URL: http://www.w3c.org/TR/xmlschema-2	M	1	Duration	Unrestricted
19	AbstractRouteSummary	Abstract type which specifies a route's overall characteristics.			<<Abstract>>	Lines 20 - 22
20	boundingBox	Rectangular area bounding the complete route.	M	1	BoundingBox	Unrestricted
21	distance	The cumulative distance of the route	M	1	Distance	Unrestricted
22	TotalTime	Estimated time to travel the complete route. Expressed as a duration as defined by W3C. reference URL: http://www.w3c.org/TR/xmlschema-2/	M	1	Duration	Unrestricted
23	AbstractStreetLocator	The AbstractStreetLocatorType is an abstract type for describing the location on a street within an AddressType. We do this because the components of a location on a street vary greatly throughout the world. So that the schema can accommodate this variation we create derived types such as the BuildingLocatorType which has the components for an apartment or suite or floor within a building.			<<Abstract>>	
24	AbstractWayPoint	Abstract type representing a location to be visited along a route.			<<Abstract>>	
25	Address	Defines an address				Lines 26 - 26
26	addressChoice	The address (can be a structured or unstructured address)	M	1	AddressChoice	Unrestricted
27	AddressChoice	Structured or unstructured address			<<Union>>	Lines 28 - 29
28	addressData	structured address data	M	1	AddressData	Unrestricted
29	freeFormAddress	a free form address (unstructured)	M	1	String	Unrestricted
30	AddressData	Provides an address			<<DataType>>	Lines 31 - 33
31	place	Place represents a hierarchical set of geographic regions/placenames: country subdivision, country secondary subdivision, municipality, and municipality subdivision.	O	*	Place	Unrestricted
32	postalCode	A zipcode or international postal code as defined by the governing postal authority.	O	1	PostalCode	Unrestricted
33	streetAddress	Structured street address.	M	1	StreetAddress	Unrestricted
34	Altitude	The height above mean sea level			Distance	

35	Angle	This type is used as a unit of measure for ADTs only, it's not used by the GML3 geometry. This will be a point for future work of harmonization.				Lines 36 - 36
36	uom	Unit of Measure	O	1	String	Unrestricted
37	AreaOfInterest	A user defined area (represented by a bounding box, circle or polygon). Often used as a filter in a query.				Lines 38 - 40
38	circle	The circular geometry of the AOI	M	1	Gml:CircleByCenterPoint	Unrestricted
39	envelope	The bounding (rectangular) geometry of the AOI	M	1	Gml:Envelope	Unrestricted
40	polygon	The bounding (polygonal) geometry of the AOI	M	1	Gml:Polygon	Unrestricted
41	AvoidFeature	Enumeration of types of features to avoid when determining the route.			<<Enumeration>>	Lines 42 - 43
42	Highway	Minimize the use of highways.	M	1	String	Unrestricted
43	Tollway	Minimize tolls.	M	1	String	Unrestricted
44	AvoidList	Defines the list of areas, locations, and types of features in which the route should avoid passing through.				Lines 45 - 47
45	aoi	List of geographic areas to avoid.	O	*	AOI	Unrestricted
46	avoidFeature	Enumeration of types of features to avoid when determining the route.	O	*	AvoidFeature	Unrestricted
47	location	List of locations to avoid.	O	*	AbstractLocation	Unrestricted
48	BuildingLocator	A type of AbstractStreetLocatorType				Lines 49 - 51
49	buildingName	The name of the building	O	1	String	Unrestricted
50	number	The building number, if needed	O	1	String	Unrestricted
51	subdivision	The subpart of the building, typically a floor number	O	1	String	Unrestricted
52	CenterContext	ADT defining the context for a center point				Lines 53 - 56
53	azimuth	The orientation of the map, clockwise degrees from north.	O	1	Integer	Unrestricted
54	centerContextChoice	The radius alone or with mobile terminal screen context as well	M	1	CenterContextChoice	Unrestricted
55	CenterPoint	lat/long WGS84 point to center the map on	M	1	Gml:Point	Unrestricted
56	SRS	The Spatial Reference System that the data with be projected to in EPSG:XXXX format (getCapabilites provides the list of SRS's supported).	M	1	String	Unrestricted
57	CenterContextChoice	When specifying the extent of the map using a center point, indicate the measure units on the earth or that plus screen context (what is the current zoom scale of the mobile terminal display)			<<Union>>	Lines 58 - 59
58	centerContextFull	radius on the earth and the scale of the mobiel terminal screen	M	1	CenterContextFull	Unrestricted
59	centerContextRadius	units on the earth	M	1	CenterContextRadius	Unrestricted

60	CenterContextFull	A definition of the circular context with respect to the current mobile terminal screen context			<<DataType>>	Lines 61 - 63
61	DisplayScale	A ratio of distance. For example 1:5000 would be expressed as 5000, it's always expressed per 1 pixel of the display	M	1	Integer	Unrestricted
62	DPI	Dots per Inch of the display device.	M	1	Integer	Unrestricted
63	radius	The radius in real world units	M	1	Radius	Unrestricted
64	CenterContextRadius	the radius measure			<<DataType>>	Lines 65 - 65
65	radius	the radius	M	1	Radius	Unrestricted
66	CircularArc	This is Modeled after GML ArcByCenterPointType.				Lines 67 - 73
67	endAngle	The bearing of the arc and radial line at the end.	M	1	Gml:Angle	Unrestricted
68	innerRadius	The radius of the inner arc.	M	1	Gml:Length	Unrestricted
69	interpolation	The attribute "interpolation" specifies the curve interpolation mechanism used for this segment. This mechanism uses the control points and control parameters to determine the position of this curve segment. For an ArcByCenterPoint the interpolation is fixed as "circularArcCenterPointWithRadius".	M	1	Gml:CurveInterpolation	Unrestricted
70	numArc	Since this type describes always a single arc, the attribute is fixed to "1".	M	1	Integer	Unrestricted
71	outerRadius	The radius of the outer arc.	M	1	Gml:Length	Unrestricted
72	position	The position of the center	M	1	Gml:pos	Unrestricted
73	startAngle	The bearing of the arc and radial line at the start.	M	1	Gml:Angle	Unrestricted
74	Content	ADT defining the content of a Map				Lines 75 - 78
75	contentChoice	The Data can be found at this URL	M	1	ContentChoice	Unrestricted
76	format	The data is in this format	M	1	String	Unrestricted
77	height	The map image has this height in pixels	M	1	Integer	Unrestricted
78	width	The map image has this width in pixels	M	1	Integer	Unrestricted
79	ContentChoice	Specifies either the data or a URL at which the data is available			<<Union>>	Lines 80 - 81
80	data	The data element of the choice	M	1	String	Unrestricted
81	URL	The URL element of the choice	M	1	String	Unrestricted
82	CountryCode	ISO 3166 Alpha-2 Country Codes			String	
83	Decimal	A decimal number			<<Simple>>	
84	DetermineRouteRequest	Defines the Determine Route request parameters.				Lines 85 -

						90
85	determineRouteRequestChoice	A choice between a route handle (the route is already on the server) and a route plan (providing the route plan)	M	1	DetermineRouteRequestChoice	Unrestricted
86	distanceUnit	Specifies the unit for measuring distance.	O	1	DistanceUnit	Unrestricted
87	provideRouteHandle	Requests the return of a route handle.	O	1	Boolean	Unrestricted
88	routeGeometryRequest	Request parameters for route geometry.	O	1	RouteGeometryRequest	Unrestricted
89	routeInstructionsRequest	Request parameters for turn-by-turn route directions and advisories formatted for presentation.	O	1	RouteInstructionsRequest	Unrestricted
90	routeMapRequest	Defines the request parameters for route maps.	O	1	RouteMapRequest	Unrestricted
91	DetermineRouteRequestChoice	A choice of refering to a previously stored route or providing a plan to a route determination request			<<Union>>	Lines 92 - 93
92	routeHandle	Reference to a proviously determined route stored at the server or providng the parameters for a route determination	M	1	RouteHandle	Unrestricted
93	routePlan	Defines the criteria upon which a route is determined.	M	1	RoutePlan	Unrestricted
94	DetermineRouteResponse	Defines the Determine Route response parameters.				Lines 95 - 99
95	routeGeometry	Response for requested route geometry.	O	1	RouteGeometry	Unrestricted
96	routeHandle	Reference to the route stored at the Route Determination Service server.	O	1	RouteHandle	Unrestricted
97	routeInstructionsList	Response for requested route instructions.	O	1	RouteInstructionsList	Unrestricted
98	routeMap	Response list for requested route maps.	O	*	RouteMap	Unrestricted
99	routeSummary	Response for requested route summary.	M	1	RouteSummary	Unrestricted
100	Distance	A distance measure				Lines 101 - 101
101	distanceUnit	the distance units	M	1	DistanceUnit	Unrestricted
102	DistanceUnit	An enumeration of distance units			<<Enumeration>>	Lines 103 - 108
103	DM	decimeter	M	1	String	Unrestricted
104	FT	foot	M	1	String	Unrestricted
105	KM	kilometer	M	1	String	Unrestricted
106	M	meter	M	1	String	Unrestricted
107	MI	mile	M	1	String	Unrestricted
108	YD	yard	M	1	String	Unrestricted
109	Ellipse	The ellipse ADT				Lines 110 - 113

110	majorAxis	The major axis of the ellipse	M	1	Gml:Length	Unrestricted
111	minorAxis	The minor axis of the ellipse	M	1	Gml:Length	Unrestricted
112	position	The position of the center of the ellipse	M	1	Gml:pos	Unrestricted
113	rotation	The rotation of the ellipse w.r.t. the major axis about the center	M	1	Gml:Angle	Unrestricted
114	GeocodingQOS	Quality of service type				Lines 115 - 116
115	accuracy	This is the score (probability) assocaited with the match function	O	1	Float	Unrestricted
116	matchType	Describes the type of match made by the function, example zip+4	O	1	String	Unrestricted
117	HorAcc	Horizontal accuracy is defined through the distance and the angle			<<Union>>	Lines 118 - 119
118	angle	The angle (angle contains three attributes, value, accuracy and uom)	M	1	Angle	Unrestricted
119	distance	the distance (distance contains three attributes, value, accuracy and uom)	M	1	Distance	Unrestricted
120	LineStringProperty	A property that has a line string as its value domain as an appropriate geometry element encapsulated in an element of this type.				Lines 121 - 122
121	associationAttributeGroup	Provides a linkage for a set of attributes	M	1	Gml:AssociationAttributeGroup	Unrestricted
122	lineString	the line string geometry	O	1	Gml:LineString	Unrestricted
123	Map	Contains the encoded map				Lines 124 - 125
124	content	The encoded content (typically image/jpeg, image/gif, or image/png)	M	1	Content	Unrestricted
125	mapChoice	The map extent as a bounding box or as a circle (point and radius)	O	1	MapChoice	Unrestricted
126	MapChoice	Provides the map extent (given as a bounding box or a point and radius)			<<Union>>	Lines 127 - 128
127	BBoxContext	Bounding box	M	1	Gml:Envelope	Unrestricted
128	centerContext	point and a radius	M	1	CenterContext	Unrestricted
129	MultiPolygon	A MultiPolygon is defined by one or more Polygons, referenced through polygonMember elements. This type replaces the gml:MultiPolygonType that was deprecated in GML3.1.1 and will dissapear from ISO/GML 3.2.				Lines 130 - 130
130	polygonMember	The list of polygons in the multipolygon	O	*	polygonMember	Unrestricted
131	MultiPolygonProperty	Replacement for gml:MultiPolygonPropertyType Deprecated with GML 3.0				Lines 132 - 133
132	associationAttributeGroup	Provides a linkage for a set of attributes	M	1	Gml:AssociationAttributeGroup	Unrestricted
133	multiPolygon	The geometry itself	O	1	MultiPolygon	Unrestricted
134	NACE	Classification of Economic Activities in the European Community (like NAICS is in the US)				Lines 135 - 138

135	class	Top-level subdivision in the NACE classification hierarchy	O	1	String	Unrestricted
136	description	The actual description	O	1	String	Unrestricted
137	division	Second-level subdivision in the NACE classification hierarchy	O	1	String	Unrestricted
138	group	Third-level subdivision in the NACE classification hierarchy	O	1	String	Unrestricted
139	NAICS	North American Industry Classification System				Lines 140 - 142
140	category	Top-level element in the NAICS classification hierarchy	O	1	String	Unrestricted
141	subType	Second-level element in the NAICS classification hierarchy	O	1	String	Unrestricted
142	type	Third-level element in the NAICS classification hierarchy	O	1	String	Unrestricted
143	NamedPlace	A named place has a classification (such as country, country subdivision, or municipality).				Lines 144 - 144
144	type	The classification for the hierarchy a level of which is defined to be one of five different types: CountrySubDivision, CountrySecondarySubdivision, Municipality, or MunicipalitySubdivision	M	1	NamedPlaceClassification	Unrestricted
145	NamedPlaceClassification	The classification for the hierarchy a level of which is defined to be one of five different types: CountrySubDivision, CountrySecondarySubdivision, Municipality, or MunicipalitySubdivision.			<<Enumeration>>	Lines 146 - 149
146	CountrySecondarySubdivision	the secondary country subdivision	M	1	String	Unrestricted
147	CountrySubdivision	the country subdivison	M	1	String	Unrestricted
148	Municipality	the municipality	M	1	String	Unrestricted
149	MunicipalitySubdivision	the municipality subdivision	M	1	String	Unrestricted
150	Place	Place represents a hierarchical set of geographic regions/placenames: country subdivision, country secondary subdivision, municipality, and municipality subdivision.				Lines 151 - 151
151	type	The classification for the hierarchy a level of which is defined to be one of five different types: CountrySubDivision, CountrySecondarySubdivision, Municipality, or MunicipalitySubdivision.	M	1	NamedPlaceClassification	Unrestricted
152	POI	A location (with a fixed position) where one can find a place, product or service, typically identified by name rather than by address and characterized by type, which may be used as a reference point or a target in a location based service request, e.g., as the destination of a route.				Lines 153 - 159
153	address	The address of the POI	O	1	Address	Unrestricted
154	description	A description of the POI	O	1	String	Unrestricted

155	ID	An identifier (may be unqiue in some context)	M	1	String	Unrestricted
156	phoneNumber	The phone number for the POI	O	1	String	Unrestricted
157	poiAttributeList	A list of additional attributes	O	1	POIAttributeList	Unrestricted
158	poiName	The name of the POI	O	1	String	Unrestricted
159	point	The location of the POI	O	1	Gml:Point	Unrestricted
160	POIAttributeList	A list of attributes for a POI			<<DataType>>	Lines 161 - 162
161	poiInfoList	The attributes	O	1	POIInfoList	Unrestricted
162	referenceSystem	the references system for the attributes	O	1	ReferenceSystem	Unrestricted
163	POIInfo	POI Information defined as a Name/Value pair				Lines 164 - 165
164	name	The name	M	1	String	Unrestricted
165	value	The value	M	1	String	Unrestricted
166	POIInfoList	a list of POI info ADTs				Lines 167 - 167
167	poiInfo	The list of POI info ADTs	M	*	POIInfo	Unrestricted
168	PolygonProperty	Replacement for gml:PolygonPropertyType Deprecated with GML 3.0				Lines 169 - 170
169	associationAttributeGroup	Provides a linkage for a set of attributes	M	1	Gml:AssociationAttributeGroup	Unrestricted
170	polygon	the polygon geometry	O	1	Gml:Polygon	Unrestricted
171	Position	The Position ADT. Normally used to represent an observation/calculated position for a mobile terminal, but can be any position used by the platform. Contains Point with optional Shape, QoP, Speed, Direction and Time. Also has levelOfConfidence attribute.				Lines 172 - 178
172	angle	direction of travel of the mobile terminal	O	1	Angle	Unrestricted
173	levelOfConf	a descirption of the level of confidence in the value of the position	O	1	String	Unrestricted
174	point	the actual location on the earth	M	1	Gml:Point	Unrestricted
175	positionChoice	The geometry of the position	O	1	PositionChoice	Unrestricted
176	qualityOfPosition	The quality of the position is specified through the vertical and horizontal accuracy.	O	1	QualityOfPosition	Unrestricted
177	speed	The speed of the mobile terminal	O	1	Speed	Unrestricted
178	time	The time that position was determined	O	1	Time	Unrestricted
179	PositionChoice	Provides an enumeration of position (geometry) types			<<Union>>	Lines 180 - 184
180	circle	A circle	M	1	Gml:CircleByCenterPoint	Unrestricted

181	circularArc	A circular arc. This is Modeled after GML ArcByCenterPointType.	M	1	CircularArc	Unrestricted
182	ellipse	An ellipse	M	1	Ellipse	Unrestricted
183	multiPolygon	A multi-polygon	M	1	MultiPolygon	Unrestricted
184	polygon	A polygon	M	1	Gml:Polygon	Unrestricted
185	PostalCode	The AbstractPostalCodeType is an abstract type for postal code within an AddressType. We do this because the components of a postal code vary greatly throughout the world. So that the schema can accommodate this variation we create derived types such as the USZipCodeType which has the components for a US zipcode			<<Simple>>	
186	QualityOfPosition	The quality of the position is specified through the vertical and horizontal accuracy.				Lines 187 - 190
187	horAcc	The horizontal accuracy	M	1	HorAcc	Unrestricted
188	responseReq	Three possible values, default is Delay_Tol. Corresponds to ResponseReq in OMA MLP, 1) No_Delay, 2) Low_Delay, 3) Delay_Tol	O	1	QualityOfPosition::ResponseReq	Unrestricted
189	responseTimer	Corresponds to the OMA element called “resp_timer” in the MLP_QOP DTD.	O	1	String	Unrestricted
190	verAcc	the vertical accuracy	M	1	VerAcc	Unrestricted
191	QualityOfPosition::ResponseReq	Three possible values, default is Delay_Tol. Corresponds to ResponseReq in OMA MLP, 1) No_Delay, 2) Low_Delay, 3) Delay_Tol			<<Enumeration>>	Lines 192 - 194
192	Delay_Tol	Delay tolerant: Fulfilment of the accuracy requirement takes precedence over fulfilment of the response time requirement.	M	1	String	Unrestricted
193	Low_Delay	Low delay: Fulfilment of the response time requirement takes precedence over fulfilment of the accuracy requirement.	M	1	String	Unrestricted
194	No_Delay	No delay: The server SHOULD immediately return any location estimate that it currently has.	M	1	String	Unrestricted
195	Radius	A radius measure				Lines 196 - 196
196	distanceUnit	units for the radius	M	1	DistanceUnit	Unrestricted
197	ReferenceSystem	Formal name reference system. Three are defined here (NACE, NAICS and SIC), but any others may be defined and added to this schema.				Lines 198 - 198
198	namedReferenceSystem	Reference system ADT.	M	*	NamedReferenceSystem	Unrestricted
199	RouteGeometry	Defines the geometry of a route.				Lines 200 - 200
200	lineString	The actual route geometry as a line string (multi-segment line)	M	1	Gml:LineString	Unrestricted

201	RouteGeometryRequest	Defines the request parameters for route geometry.				Lines 202 - 205
202	boundingBox	Rectangular area of route for which the geometry is requested. If not specified, defaults to full route.	O	1	Gml:Envelope	Unrestricted
203	maxPoints	Maximum number of geometric points to return.	O	1	PositiveInteger	Unrestricted
204	provideStartingPortion	If true, return the geometry of the starting portion of the route contained within the specified bounding area, up to the specified maximum number of points. If false, return the geometry of the complete route contained within the specified area, reducing the accuracy of the geometry as necessary to not exceed the specified maximum number of points.	O	1	Boolean	Unrestricted
205	scale	Maximum scale at which the route will be displayed. Expressed as a ratio of world units to a device unit. For example 1:50000 would be specified as 50000.	O	1	PositiveInteger	Unrestricted
206	RouteHandle	Defines a reference to a route stored at the Route Determination Service server.				Lines 207 - 208
207	routeID	Uniquely identifies the route store at the service.	M	1	String	Unrestricted
208	serviceID	Uniquely identifies the service which holds the route.	O	1	String	Unrestricted
209	RouteInstruction	Defines a single turn-by-turn route instruction or advisory formatted for presentation.				Lines 210 - 215
210	boundingBox	The bounding geometry for the route instructions	O	1	Gml:Envelope	Unrestricted
211	description	Allows the route instruction to be matched with a RouteMapType. For example "maneuver 1"	M	1	String	Unrestricted
212	distance	The distance of the instruction	M	1	Distance	Unrestricted
213	duration	Specifies the duration needed to execute those instructions. Duration is expressed as defined in the W3C defintion. Reference URL: http://www.w3c.org/TR/xmlschema-2/	M	1	Duration	Unrestricted
214	Instruction	The string that is the instruction	M	1	String	Unrestricted
215	routeGeometry	the geometry of the instruction	O	1	RouteGeometry	Unrestricted
216	RouteInstructionsList	Defines a list of route instructions.				Lines 217 - 219
217	format	Mime type describing the encoding.	O	1	String	Unrestricted
218	lang	The language of the instructons	M	1	xsd:language	Unrestricted
219	routeInstruction	The list of instructions themselves	M	*	RouteInstruction	Unrestricted
220	RouteInstructionsRequest	Defines the request parameters for turn-by-turn route instructions and travel advisories formatted for presentation.				Lines 221 - 223
221	format	The preferred format of the route instructions, specified as a mime	O	1	String	Unrestricted

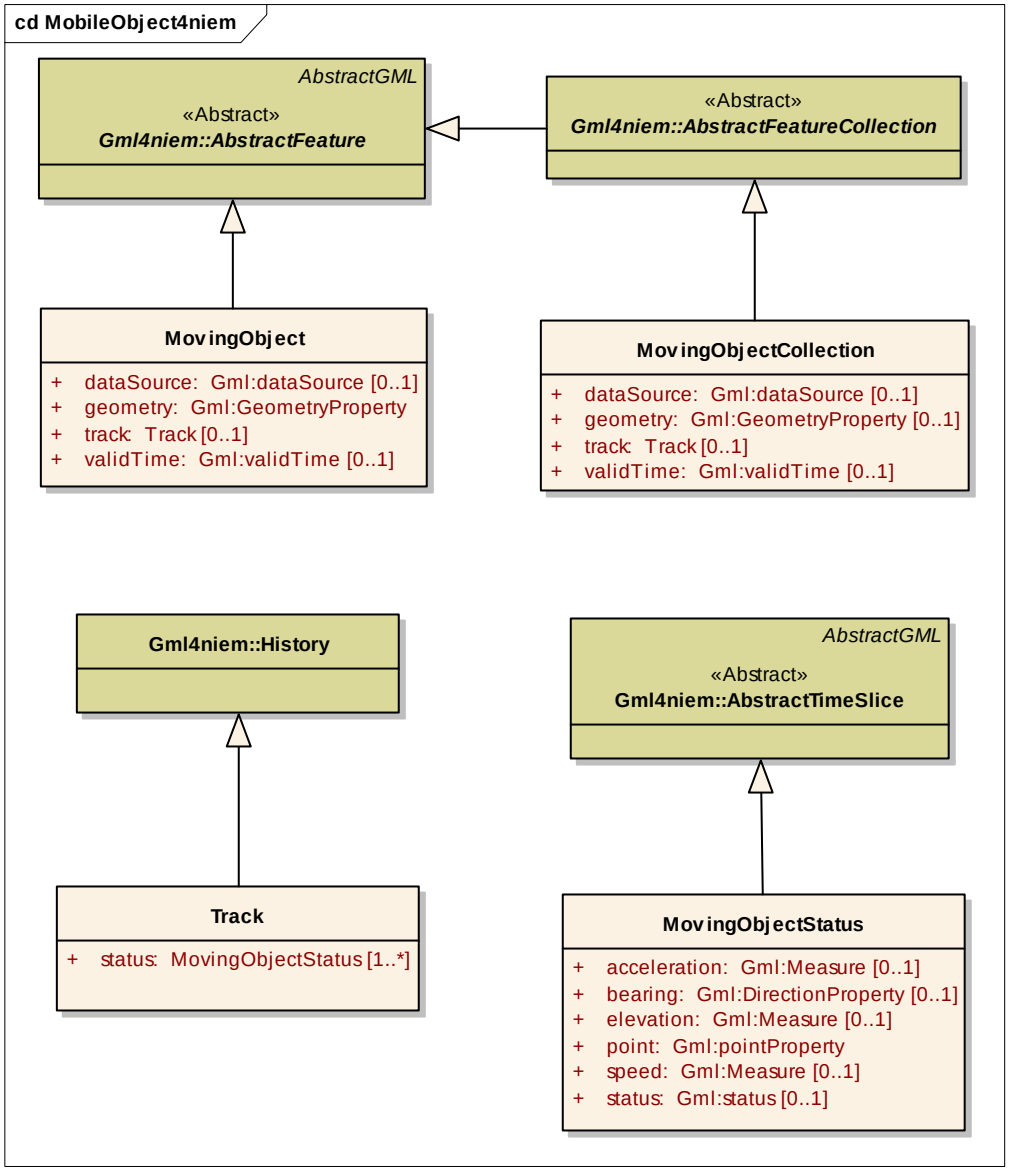
		type.				
222	provideBoundingBox	The bounding box of the route should be returned from the request	O	1	Boolean	Unrestricted
223	provideGeometry	The geometry of the route should be returned from the request	O	1	Boolean	Unrestricted
224	RouteMap	Defines a route map.				Lines 225 - 225
225	description	Allows the route instruction to be matched with a RouteMapType. For example "maneuver 1"	M	1	String	Unrestricted
226	RouteMapOutput	Defines the rendered route map output parameters.				Lines 227 - 233
227	BBoxContext	Rectangular area to be displayed in the rendered map. If not specified, defaults to full route.	M	1	Gml:Envelope	Unrestricted
228	BGcolor	Background Color of the map in RGB Hex format, defaults to "#FFFFFF" (White)	O	1	String	Unrestricted
229	format	mime type describing the encoding	M	1	String	Unrestricted
230	height	pixel height of the resulting map	M	1	NonNegativeInteger	Unrestricted
231	routeMapStyle	A route map can be either an overview or a maneuver	O	1	RouteMapStyle	Unrestricted
232	transparent	The opacity of the map. If set true, the map background is transparent. If set false, the map background is opaque	O	1	Boolean	Unrestricted
233	width	pixel width of the resulting map	M	1	NonNegativeInteger	Unrestricted
234	RouteMapRequest	Defines the request parameters for route maps.				Lines 235 - 235
235	routeMapOutput	Defines the rendered route map output parameters.	M	*	RouteMapOutput	Unrestricted
236	RouteMapStyle	A route map can be either an overview or a maneuver			<<Enumeration>>	Lines 237 - 238
237	Maneuver	Used to describe the map showing a particular maneuver (often the maneuver corresponds to a single instruction)	M	1	String	Unrestricted
238	Overview	Used to describe the map showing the full route	M	1	String	Unrestricted
239	RoutePlan	Defines the criteria upon which a route is determined.				Lines 240 - 245
240	avoidList	Defines the list of areas, locations, and types of features in which the route should avoid passing through.	O	1	AvoidList	Unrestricted
241	expectedEndTime	Specifies the date and time at which travel is expected to end. The format for the end time is specified as Duration	O	1	DateTime	Unrestricted
242	expectedStartTime	Specifies the date and time at which travel is expected to begin. Specified in the format YYYY-MM-DD HH:MM. Defaults to current date and time.	O	1	DateTime	Unrestricted

243	routePreference	Enumeration of preferences to be taken into consideration when determining the route.	M	1	RoutePreference	Unrestricted
244	useRealTimeTraffic	Specifies whether to use real time traffic information when determining the best route.	O	1	Boolean	Unrestricted
245	wayPointList	Defines a list of waypoints along a route.	M	1	WayPointList	Unrestricted
246	RoutePreference	Enumeration of preferences to be taken into consideration when determining the route.			<<Enumeration>>	Lines 247 - 249
247	Fastest	Minimize the travel time by vehicle.	M	1	String	Unrestricted
248	Pedestrian	Best route by foot.	M	1	String	Unrestricted
249	Shortest	Minimize the travel distance by vehicle.	M	1	String	Unrestricted
250	RouteSegment	Defines the characteristics of a segment along a route.			AbstractRouteSegment	
251	RouteSummary	Specifies a route's overall characteristics.			AbstractRouteSummary	
252	SIC	Standard Industrial Classification				Lines 253 - 256
253	category	subdivison of the SIC code	O	1	String	Unrestricted
254	code	the 2, 3, or 4 digit code itself	O	1	String	Unrestricted
255	subType	subdivison of the SIC code	O	1	String	Unrestricted
256	type	subdivison of the SIC code	O	1	String	Unrestricted
257	Speed	The speed at the position (typically used for moving objects like vehicles).				Lines 258 - 258
258	speedUnit	The speed units (MPH, KPH, etc.)	M	1	SpeedUnit	Unrestricted
259	SpeedUnit	An enumeration of speed units			<<Enumeration>>	Lines 260 - 263
260	FPS	feet per second	M	1	String	Unrestricted
261	KPH	kilometers per hour	M	1	String	Unrestricted
262	MPH	miles per hour	M	1	String	Unrestricted
263	MPS	miles per second	M	1	String	Unrestricted
264	StreetAddress	A set of precise and complete data elements that cannot be subdivided and that describe the physical location of a place.				Lines 265 - 266
265	street	The street portion of an address (structured)	M	*	Street	Unrestricted
266	streetLocation	The AbstractStreetLocatorType is an abstract type for describing the location on a street within an AddressType. We do this because the components of a location on a street vary greatly throughout the world. So that the schema can accommodate this variation we create derived types such as the BuildingLocatorType which has the components for an apartment or suite or floor within a building.	O	1	AbstractStreetLocator	Unrestricted

267	StreetName	The data elements that make up the name of a street. There are two valid methods for encoding this information: 1). Use the structured elements and attributes. 2). The element value may contain a simplified string (e.g. 43 West 83rd. Street). An example:			<<DataType>>	Lines 268 - 273
268	directionalPrefix	The direction for a street (e.g., North), placed before the official name.	O	1	String	Unrestricted
269	directionalSuffix	The direction for a street (e.g., North), placed after the official name.	O	1	String	Unrestricted
270	muniOctant	An indication of the octant (N,S,E,W,NW,SW,NE,SE) within a municipality	O	1	Gml:CompassPointEnumeration	Unrestricted
271	officialName	The name for a street (e.g., Main).	O	1	String	Unrestricted
272	typePrefix	The street type (e.g., Rd or Ave) specified before the official name	O	1	String	Unrestricted
273	typeSuffix	The street type (e.g., Rd or Ave) specified after the official name	O	1	String	Unrestricted
274	String	A character string			<<Simple>>	
275	Time	A time class (extends time stamp)				Lines 276 - 276
276	utcOffset	The offset from UTC in which the time is provided	O	1	Integer	Unrestricted
277	TimeStamp	Defines a time with an optional duration				Lines 278 - 279
278	begin	The begin time	M	1	DateTime	Unrestricted
279	duration	The duration	O	1	Duration	Unrestricted
280	VerAcc	Vertical accuracy is defined through the distance			<<DataType>>	Lines 281 - 281
281	distance	Distance contains three attributes, value, accuracy and uom	M	1	Distance	Unrestricted
282	WayPoint	Defines a location to be visited along a route.				Lines 283 - 285
283	geocodeMatchCode	The QoS information for the GeocodedAddress response. Provides information on the quality of the match. These results consist of an Accuracy (float value within the range 0.0 – 1.0) and a MatchCode (MatchType)	O	1	GeocodeMatchCode	Unrestricted
284	location	The waypoint location	M	1	AbstractLocation	Unrestricted
285	stop	Specifies whether the traveler plans to stop at the waypoint, or simply pass through it.	O	1	Boolean	Unrestricted
286	WayPointList	Defines a list of waypoints along a route.				Lines 287 - 289
287	endPoint	The end point of the list of waypoints	M	1	AbstractWayPoint	Unrestricted
288	startPoint	The start point of the list of waypoints	M	1	AbstractWayPoint	Unrestricted
289	viaPoint	Intermediate point(s) in the list of waypoints	O	*	AbstractWayPoint	Unrestricted

NOTE: Structure has not been included in this document because the work involved in creating and harmonizing this model has been moved into Phase II.

Mobile Object

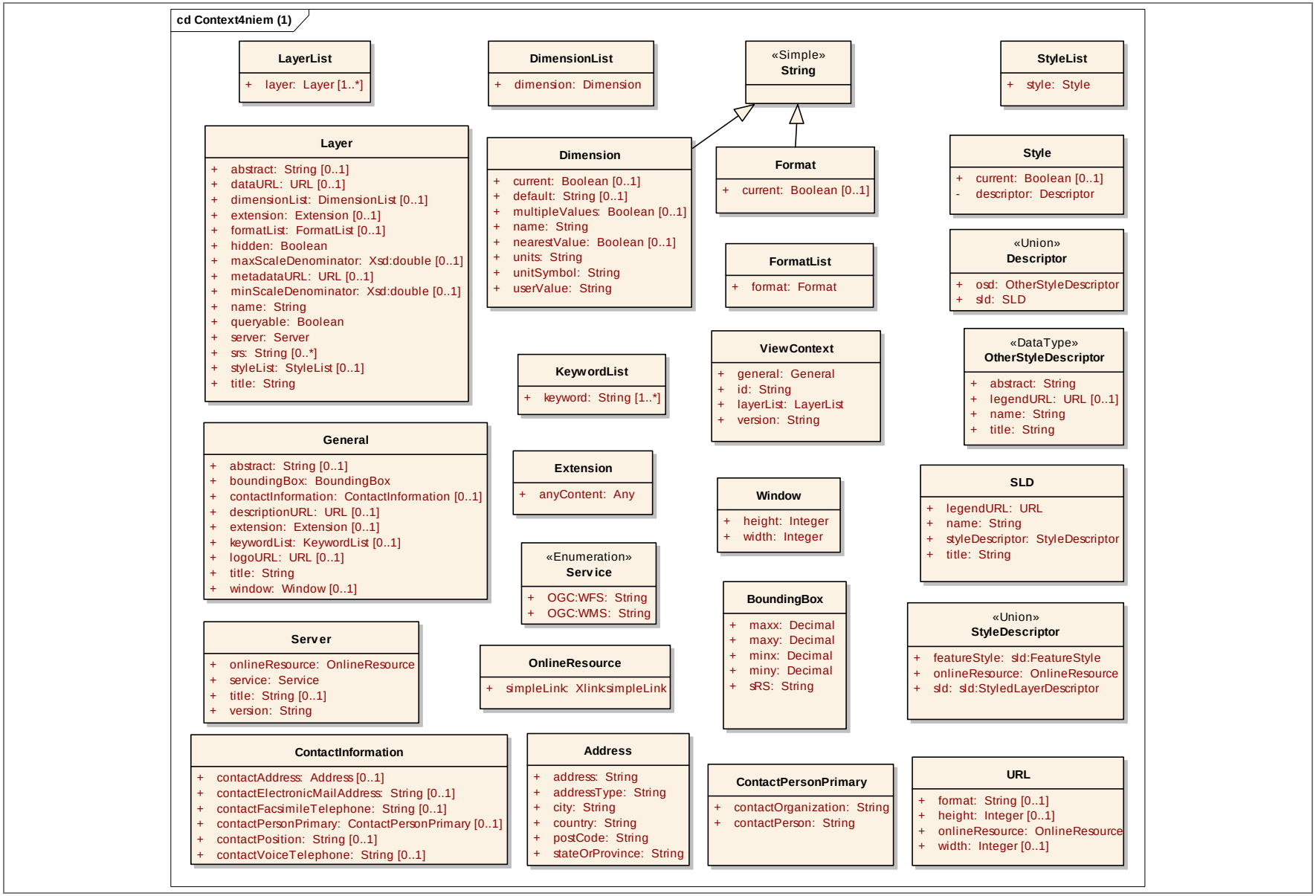


MobileObject						
Line	**Name/RoleName**	**Definition**	**Obligation / Condition**	**Maximum Occurrence**	**Data Type**	**Domain**
1	MovingObject	This type mirrors the gml:MovingObjectType; it includes a mo:track with mo:MovingObjectStatus elements instead of a gml:track with gml:MovingObjectStatus elements.				Lines 2 - 5
2	dataSource	Evidence is represented by a simple dataSource property that indicates the source of the temporal data (e.g. human observer, in situ sensor).	O	1	Gml:dataSource	Unrestricted
3	geometry	This element could be replaced by a gml:geometryMember element, except that "members" property elements by convention are for members of a collection or union, whereas "property" property elements are for non-member properties. See 7.4 GML Model and Syntax: "Furthermore, the property semantics, which is indicated by the name of the element representing the property, and the property value, which is given by the content of the property element, are distinguished."	M	1	Gml:GeometryProperty	Unrestricted
4	track	The track for the MovingObject	O	1	Track	Unrestricted
5	validTime	The time at which the track was valid	O	1	Gml:validTime	Unrestricted
6	MovingObjectCollection	A moving object collection may possess a track and/or a timestamp.				Lines 7 - 10
7	dataSource	Evidence is represented by a simple dataSource property that indicates the source of the temporal data (e.g. human observer, in situ sensor).	O	1	Gml:dataSource	Unrestricted
8	geometry	This element could be replaced by a gml:geometryMember element, except that "members" property elements by convention are for members of a collection or union, whereas "property" property elements are for non-member properties. See 7.4 GML Model and Syntax: "Furthermore, the property semantics, which is indicated by the name of the element representing the property, and the property value, which is given by the content of the property element, are distinguished."	O	1	Gml:GeometryProperty	Unrestricted
9	track	The track for the collection	O	1	Track	Unrestricted
10	validTime	The time at which the track was valid	O	1	Gml:validTime	Unrestricted
11	MovingObjectStatus	This type encapsulates various dynamic properties of moving objects (points, lines, regions). It is useful for dealing with features whose geometry or topology changes over time. It is different from the gml:MovingObjectStatusType in that it uses gml:pointProperty instead of gml:location, which is deprecated in (ISO) GML v3.2				Lines 12 - 17
12	acceleration	The acceleration of the object	O	1	Gml:Measure	Unrestricted
13	bearing	The direction that the object is traveling	O	1	Gml:DirectionProperty	Unrestricted
14	elevation	The elevation of the object	O	1	Gml:Measure	Unrestricted
15	point	The location of the object	M	1	Gml:pointProperty	Unrestricted

16	speed	The speed of the object	O	1	Gml:Measure	Unrestricted
17	status	The object's status (an arbitrary text string)	O	1	Gml:status	Unrestricted
18	Track	The track of a moving object is a sequence of specialized timeslices that indicate the status of the object.				Lines 19 - 19
19	status	The status element allows the user to describe the present location, along with the speed, bearing, acceleration and elevation of an object in a particular time slice.	M	*	MovingObjectStatus	Unrestricted

Map

Context4NIEM



Context4niem						
Line	**Name/RoleName**	**Definition**	**Obligation / Condition**	**Maximum Occurrence**	**Data Type**	**Domain**
1	Address	Physical or mailing address.				Lines 2 - 7
2	address	Address identifier	M	1	String	Unrestricted
3	addressType	Address type.	M	1	String	Unrestricted
4	city	City of address.	M	1	String	Unrestricted
5	country	Country of address.	M	1	String	Unrestricted
6	postCode	Postcode of address.	M	1	String	Unrestricted
7	stateOrProvince	State or province of address	M	1	String	Unrestricted
8	BoundingBox	represents the geographic extent that should be presented by the client				Lines 9 - 13
9	maxx	Maximum X (East) coordinate	M	1	Decimal	Unrestricted
10	maxy	Maximum Y (North) coordinate	M	1	Decimal	Unrestricted
11	minx	Minimum X (West) coordinate	M	1	Decimal	Unrestricted
12	miny	Minimum Y (South) coordinate	M	1	Decimal	Unrestricted
13	sRS	Spatial Reference System identifier	M	1	String	Unrestricted
14	ContactInformation	Contact information for creator of the Context document.				Lines 15 - 20
15	contactAddress	Physical or mailing address of contact.	O	1	Address	Unrestricted
16	contactElectronicMailAddress	Electronic mail address of contact.	O	1	String	Unrestricted
17	contactFacsimileTelephone	Facsimile telephone number of contact.	O	1	String	Unrestricted
18	contactPersonPrimary	Primary contact person of the creator of the Context document.	O	1	ContactPersonPrimary	Unrestricted
19	contactPosition	Position of contact person.	O	1	String	Unrestricted
20	contactVoiceTelephone	Voice telephone number of contact person.	O	1	String	Unrestricted
21	ContactPersonPrimary	Primary contact person of the creator of the Context document.				Lines 22 - 23
22	contactOrganization	Contact organization of the creator of the Context document.	M	1	String	Unrestricted
23	contactPerson	Additional contaxt person of the creator of the Context document.	M	1	String	Unrestricted
24	Descriptor	A union of and choice between a SLD and an OtherStyleDescriptor union.			<<Union>>	Lines 25 - 26
25	osd	A union of and choice between non-SLD style descriptors: an abstract, a legendURL, a name, or a title.	M	1	OtherStyleDescriptor	Unrestricted
26	sld	A SLD-defined Style.	M	1	SLD	Unrestricted
27	Dimension	Used in service metadata to declare that one or more dimensional parameters				Lines 28 -

		for Time, Elevation or Sample data are relevant to a layer or group of layers. [ISO DIS 19128]				35
28	current	Boolean attribute valid only for temporal extents (i.e., if attribute name="time"). This attribute, if it either 1 or 'true', indicates (a) that temporal data are normally kept current and (b) that the request parameter TIME may include the keyword 'current' instead of an ending value (see C.4.1). Default = 0.	O	1	Boolean	Unrestricted
29	default	Attribute indicating default value that will be used if GetMap request does not specify a value. If attribute is absent, then shall respond with a service exception if request does not include a value for that dimension.	O	1	String	Unrestricted
30	multipleValues	Boolean attribute indicating whether multiple values of the dimension may be requested. 0 (or 'false') = single values only; 1 (or 'true') = multiple values permitted. Default = 0.	O	1	Boolean	Unrestricted
31	name	Attribute stating name of dimensional axis.	M	1	String	Unrestricted
32	nearestValue	Boolean attribute indicating whether nearest value of the dimension will be returned in response to a request for a nearby value. 0 (or 'false') = request value(s) must correspond exactly to declared extent value(s); 1 (or 'true') = request values may be approximate. Default = 0.	O	1	Boolean	Unrestricted
33	units	Attribute indicating units of dimensional axis.	M	1	String	Unrestricted
34	unitSymbol	Attribute specifying symbol.	M	1	String	Unrestricted
35	userValue	Value of Time, Elevation or Sample dimension.	M	1	String	Unrestricted
36	DimensionList	A list of Dimension constraints that shall be used to request this layer.				Lines 37 - 37
37	dimension	Declares that one or more dimensional parameters are relevant to a layer or group of layers.	M	1	Dimension	Unrestricted
38	Extension	This allows additional elements to be added to support non WMS Layer services.				Lines 39 - 39
39	anyContent	a container tag in which arbitrary vendor specific information can be included without compromising the ability of other clients to enforce schema validation.	M	1	Any	Unrestricted
40	Format	Describe one output image format for the Layer				Lines 41 - 41
41	current	True if the current image format is selected	O	1	Boolean	Unrestricted
42	FormatList	A list of available image format for this layer. Image formats should be expressed with MIME types as described in WMS 1.1.1 Specification. Each image format is defined in a Format. A FormatList shall include at least one Format element.				Lines 43 - 43
43	format	Describe one output image format for the Layer.	M	1	Format	Unrestricted
44	General	layer-independent information about the current Context document such as the				Lines 45 -

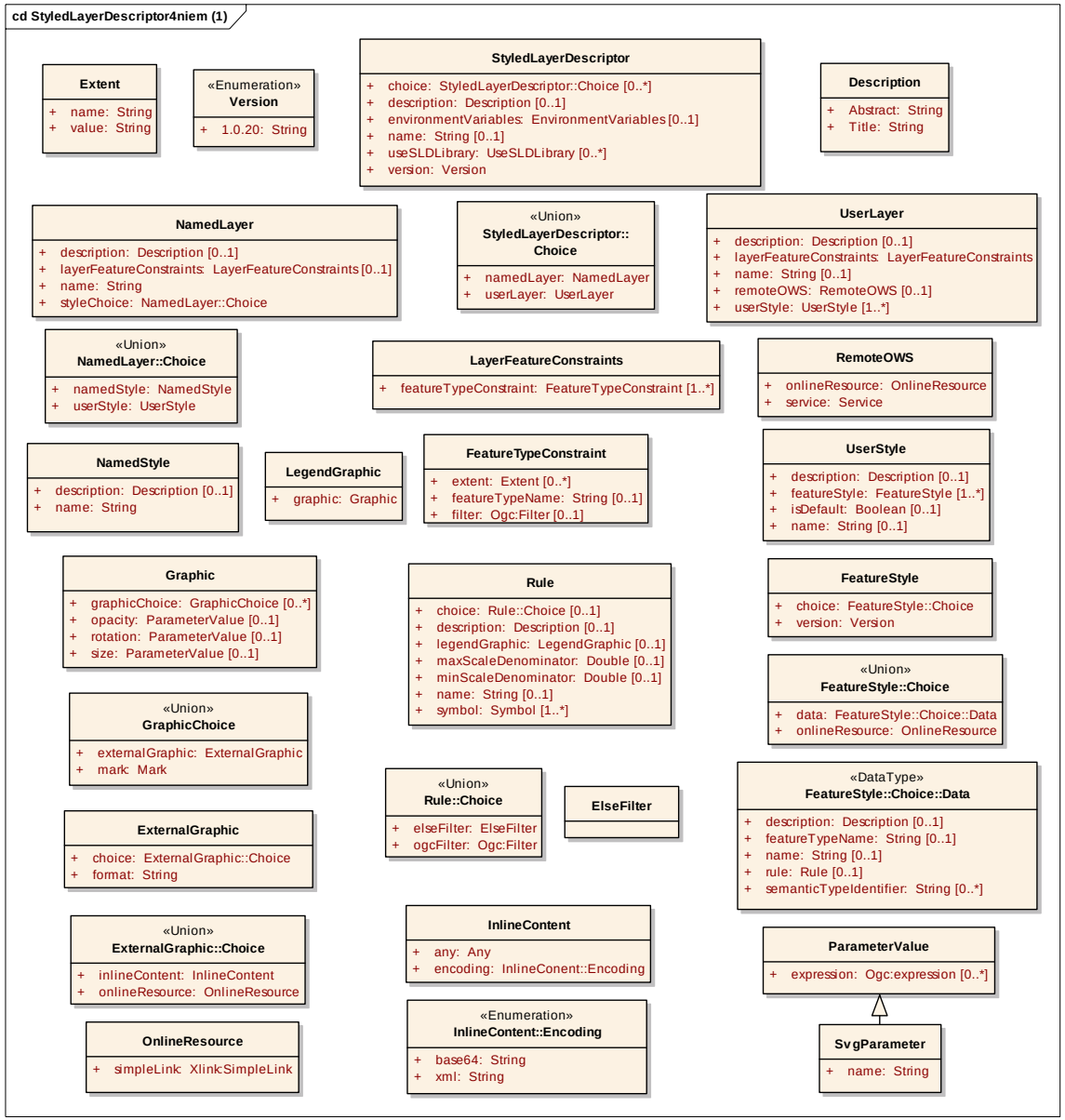
		bounding box and the spatial reference system and also some information describing the Context document itself such as title, abstract, etc.				53
45	abstract	a description for the Context document describing its content	O	1	String	Unrestricted
46	boundingBox	the geographic extent that should be presented by the client	M	1	BoundingBox	Unrestricted
47	contactInformation	presents contact information of the creator of the Context document. Contact is described as defined in WMS 1.1.1 Specification.	O	1	ContactInformation	Unrestricted
48	description	URL reference to a webpage which contains relevant information to the view.	O	1	URL	Unrestricted
49	extension	a container tag in which arbitrary vendor specific information can be included without compromising the ability of other clients to enforce schema validation.	O	1	Extension	Unrestricted
50	keywordList	one or more Keyword elements which allow search across context collections.	O	1	KeywordList	Unrestricted
51	logoURL	A reference to an image that might be attached to the Context document. It can be, for instance, the logo of the project for which the context has been setup, or an overview of the map the context describes. This element contains a link to the image as well as the dimension of the image (in pixels) and its format.	O	1	URL	Unrestricted
52	title	a human readable title of the Context.	M	1	String	Unrestricted
53	window	the size in pixels of the map the Context document describes	O	1	Window	Unrestricted
54	KeywordList	one or more Keyword elements which allow search across context collections.				Lines 55 - 55
55	keyword	A Keyword which allows search across context collections.	M	*	String	Unrestricted
56	Layer	The Layer element must enclose one or more child elements providing information about the Layer.				Lines 57 - 71
57	abstract	The abstract of the selected layer (extracted from Capabilities by the Context document creator).	O	1	String	Unrestricted
58	dataURL	a link to an online resource where data corresponding to the layer can be found.	O	1	URL	Unrestricted
59	dimensionList	A list of Dimension constraints that shall be used to request this layer.	O	1	DimensionList	Unrestricted
60	extension	a container tag in which arbitrary vendor specific information can be included without compromising the ability of other clients to enforce schema validation.	O	1	Extension	Unrestricted
61	formatList	The parent element containing the list of available image format for this layer.	O	1	FormatList	Unrestricted
62	hidden	True if Layer is hidden	M	1	Boolean	Unrestricted
63	maxScaleDenominator	the maximum scale from wich this layer should not be displayed by a client application. The exact definition of this element is presented in detail in the SLD implementation specification [SLD].	O	1	Xsd:double	Unrestricted
64	metadataURL	a link to an online resource where descriptive metadata corresponding to the layer can be found.	O	1	URL	Unrestricted
65	minScaleDenominator	the minimum scale from wich this layer should be displayed by a client	O	1	Xsd:double	Unrestricted

		application. The exact definition of this element is presented in detail in the SLD implementation specification [SLD].				
66	name	The name of the selected layer (extracted from Capabilities by the Context document creator).	M	1	String	Unrestricted
67	queryable	true if the layer is set queryable	M	1	Boolean	Unrestricted
68	server	The element defining the service from which the named Layer may be requested	M	1	Server	Unrestricted
69	srs	A list of available SRS for the enclosing layer. One of the listed SRS's must be the SRS mentioned in the ViewerContext/General/BoundingBox@SRS element.	O	*	String	Unrestricted
70	styleList	The parent element containing the list of available styles for this layer. Each style is defined in a Style element. A StyleList shall include at least one Style element.	O	1	StyleList	Unrestricted
71	title	title of the selected layer (extracted from Capabilities by the Context document creator).	M	1	String	Unrestricted
72	LayerList	Describes the list of all layers to build a required view (map). The Layers are presented in a bottom to top approach. Each layer is defined in a Layer element in the Context document XML. If desired, Layers may be repeated with different attributes (e.g. different styles).				Lines 73 - 73
73	layer	The Layer element must enclose one or more child elements providing information about the Layer.	M	*	Layer	Unrestricted
74	OnlineResource	A link to the specified SLD document				Lines 75 - 75
75	simpleLink	A reference (link) to the resource	M	1	Xlink:simpleLink	Unrestricted
76	OtherStyleDescriptor	A union of and choice between non-SLD style descriptors: an abstract, a legendURL, a name, or a title.			<<DataType>>	Lines 77 - 80
77	abstract	A narrative description of the current style (extracted from Capabilities by the Context document creator).	M	1	String	Unrestricted
78	legendURL	The location of an image of a map legend describing the current style (extracted from Capabilities by the Context document creator).	O	1	URL	Unrestricted
79	name	The name of the style (extracted from Capabilities by the Context document creator).	M	1	String	Unrestricted
80	title	The human-readable title of the style (extracted from Capabilities by the Context document creator).	M	1	String	Unrestricted
81	Server	The element defining the service from which the named Layer may be requested				Lines 82 - 85
82	onlineResource	the link to the online resource	M	1	OnlineResource	Unrestricted

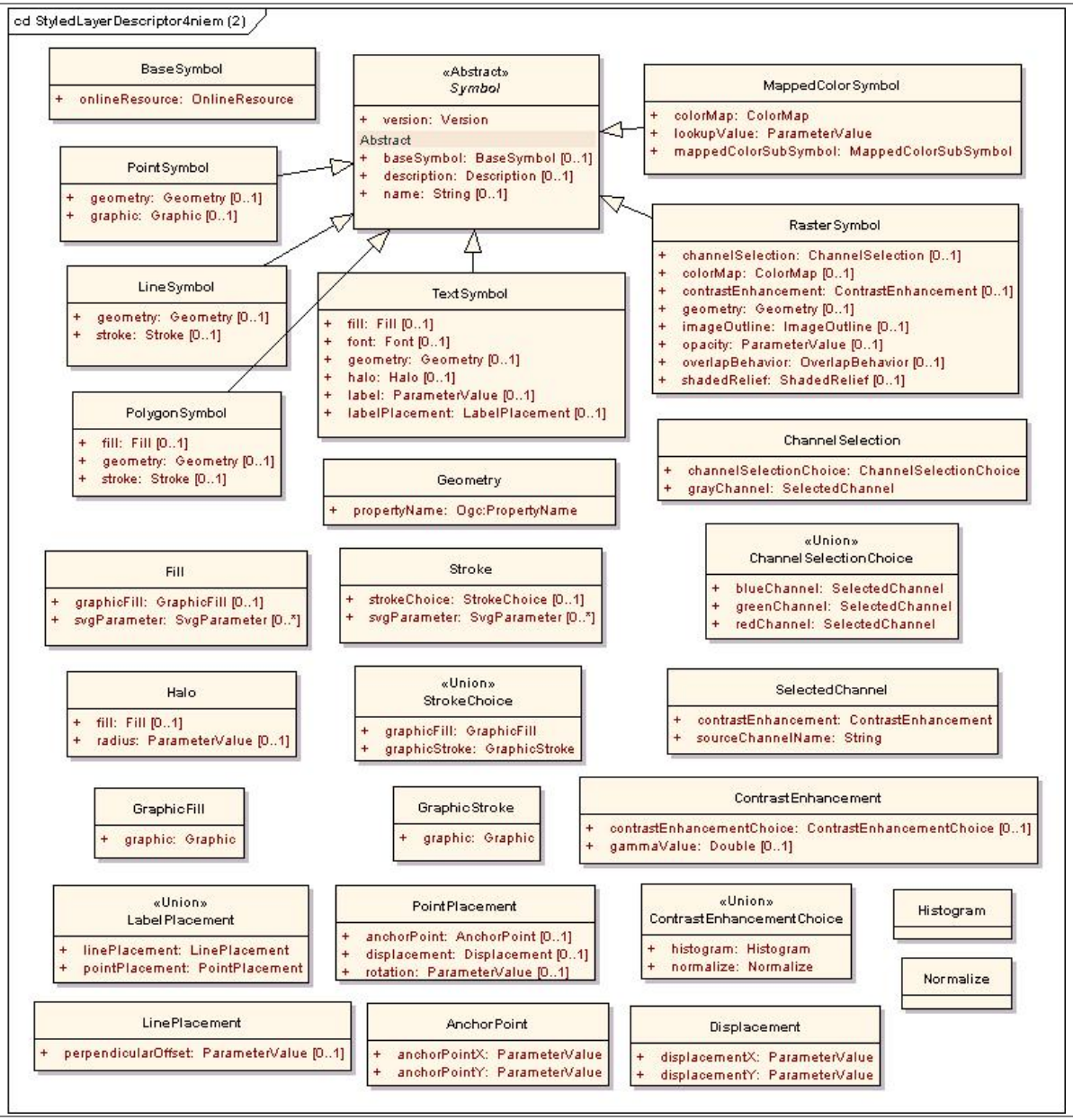
83	service	the type of the service according to OGC interfaces, such as WMS, WFS.	M	1	Service	Unrestricted
84	title	the title of the service (extracted from the Capabilities by the Context document creator)	O	1	String	Unrestricted
85	version	Version number of the OGC interface specification which corresponds to the service (required)	M	1	String	Unrestricted
86	Service	The type of the service according to OGC interfaces, such as WMS, WFS. (required)			<<Enumeration>>	Lines 87 - 88
87	OGC:WFS	Identifier of Web Feature Service type	M	1	String	Unrestricted
88	OGC:WMS	Identifier of Web Map Service type	M	1	String	Unrestricted
89	SLD	A SLD-defined Style.				Lines 90 - 93
90	legendURL	URL to a legend icon representing the Style	M	1	URL	Unrestricted
91	name	Name of SLD-defined Style	M	1	String	Unrestricted
92	styleDescriptor	A union of and choice between a FeatureStyle, OnlineResource, and Styled Layer Descriptor.	M	1	StyleDescriptor	Unrestricted
93	title	Title of a SLD-defined Style	M	1	String	Unrestricted
94	String	A character string.			<<Simple>>	
95	Style	Defines the style(s) of the Layer.				Lines 96 - 97
96	current	True if the current style is selected	O	1	Boolean	Unrestricted
97	descriptor	A union of (choice between) a SLD-defined Style and a Named Style.	M	1	Descriptor	Unrestricted
98	StyleDescriptor	A union of and choice between a FeatureStyle, OnlineResource, and Styled Layer Descriptor.			<<Union>>	Lines 99 - 101
99	featureStyle	A FeatureStyle contains styling information specific to one feature type.	M	1	Sld:FeatureStyle	Unrestricted
100	onlineResource	A link to the specified SLD document	M	1	OnlineResource	Unrestricted
101	sld	A StyledLayerDescriptor is a sequence of styled layers, represented at the first level by NamedLayer and UserLayer elements.	M	1	sld:StyledLayerDescriptor	Unrestricted
102	StyleList	The list of available styles for this layer				Lines 103 - 103
103	style	A Style definition or identifier	M	1	Style	Unrestricted
104	URL	Location identifier for online image.				Lines 105 - 108
105	format	image format identifier	O	1	String	Unrestricted
106	height	height in pixels of image	O	1	Integer	Unrestricted
107	onlineResource	URL reference to image file	M	1	OnlineResource	Unrestricted
108	width	width in pixels of image	O	1	Integer	Unrestricted

109	ViewContext	The ViewContext element is composed of two elements, one for general information and another defining a list of layers.				Lines 110 - 113
110	general	layer-independent information about the current Context document such as the bounding box and the spatial reference system and also some information describing the Context document itself such as title, abstract, etc.	M	1	General	Unrestricted
111	id	should be unique and that represents a unique identifier of the Context	M	1	String	Unrestricted
112	layerList	Describes the list of all layers to build a required view (map). The Layers are presented in a bottom to top approach. Each layer is defined in a Layer element in the Context document XML. If desired, Layers may be repeated with different attributes (e.g. different styles).	M	1	LayerList	Unrestricted
113	version	Represents the published specification version number, contains three positive integers, separated by decimal points, in the form “x.y.z”. Each context specification is numbered independently.	M	1	String	Unrestricted
114	Window	Representing the size in pixels of the map the Context document describes. Negotiation between Context defined aspect ratio and typical client aspect ratio (according to the client’s vendor) is left to the client.				Lines 115 - 116
115	height	height of window in pixels	M	1	Integer	Unrestricted
116	width	width of window in pixels	M	1	Integer	Unrestricted

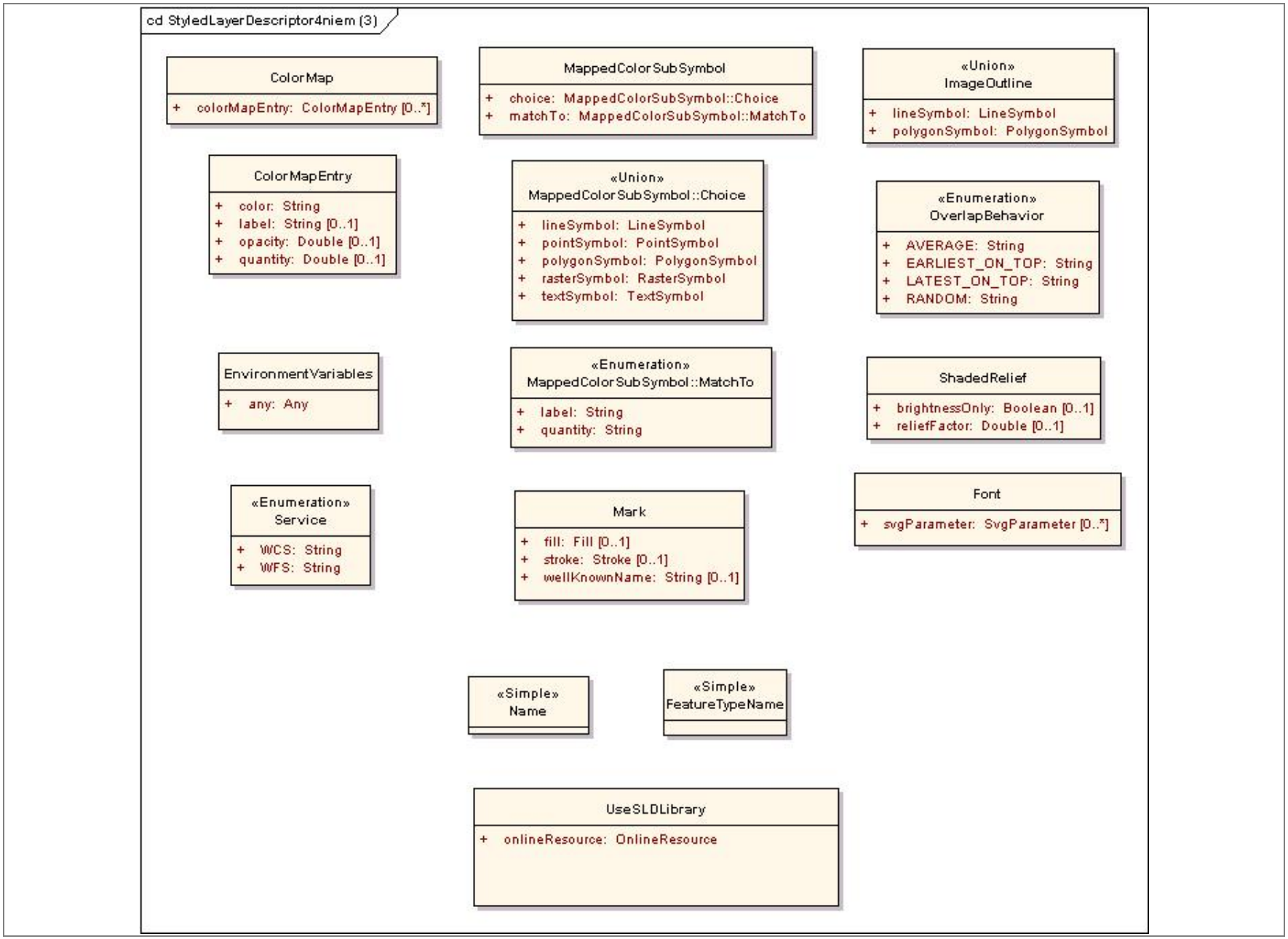
StyledLayerDescriptor4NIEM (1 of 3)



StyledLayerDescriptor4NIEM (2 of 3)



StyledLayerDescriptor4NIEM (3 of 3)



StyledLayerDescriptor4niem						
Line	**Name/RoleName**	**Definition**	**Obligation / Condition**	**Maximum Occurrence**	**Data Type**	**Domain**
1	AnchorPoint	An "AnchorPoint" identifies the location inside of a text label to use an an 'anchor' for positioning it relative to a point geometry.				Lines 2 - 3
2	anchorPointX	X coordinate of the AnchorPoint	M	1	ParameterValue	Unrestricted
3	anchorPointY	Y coordinate of the AnchorPoint	M	1	ParameterValue	Unrestricted
4	BaseSymbol	A "BaseSymbol" defines the default properties of a symbol to be those of an external symbol, which will frequently be inside of an OGC symbol(izer) repository. The symbol properties given in-line override the base-symbol properties.				Lines 5 - 5
5	onlineResource	An "OnlineResource" is typically used to refer to an HTTP URL.	M	1	OnlineResource	Unrestricted
6	ChannelSelection	"ChannelSelection" specifies the false-color channel selection for a multi-spectral raster source.				Lines 7 - 8
7	channelSelectionChoice	Union of and choice among red, green, and blue channels.	M	1	ChannelSelectionChoice	Unrestricted
8	grayChannel	Grey Channel.	M	1	SelectedChannel	Unrestricted
9	ChannelSelectionChoice	Union of and choice among red, green, and blue channels.			<<Union>>	Lines 10 - 12
10	blueChannel	Blue Channel	M	1	SelectedChannel	Unrestricted
11	greenChannel	Green Channel	M	1	SelectedChannel	Unrestricted
12	redChannel	Red Ghannel	M	1	SelectedChannel	Unrestricted
13	ColorMap	A "ColorMap" defines either the colors of a pallet-type raster source or the mapping of numeric pixel values to colors.				Lines 14 - 14
14	colorMapEntry	Color with optional label, opacity, and quantity.	O	*	ColorMapEntry	Unrestricted
15	ColorMapEntry	The ColorMap element defines either the colors of a palette-type raster source or the mapping of fixed-numeric pixel values to colors. Color with optional label, opacity, and quantity.				Lines 16 - 19
16	color	Color	M	1	String	Unrestricted
17	label	Labels may be used for legends or may be used in the future to match character values.	O	1	String	Unrestricted
18	opacity	Opacity. Not all systems can support opacity in colormaps. The default opacity is 1.0 (fully opaque).	O	1	Double	Unrestricted
19	quantity	The quantity attributes of a color-map are used for translating between numeric matrixes and color rasters and the ColorMap entries should be in order of increasing numeric quantity so that	O	1	Double	Unrestricted

		intermediate numeric values can be matched to a color (or be interpolated between two colors).				
20	ContrastEnhancement	"ContrastEnhancement" defines the 'stretching' of contrast for a channel of a false-color image or for a whole grey/color image. Contrast enhancement is used to make ground features in images more visible.				Lines 21 - 22
21	contrastEnhancementChoice	Union of and choice between histogram and normalize.	O	1	ContrastEnhancementChoice	Unrestricted
22	gammaValue	A “GammaValue” tells how much to brighten (value greater than 1.0) or dim (value less than 1.0) an image. The default GammaValue is 1.0 (no change).	O	1	Double	Unrestricted
23	ContrastEnhancementChoice	Union of and choice between histogram and normalize.			<<Union>>	Lines 24 - 25
24	histogram	“Histogram” means to stretch the contrast based on a histogram of how many colors are at each brightness level on input, with the goal of producing equal number of pixels in the image at each brightness level on output. This has the effect of revealing many subtle ground features.	M	1	Histogram	Unrestricted
25	normalize	“Normalize” means to stretch the contrast so that the dimmest color is stretched to black and the brightest color is stretched to white, with all colors in between stretched out linearly.	M	1	Normalize	Unrestricted
26	Description	A "Description" gives human-readable descriptive information for the object it is included within.				Lines 27 - 28
27	Abstract	Brief narrative description, normally used for display to a human.	M	1	String	Unrestricted
28	Title	A title used for display to a human.	M	1	String	Unrestricted
29	Displacement	A "Displacement" gives X and Y offset displacements to use for rendering a text label near a point.				Lines 30 - 31
30	displacementX	X axis offset of displacement	M	1	ParameterValue	Unrestricted
31	displacementY	Y axis offset of displacement	M	1	ParameterValue	Unrestricted
32	ElseFilter	The ElseFilter allows rules to be specified that are activated for features that are not selected by any other rule in a feature-type style.				
33	EnvironmentVariables	An "EnvironmentVariables" element includes an XML blob which can be used to declare the values to use for global environment variables during the execution of the styling operations. These variables may be refered to in styles and symbols in the same way as feature properties.				Lines 34 - 34
34	any	Any data.	M	1	Any	Unrestricted

35	Extent	An Extent gives feature/coverage/raster/matrix dimension extent.				Lines 36 - 37
36	name	Name of the extent.	M	1	String	Unrestricted
37	value	Value of the extent.	M	1	String	Unrestricted
38	ExternalGraphic	An "ExternalGraphic" gives a reference to an raster or vector graphical object, either online or inline, in an externally-defined graphic format.				Lines 39 - 40
39	choice	Union of and choice between inline content and an online resource.	M	1	ExternalGraphic::Choice	Unrestricted
40	format	MIME type of the graphic	M	1	String	Unrestricted
41	ExternalGraphic::Choice	Union of and choice between inline content and an online resource.			<<Union>>	Lines 42 - 43
42	inlineContent	Graphic from an inline Mark. "InlineContent" is XML- or base64-encoded encoded content in some externally-defined format that is included in an SLD in-line.	M	1	InlineContent	Unrestricted
43	onlineResource	An "OnlineResource" is typically used to refer to an HTTP URL.	M	1	OnlineResource	Unrestricted
44	FeatureStyle	A FeatureStyle contains styling information specific to one feature type. This is the SLD level that separates the 'layer' handling from the 'feature' handling.				Lines 45 - 46
45	choice	Union of and choice between inline feature style or an online resource.	M	1	FeatureStyle::Choice	Unrestricted
46	version	The "VersionType" merely restricts the version string that may be used with XML documents based on this schema: 1.0.20	M	1	Version	Unrestricted
47	FeatureStyle::Choice	Union of and choice between inline feature style or an online resource.			<<Union>>	Lines 48 - 49
48	data	Data that defines a FeatureStyle	M	1	FeatureStyle::Choice::Data	Unrestricted
49	onlineResource	An "OnlineResource" is typically used to refer to an HTTP URL.	M	1	OnlineResource	Unrestricted
50	FeatureStyle::Choice::Data	Data that defines a FeatureStyle			<<DataType>>	Lines 51 - 55
51	description	A "Description" gives human-readable descriptive information for the object it is included within.	O	1	Description	Unrestricted
52	featureTypeName	Name of the feature type to which this FeatureStyle applies.	O	1	String	Unrestricted
53	name	Name of this FeatureStyle.	O	1	String	Unrestricted
54	rule	A Rule is used to attach property/scale conditions to and group the individual symbols used for rendering.	O	1	Rule	Unrestricted
55	semanticTypeIdentifier	The SemanticTypeIdentifier is experimental and is intended to be used to identify what the feature style is suitable to be used for	O	*	String	Unrestricted

		using community-controlled name(s). For example, a single style may be suitable to use with many different feature types. The syntax of the SemanticTypeIdentifier string is undefined, but the strings “generic:line”, “generic:polygon”, “generic:point”, “generic:text”, “generic:raster”, and “generic:any” are reserved to indicate that a FeatureTypeStyle may be used with any feature type with the corresponding default geometry type (i.e., no feature properties are referenced in the feature-type style).				
56	FeatureTypeConstraint	A FeatureTypeConstraint identifies a specific feature type and supplies fitlering.				Lines 57 - 59
57	extent	An Extent gives feature/coverage/raster/matrix dimension extent.	O	*	Extent	Unrestricted
58	featureTypeName	Name of the feature type to which this constraint applies.	O	1	String	Unrestricted
59	filter	Attribute and/or spatial query filter to constrain feature selection.	O	1	Ogc:Filter	Unrestricted
60	FeatureTypeName	Name of a GML Feature type.			<<Simple>>	
61	Fill	A "Fill" specifies the pattern for filling an area geometry. The allowed SvgParameters are: "fill" (color) and "fill-opacity".				Lines 62 - 63
62	graphicFill	A "GraphicFill" defines repeated-graphic filling (stippling) pattern for an area geometry.	O	1	GraphicFill	Unrestricted
63	svgParameter	A "SvgParameter" refers to an SVG/CSS graphical-formatting parameter. The parameter is identified using the "name" attribute and the content of the element gives the SVG/CSS-coded value.	O	*	SvgParameter	Unrestricted
64	Font	A "Font" element specifies the text font to use. The allowed SvgParameters are: "font-family", "font-style", "font-weight", and "font-size".				Lines 65 - 65
65	svgParameter	A "SvgParameter" refers to an SVG/CSS graphical-formatting parameter. The parameter is identified using the "name" attribute and the content of the element gives the SVG/CSS-coded value.	O	*	SvgParameter	Unrestricted
66	Geometry	A Geometry gives reference to a (the) geometry property of a feature to be used for rendering.				Lines 67 - 67
67	propertyName	Name of font property.	M	1	Ogc:PropertyName	Unrestricted
68	Graphic	A "Graphic" specifies or refers to a "graphic symbol" with inherent shape, size, and coloring.				Lines 69 - 72
69	graphicChoice	Union of and choice between an external graphic and a contained mark.	O	*	GraphicChoice	Unrestricted
70	opacity	Opacity ranges from 0..0 (fully transluscent) to 1.0 (fully opaque).	O	1	ParameterValue	Unrestricted
71	rotation	The Rotation element gives the rotation of a graphic in the clockwise direction about its center point in decimal degrees,	O	1	ParameterValue	Unrestricted

		encoded as a floating-point number. Negative values mean counter-clockwise rotation. The default value is 0.0 (no rotation).				
72	size	The Size element gives the absolute size of the graphic in pixels encoded as a floatingpoint number.	O	1	ParameterValue	Unrestricted
73	GraphicChoice	Union of and choice between an external graphic and a contained mark. Graphics can either be referenced from an external URL in a common format (such as GIF or SVG) or may be derived from a Mark.			<<Union>>	Lines 74 - 75
74	externalGraphic	An "ExternalGraphic" gives a reference to an raster or vector graphical object, either online or inline, in an externally-defined graphic format.	M	1	ExternalGraphic	Unrestricted
75	mark	The Mark element of a Graphic defines a “shape” which has coloring applied to it.	M	1	Mark	Unrestricted
76	GraphicFill	A "GraphicFill" defines repeated-graphic filling (stippling) pattern for an area geometry.				Lines 77 - 77
77	graphic	The fill graphic.	M	1	Graphic	Unrestricted
78	GraphicStroke	A "GraphicStroke" defines a repated-linear graphic pattern to be used for stroking a line.				Lines 79 - 79
79	graphic	The stroke graphic.	M	1	Graphic	Unrestricted
80	Halo	A "Halo" fills an extended area outside the glyphs of a rendered text label to make the label easier to read over a background.				Lines 81 - 82
81	fill	A "Fill" specifies the pattern for filling an area geometry. The allowed SvgParameters are: "fill" (color) and "fill-opacity".	O	1	Fill	Unrestricted
82	radius	The Radius element gives the absolute size of a halo radius in pixels encoded as a floating-point number. The radius is taken from the outside edge of a font glyph to extend the area of coverage of the glyph (and the inside edge of “holes” in the glyphs). The halo of a text label is considered to be a single shape. The default radius is one pixel. Negative values are not allowed.	O	1	ParameterValue	Unrestricted
83	Histogram	“Histogram” means to stretch the contrast based on a histogram of how many colors are at each brightness level on input, with the goal of producing equal number of pixels in the image at each brightness level on output. This has the effect of revealing many subtle ground features.				
84	ImageOutline	"ImageOutline" specifies how individual source rasters in a multi-raster set (such as a set of satellite-image scenes) should be outlined to make the individual-image locations visible. It is a				Lines 85 - 86

		union of and choice between a lineSymbol or a polygonSymbol used as the outline graphic.				
85	lineSymbol	A LineSymbol is used to render a "stroke" along a linear geometry.	M	1	LineSymbol	Unrestricted
86	polygonSymbol	A "PolygonSymbol" specifies the rendering of a polygon or area geometry, including its interior fill and border stroke.	M	1	PolygonSymbol	Unrestricted
87	InlineContent	"InlineContent" is XML- or base64-encoded encoded content in some externally-defined format that is included in an SLD in-line.				Lines 88 - 89
88	any	Any data.	O	1	Any	Unrestricted
89	encoding	Enumeration of encoding options for InlineContent.	M	1	InlineConent::Encoding	Unrestricted
90	InlineContent::Encoding	Enumeration of encoding options for InlineContent.			<<Enumeration>>	Lines 91 - 92
91	base64	Base64 encoding	M	1	String	Unrestricted
92	xml	XML encoding	M	1	String	Unrestricted
93	LabelPlacement	The "LabelPlacement" specifies where and how a text label should be rendered relative to a geometry. The present mechanism is poorly aligned with CSS/SVG. It is a union of and choice between a linePlacement and a pointPlacement.				Lines 94 - 95
94	linePlacement	A "LinePlacement" specifies how a text label should be rendered relative to a linear geometry.	M	1	LinePlacement	Unrestricted
95	pointPlacement	A "PointPlacement" specifies how a text label should be rendered relative to a geometric point.	M	1	PointPlacement	Unrestricted
96	LayerFeatureConstraints	LayerFeatureConstraints define what features and feature types are referenced in a layer.				Lines 97 - 97
97	featureTypeConstraint	A FeatureTypeConstraint identifies a specific feature type and supplies fitlering.	M	*	FeatureTypeConstraint	Unrestricted
98	LegendGraphic	The LegendGraphic SLD element is intended to provide a substitute representative image for a Rule.				Lines 99 - 99
99	graphic	The graphic for a LegendGraphic. A "Graphic" specifies or refers to a "graphic symbol" with inherent shape, size, and coloring.	M	1	Graphic	Unrestricted
100	LinePlacement	A "LinePlacement" specifies how a text label should be rendered relative to a linear geometry.				Lines 101 - 101
101	perpendicularOffset	A "PerpendicularOffset" gives the perpendicular distance away from a line to draw a label.	O	1	ParameterValue	Unrestricted
102	LineSymbol	A LineSymbol is used to render a "stroke" along a linear geometry.				Lines 103 - 104
103	geometry	Linear geometry to be symbolized.	O	1	Geometry	Unrestricted

104	stroke	Stroke used for symbolization.	O	1	Stroke	Unrestricted
105	MappedColorSubSymbol	The MappedColorSubSymbol identifies the the symbol to which to apply computed colors. The computed color is used as the 'default color' in the sub-symbol. The "matchTo" attribute tells whether to match the lookup value to the "quantity" or "label" attributes of the 'choropleth' ColorMap.				Lines 106 - 107
106	choice	Union of and choice among symbolizers for a MappedColorSubSymbol.	M	1	MappedColorSubSymbol::Choice	Unrestricted
107	matchTo	The "matchTo" attribute tells whether to match the lookup value to the "quantity" or "label" attributes of the 'choropleth' ColorMap.	M	1	MappedColorSubSymbol::MatchTo	Unrestricted
108	MappedColorSubSymbol::Choice	Union of and choice among symbolizers for a MappedColorSubSymbol.			<<Union>>	Lines 109 - 113
109	lineSymbol	A LineSymbol is used to render a "stroke" along a linear geometry.	M	1	LineSymbol	Unrestricted
110	pointSymbol	A "PointSymbol" specifies the rendering of a "graphic symbol" at a point.	M	1	PointSymbol	Unrestricted
111	polygonSymbol	A "PolygonSymbol" specifies the rendering of a polygon or area geometry, including its interior fill and border stroke.	M	1	PolygonSymbol	Unrestricted
112	rasterSymbol	A "RasterSymbol" is used to specify the rendering of raster/matrix-coverage data (e.g., satellite images, DEMs).	M	1	RasterSymbol	Unrestricted
113	textSymbol	A "TextSymbol" is used to render text labels according to various graphical parameters.	M	1	TextSymbol	Unrestricted
114	MappedColorSubSymbol::MatchTo	The "matchTo" attribute tells whether to match the lookup value to the "quantity" or "label" attributes of the 'choropleth' ColorMap.			<<Enumeration>>	Lines 115 - 116
115	label	Match the lookup value to the label attribute.	M	1	String	Unrestricted
116	quantity	Match the lookup value to the quantity attribute.	M	1	String	Unrestricted
117	MappedColorSymbol	A "MappedColorSymbol" is used to specify the mapping of colors to ranges of values of a control variable/expression.				Lines 118 - 120
118	colorMap	A "ColorMap" defines either the colors of a pallet-type raster source or the mapping of numeric pixel values to colors.	M	1	ColorMap	Unrestricted
119	lookupValue	The control variable/expression value to match.	M	1	ParameterValue	Unrestricted
120	mappedColorSubSymbol	The MappedColorSubSymbol identifies the the symbol to which to apply computed colors. The computed color is used as the 'default color' in the sub-symbol. The "matchTo" attribute tells whether to match the lookup value to the "quantity" or "label" attributes of the 'choropleth' ColorMap.	M	1	MappedColorSubSymbol	Unrestricted
121	Mark	The Mark element of a Graphic defines a “shape” which has				Lines 122 -

		coloring applied to it.				124
122	fill	A "Fill" specifies the pattern for filling an area geometry. The allowed SvgParameters are: "fill" (color) and "fill-opacity".	O	1	Fill	Unrestricted
123	stroke	Stroke used for symbolization.	O	1	Stroke	Unrestricted
124	wellKnownName	The WellKnownName element gives the well-known name of the shape of the mark. Allowed values include at least “square”, “circle”, “triangle”, “star”, “cross”, and “x”, though map servers may draw a different symbol instead if they don't have a shape for all of these. The default WellKnownName is “square”.	O	1	String	Unrestricted
125	Name	Name.			<<Simple>>	
126	NamedLayer	A NamedLayer is a layer of data that has a name advertised by a WMS.				Lines 127 - 130
127	description	A "Description" gives human-readable descriptive information for the object it is included within.	O	1	Description	Unrestricted
128	layerFeatureConstraints	LayerFeatureConstraints define what features and feature types are referenced in a layer.	O	1	LayerFeatureConstraints	Unrestricted
129	name	Name of the NamedLayer.	M	1	String	Unrestricted
130	styleChoice	Union of and choice between a NamedStyle and a UserStyle.	M	1	NamedLayer::Choice	Unrestricted
131	NamedLayer::Choice	Union of and choice between a NamedStyle and a UserStyle.			<<Union>>	Lines 132 - 133
132	namedStyle	A NamedStyle is used to refer to a style that has a name in a WMS.	M	1	NamedStyle	Unrestricted
133	userStyle	A UserStyle allows user-defined styling and is semantically equivalent to a WMS named style.	M	1	UserStyle	Unrestricted
134	NamedStyle	A NamedStyle is used to refer to a style that has a name in a WMS.				Lines 135 - 136
135	description	A "Description" gives human-readable descriptive information for the object it is included within.	O	1	Description	Unrestricted
136	name	Name of the NamedStyle.	M	1	String	Unrestricted
137	Normalize	“Normalize” means to stretch the contrast so that the dimmest color is stretched to black and the brightest color is stretched to white, with all colors in between stretched out linearly.				
138	OnlineResource	An "OnlineResource" is typically used to refer to an HTTP URL.				Lines 139 - 139
139	simpleLink	An Xlink:SimpleLink	M	1	Xlink:SimpleLink	Unrestricted
140	OverlapBehavior	"OverlapBehavior" tells a system how to behave when multiple raster images in a layer overlap each other, for example with			<<Enumeration>>	Lines 141 - 144

		satellite-image scenes.				
141	AVERAGE	Average multiple scenes together. This can produce blurry results if the source images are not perfectly aligned in their geo-referencing.	M	1	String	Unrestricted
142	EARLIEST_ON_TOP	Display the first scene captured on top.	M	1	String	Unrestricted
143	LATEST_ON_TOP	Display the last scene captured on top.	M	1	String	Unrestricted
144	RANDOM	Select an image (or piece thereof) randomly and place it on top. This can produce crisper results than AVERAGE.	M	1	String	Unrestricted
145	ParameterValue	The "ParameterValueType" uses WFS-Filter expressions to give values for SLD graphic parameters. A "mixed" element-content model is used with textual substitution for values.				Lines 146 - 146
146	expression		O	*	Ogc:expression	Unrestricted
147	PointPlacement	A "PointPlacement" specifies how a text label should be rendered relative to a geometric point.				Lines 148 - 150
148	anchorPoint	An "AnchorPoint" identifies the location inside of a text label to use an an 'anchor' for positioning it relative to a point geometry.	O	1	AnchorPoint	Unrestricted
149	displacement	A "Displacement" gives X and Y offset displacements to use for rendering a text label near a point.	O	1	Displacement	Unrestricted
150	rotation	The Rotation element gives the rotation of a graphic in the clockwise direction about its center point in decimal degrees, encoded as a floating-point number. Negative values mean counter-clockwise rotation. The default value is 0.0 (no rotation).	O	1	ParameterValue	Unrestricted
151	PointSymbol	A "PointSymbol" specifies the rendering of a "graphic symbol" at a point.				Lines 152 - 153
152	geometry	Point to be symbolized	O	1	Geometry	Unrestricted
153	graphic	Graphic to be used to symbolize a point.	O	1	Graphic	Unrestricted
154	PolygonSymbol	A "PolygonSymbol" specifies the rendering of a polygon or area geometry, including its interior fill and border stroke.				Lines 155 - 157
155	fill	A "Fill" specifies the pattern for filling an area geometry. The allowed SvgParameters are: "fill" (color) and "fill-opacity".	O	1	Fill	Unrestricted
156	geometry	Polygon to be symbolized.	O	1	Geometry	Unrestricted
157	stroke	Stroke used for symbolization.	O	1	Stroke	Unrestricted
158	RasterSymbol	A "RasterSymbol" is used to specify the rendering of raster/matrix-coverage data (e.g., satellite images, DEMs).				Lines 159 - 166
159	channelSelection	"ChannelSelection" specifies the false-color channel selection for a multi-spectral raster source.	O	1	ChannelSelection	Unrestricted
160	colorMap	A "ColorMap" defines either the colors of a pallet-type raster	O	1	ColorMap	Unrestricted

		source or the mapping of numeric pixel values to colors.				
161	contrastEnhancement	"ContrastEnhancement" defines the 'stretching' of contrast for a channel of a false-color image or for a whole grey/color image. Contrast enhancement is used to make ground features in images more visible.	O	1	ContrastEnhancement	Unrestricted
162	geometry	Geometry to be symbolized.	O	1	Geometry	Unrestricted
163	imageOutline	"ImageOutline" specifies how individual source rasters in a multi-raster set (such as a set of satellite-image scenes) should be outlined to make the individual-image locations visible.	O	1	ImageOutline	Unrestricted
164	opacity	Opacity ranges from 0..0 (fully transluscent) to 1.0 (fully opaque).	O	1	ParameterValue	Unrestricted
165	overlapBehavior	"OverlapBehavior" tells a system how to behave when multiple raster images in a layer overlap each other, for example with satellite-image scenes.	O	1	OverlapBehavior	Unrestricted
166	shadedRelief	"ShadedRelief" specifies the application of relief shading (or "hill shading") to a DEM raster to give it somewhat of a three-dimensional effect and to make elevation changes more visible.	O	1	ShadedRelief	Unrestricted
167	RemoteOWS	A RemoteOWS gives a reference to a remote WFS/WCS/other-OWS server.				Lines 168 - 169
168	onlineResource	An "OnlineResource" is typically used to refer to an HTTP URL.	M	1	OnlineResource	Unrestricted
169	service	A Service refers to the type of a remote OWS server. A Union of and choice between a WFS and WCS.	M	1	Service	Unrestricted
170	Rule	A Rule is used to attach property/scale conditions to and group the individual symbols used for rendering.				Lines 171 - 177
171	choice	Union of and choice between a Filter and an ElseFilter.	O	1	Rule::Choice	Unrestricted
172	description	A "Description" gives human-readable descriptive information for the object it is included within.	O	1	Description	Unrestricted
173	legendGraphic	The LegendGraphic SLD element is intended to provide a substitute representative image for a Rule.	O	1	LegendGraphic	Unrestricted
174	maxScaleDenominator	The maximum ranges of scale (denominators) of maps for which a rule should apply	O	1	Double	Unrestricted
175	minScaleDenominator	The minimum ranges of scale (denominators) of maps for which a rule should apply	O	1	Double	Unrestricted
176	name	Name of the Rule.	O	1	String	Unrestricted
177	symbol	The Symbol applied by this Rule.	M	*	Symbol	Unrestricted
178	Rule::Choice	Union of and choice between a Filter and an ElseFilter.			<<Union>>	Lines 179 - 180
179	elseFilter	The ElseFilter allows rules to be specified that are activated for	M	1	ElseFilter	Unrestricted

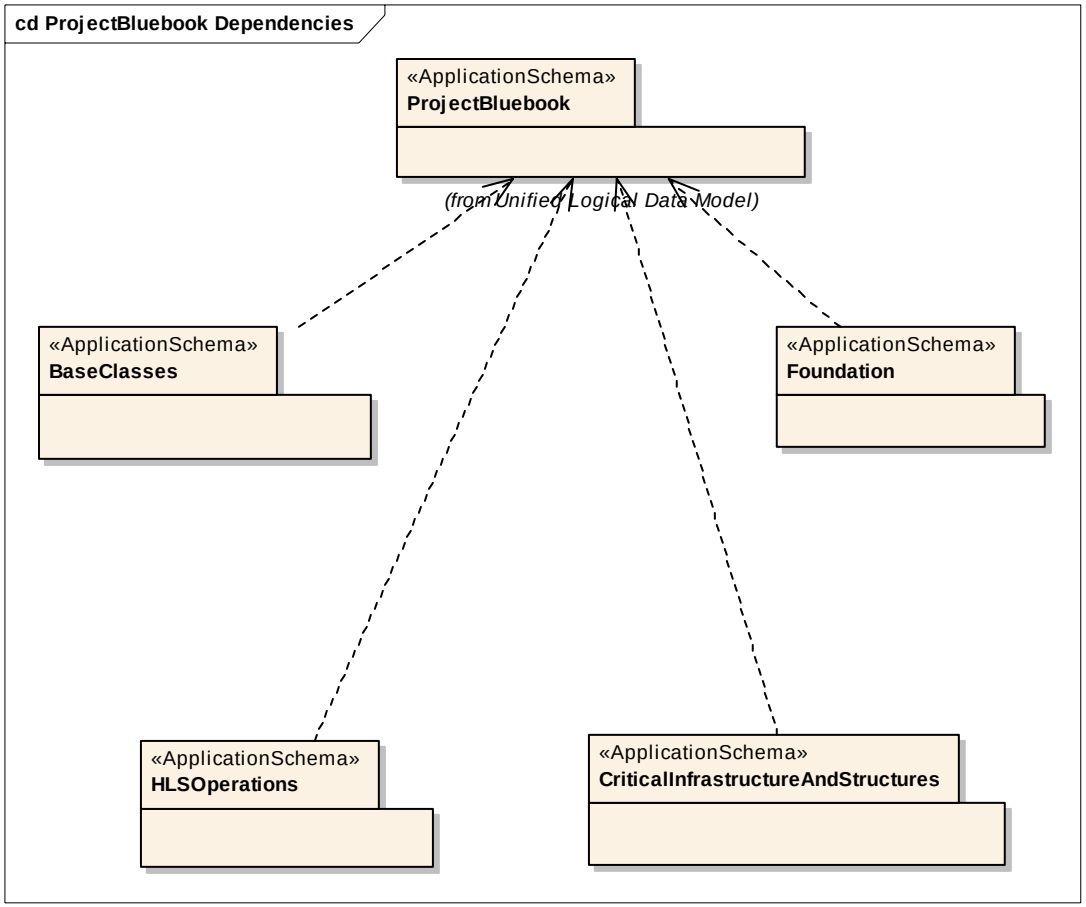
		features that are not selected by any other rule in a feature-type style.				
180	ogcFilter	An OGC Filter Query Expression.	M	1	Ogc:Filter	Unrestricted
181	SelectedChannel	A source channel with optional contrast enhancement.				Lines 182 - 183
182	contrastEnhancement	"ContrastEnhancement" defines the 'stretching' of contrast for a channel of a false-color image or for a whole grey/color image. Contrast enhancement is used to make ground features in images more visible.	M	1	ContrastEnhancement	Unrestricted
183	sourceChannelName	Name of the source channel.	M	1	String	Unrestricted
184	Service	A Service refers to the type of a remote OWS server. A Union of and choice between a WFS and WCS.			<<Enumeration>>	Lines 185 - 186
185	WCS	Web Coverate Service	M	1	String	Unrestricted
186	WFS	Web Feature Service	M	1	String	Unrestricted
187	ShadedRelief	"ShadedRelief" specifies the application of relief shading (or "hill shading") to a DEM raster to give it somewhat of a three-dimensional effect and to make elevation changes more visible.				Lines 188 - 189
188	brightnessOnly	If the BrightnessOnly flag is “0” (false, default), the shading is applied to the layer being rendered as the current RasterSymbol. If BrightnessOnly is “1” (true), the shading is applied to the brightness of the colors in the rendering canvas generated so far by other layers, with the effect of relief-shading these other layers. The default for BrightnessOnly is “0” (false).	O	1	Boolean	Unrestricted
189	reliefFactor	The ReliefFactor gives the amount of exaggeration to use for the height of the “hills.” A value of around 55 (times) gives reasonable results for Earth-based DEMs. The default value is system-dependent.	O	1	Double	Unrestricted
190	Stroke	Stroke used for symbolization.				Lines 191 - 192
191	strokeChoice	Union of and choice between GraphicStroke and GraphicFill.	O	1	StrokeChoice	Unrestricted
192	svgParameter	A "SvgParameter" refers to an SVG/CSS graphical-formatting parameter. The parameter is identified using the "name" attribute and the content of the element gives the SVG/CSS-coded value.	O	*	SvgParameter	Unrestricted
193	StrokeChoice	Union of and choice between GraphicStroke and GraphicFill.			<<Union>>	Lines 194 - 195
194	graphicFill	A "GraphicFill" defines repeated-graphic filling (stippling) pattern for an area geometry.	M	1	GraphicFill	Unrestricted

195	graphicStroke	A "GraphicStroke" defines a repated-linear graphic pattern to be used for stroking a line.	M	1	GraphicStroke	Unrestricted
196	StyledLayerDescriptor	A StyledLayerDescriptor is a sequence of styled layers, represented at the first level by NamedLayer and UserLayer elements.				Lines 197 - 202
197	choice	Union of and choice between a NamedLayer and a UserLayer	O	*	StyledLayerDescriptor::Choice	Unrestricted
198	description	A "Description" gives human-readable descriptive information for the object it is included within.	O	1	Description	Unrestricted
199	environmentVariables	An "EnvironmentVariables" element includes an XML blob which can be used to declare the values to use for global environment variables during the execution of the styling operations. These variables may be refered to in styles and symbols in the same way as feature properties.	O	1	EnvironmentVariables	Unrestricted
200	name	Name of the SLD	O	1	String	Unrestricted
201	useSLDLibrary	The UseSLDLibrary tag specifies that an external SLD document should be used as a "library" of named layers and styles to augment the set of named layers and styles that are available for use inside of a WMS. In the event of name collisions, the SLD library takes precedence over the ones internal to the WMS. Any number of libraries may be specified in an SLD and each successive library takes precedence over the former ones in the case of name collisions.	O	*	UseSLDLibrary	Unrestricted
202	version	The "VersionType" merely restricts the version string that may be used with XML documents based on this schema: 1.0.20	M	1	Version	Unrestricted
203	StyledLayerDescriptor::Choice	Union of and choice between a NamedLayer and a UserLayer			<<Union>>	Lines 204 - 205
204	namedLayer	A NamedLayer is a layer of data that has a name advertised by a WMS.	M	1	NamedLayer	Unrestricted
205	userLayer	A UserLayer allows a user-defined layer to be built from WFS and WCS data.	M	1	UserLayer	Unrestricted
206	SvgParameter	A "SvgParameter" refers to an SVG/CSS graphical-formatting parameter. The parameter is identified using the "name" attribute and the content of the element gives the SVG/CSS-coded value.				Lines 207 - 207
207	name	Name of the SVG parameter.	M	1	String	Unrestricted
208	Symbol	A "SymbolType" is an abstract type for encoding the graphical properties used to portray geographic information. Concrete symbol types are derived from this base type.			<<Abstract>>	Lines 209 - 212
209	baseSymbol	A "BaseSymbol" defines the default properties of a symbol to be	O	1	BaseSymbol	Unrestricted

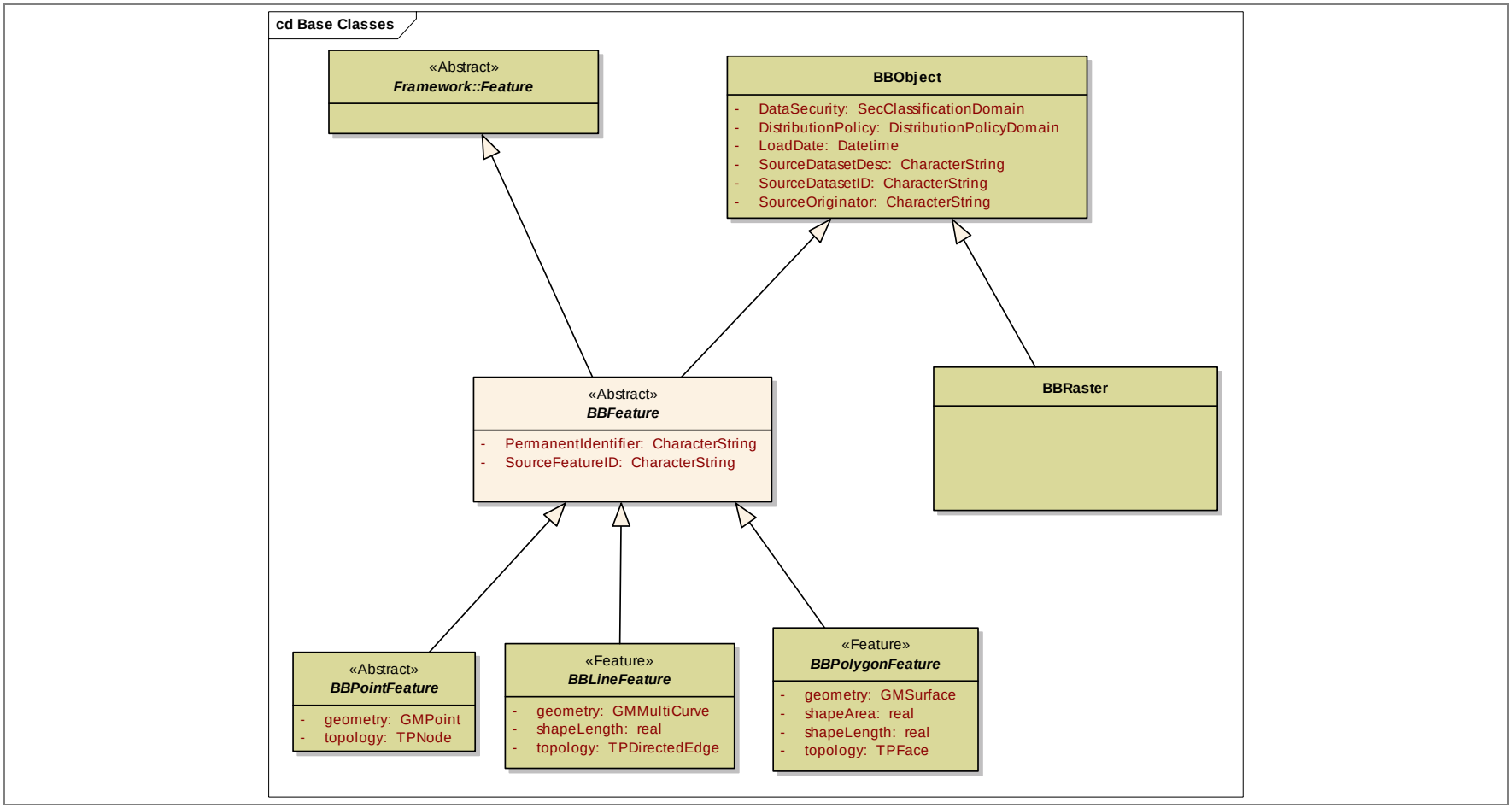
		those of an external symbol, which will frequently be inside of an OGC symbol(izer) repository. The symbol properties given in-line override the base-symbol properties.				
210	description	A "Description" gives human-readable descriptive information for the object it is included within.	O	1	Description	Unrestricted
211	name	Name of the symbol.	O	1	String	Unrestricted
212	version	The "VersionType" merely restricts the version string that may be used with XML documents based on this schema: 1.0.20	M	1	Version	Unrestricted
213	TextSymbol	A "TextSymbol" is used to render text labels according to various graphical parameters.				Lines 214 - 219
214	fill	A "Fill" specifies the pattern for filling an area geometry. The allowed SvgParameters are: "fill" (color) and "fill-opacity".	O	1	Fill	Unrestricted
215	font	A "Font" element specifies the text font to use. The allowed SvgParameters are: "font-family", "font-style", "font-weight", and "font-size".	O	1	Font	Unrestricted
216	geometry	The geometry of the text symbol.	O	1	Geometry	Unrestricted
217	halo	A "Halo" fills an extended area outside the glyphs of a rendered text label to make the label easier to read over a background.	O	1	Halo	Unrestricted
218	label	The text to be symbolized.	O	1	ParameterValue	Unrestricted
219	labelPlacement	The "LabelPlacement" specifies where and how a text label should be rendered relative to a geometry. The present mechanism is poorly aligned with CSS/SVG.	O	1	LabelPlacement	Unrestricted
220	UserLayer	A UserLayer allows a user-defined layer to be built from WFS and WCS data.				Lines 221 - 225
221	description	A "Description" gives human-readable descriptive information for the object it is included within.	O	1	Description	Unrestricted
222	layerFeatureConstraints	LayerFeatureConstraints define what features and feature types are referenced in a layer.	M	1	LayerFeatureConstraints	Unrestricted
223	name	The name of the UserLayer.	O	1	String	Unrestricted
224	remoteOWS	A RemoteOWS gives a reference to a remote WFS/WCS/other-OWS server.	O	1	RemoteOWS	Unrestricted
225	userStyle	A UserStyle allows user-defined styling and is semantically equivalent to a WMS named style.	M	*	UserStyle	Unrestricted
226	UserStyle	A UserStyle allows user-defined styling and is semantically equivalent to a WMS named style.				Lines 227 - 230
227	description	A "Description" gives human-readable descriptive information for the object it is included within.	O	1	Description	Unrestricted

228	featureStyle	A FeatureStyle contains styling information specific to one feature type. This is the SLD level that separates the 'layer' handling from the 'feature' handling.	M	*	FeatureStyle	Unrestricted
229	isDefault	True if this is the default style for the feature type.	O	1	Boolean	Unrestricted
230	name	Name of the UserStyle.	O	1	String	Unrestricted
231	UseSLDLibrary	The UseSLDLibrary tag specifies that an external SLD document should be used as a "library" of named layers and styles to augment the set of named layers and styles that are available for use inside of a WMS. In the event of name collisions, the SLD library takes precedence over the ones internal to the WMS. Any number of libraries may be specified in an SLD and each successive library takes precedence over the former ones in the case of name collisions.				Lines 232 - 232
232		An "OnlineResource" is typically used to refer to an HTTP URL.	M	1	OnlineResource	Unrestricted
233	Version	The "VersionType" merely restricts the version string that may be used with XML documents based on this schema.			<<Enumeration>>	Lines 234 - 234
234	1.0.20	Current version of the SLD Specification.	M	1	String	Unrestricted

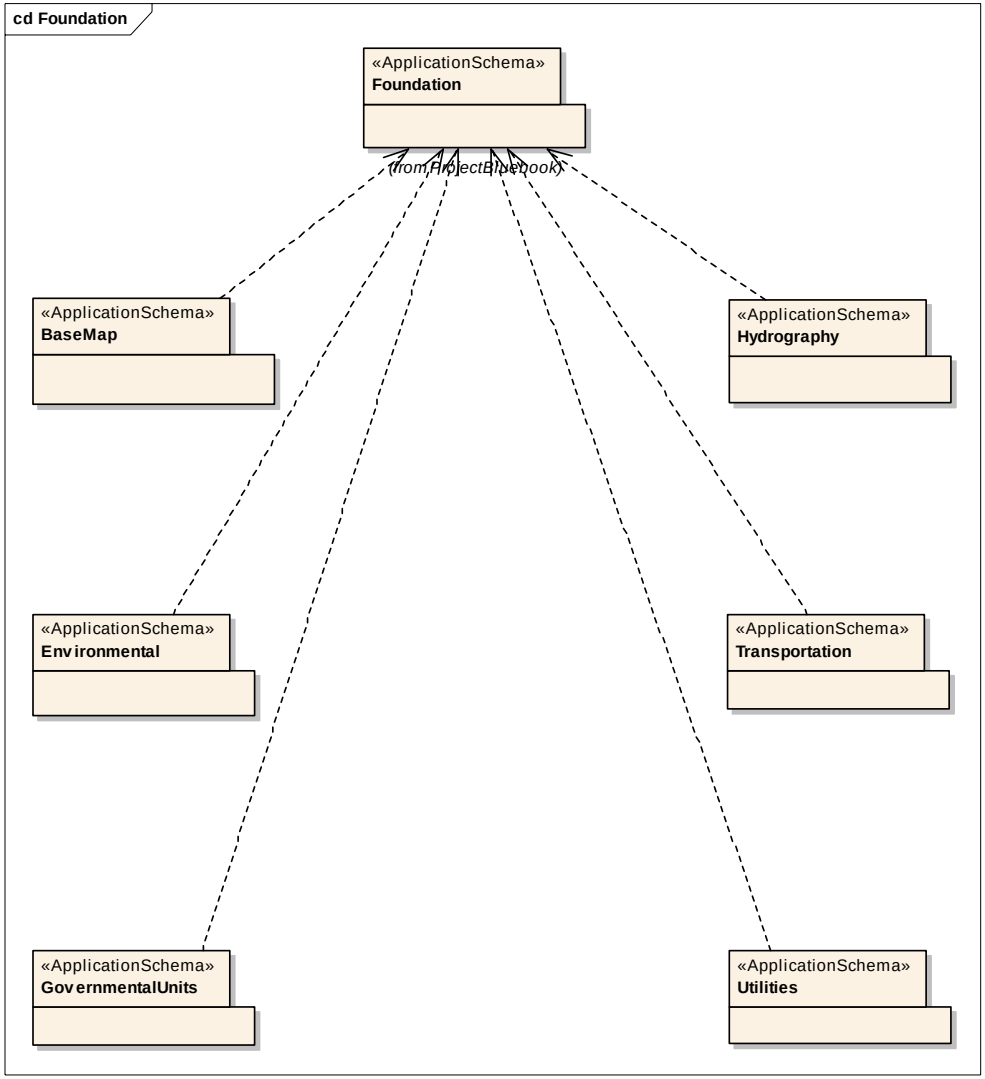
Project Bluebook Context Diagram



Base Classes

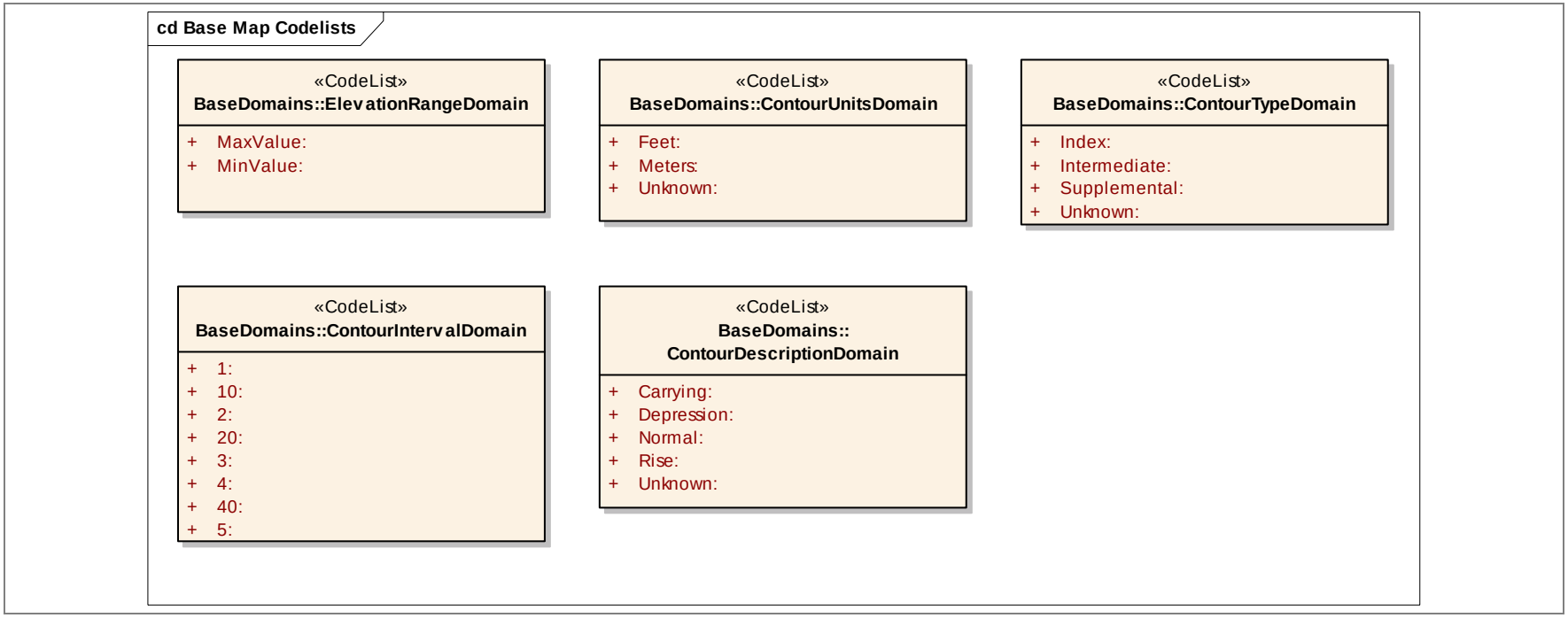


Foundation

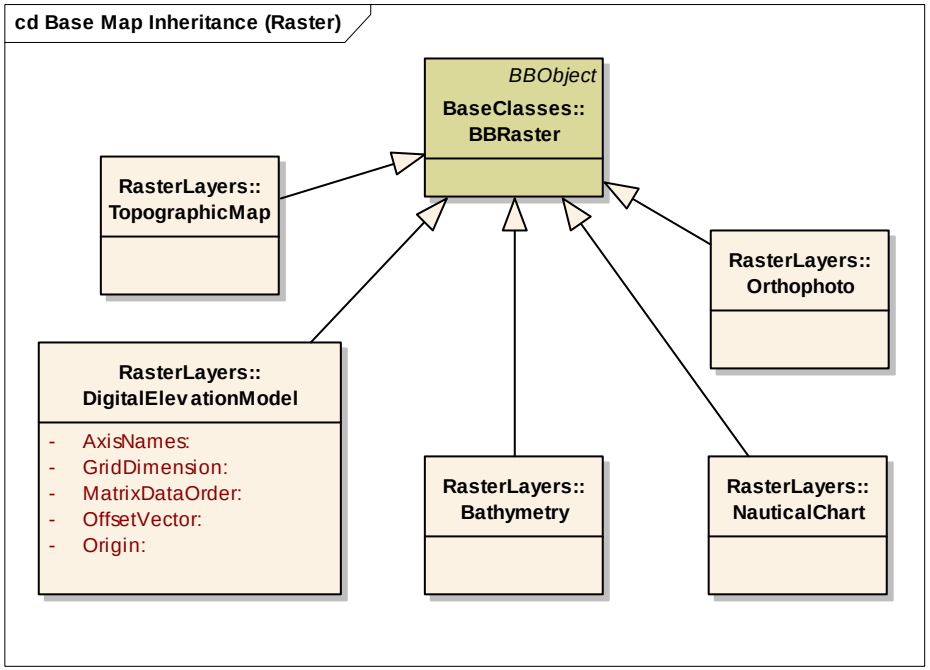

cd Foundation
«ApplicationSchema»
Foundation
(from ProjectBluebook)
«ApplicationSchema»
BaseMap
«ApplicationSchema»
Hydrography
«ApplicationSchema»
Environmental
«ApplicationSchema»
Transportation
«ApplicationSchema»
GovernmentalUnits
«ApplicationSchema»
Utilities

Basemap

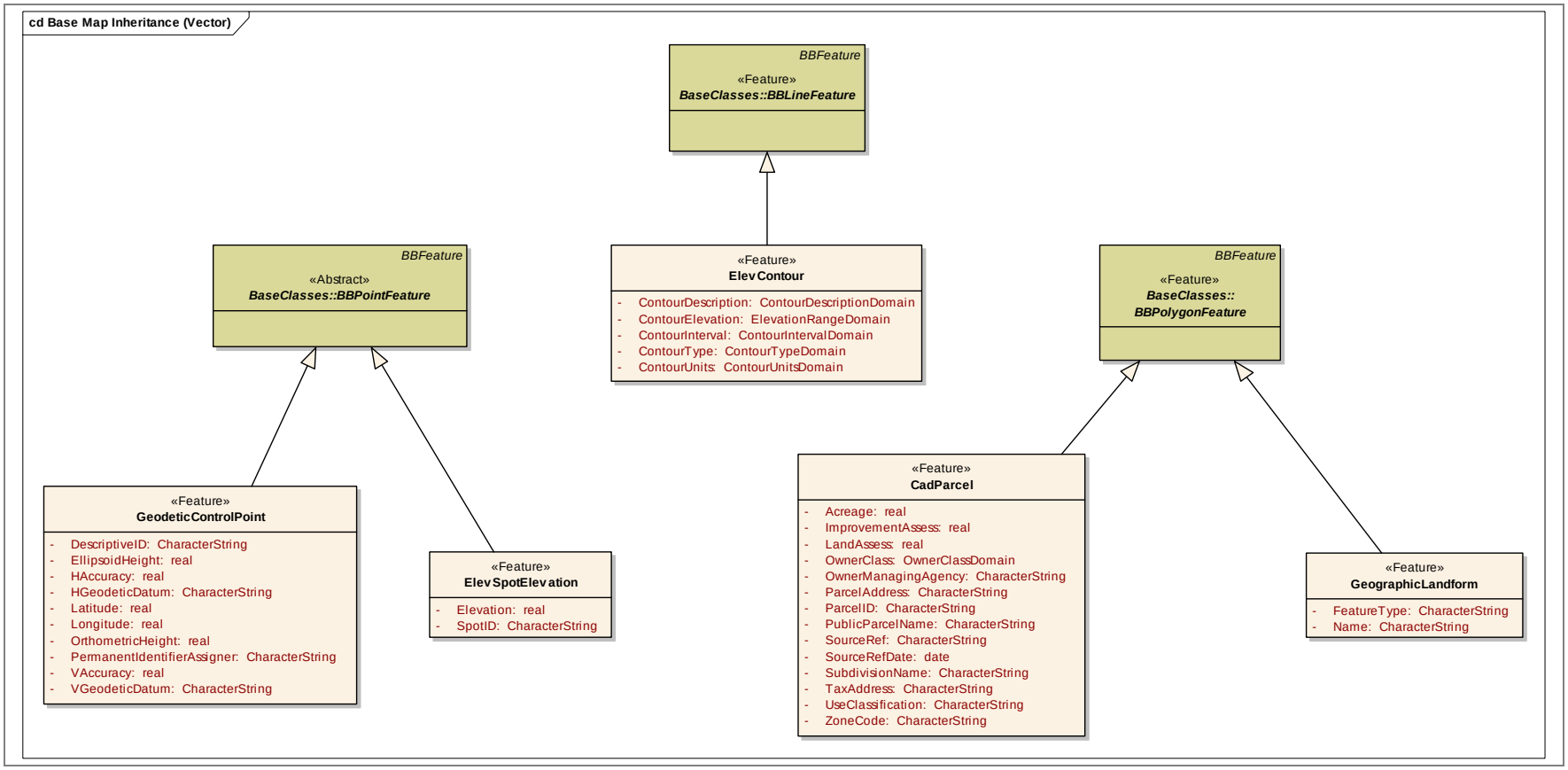
Basemap codelists



Basemap Inheritance (Raster)



Basemap Inheritance (Vector)



BaseDomains						
Line	**Name/RoleName**	**Definition**	**Obligation / Condition**	**Maximum Occurrence**	**Data Type**	**Domain**
1	ContourDescriptionDomain	Codes representing contour description			<<CodeList>>	Lines 2 - 6
2	Carrying	Carrying contour	M	1		Unrestricted
3	Depression	Depression contour	M	1		Unrestricted
4	Normal	Normal contour	M	1		Unrestricted
5	Rise	Rise contour	M	1		Unrestricted
6	Unknown	Unknown contour	M	1		Unrestricted
7	ContourIntervalDomain	Codes representing contour interval values			<<CodeList>>	Lines 8 - 15
8	1	1	M	1		Unrestricted
9	10	10	M	1		Unrestricted
10	2	2	M	1		Unrestricted
11	20	20	M	1		Unrestricted
12	3	3	M	1		Unrestricted
13	4	4	M	1		Unrestricted
14	40	40	M	1		Unrestricted
15	5	5	M	1		Unrestricted
16	ContourTypeDomain	Codes representing contour types			<<CodeList>>	Lines 17 - 20
17	Index	Index contour	M	1		Unrestricted
18	Intermediate	Intermediate contour	M	1		Unrestricted
19	Supplemental	Supplemental contour	M	1		Unrestricted
20	Unknown	Unknown contour	M	1		Unrestricted
21	ContourUnitsDomain	Codes representing contour units			<<CodeList>>	Lines 22 - 24
22	Feet	Feet	M	1		Unrestricted
23	Meters	Meters	M	1		Unrestricted
24	Unknown	Unknown	M	1		Unrestricted
25	ElevationRangeDomain	Codes representing elevation ranges			<<CodeList>>	Lines 26 - 27
26	MaxValue	Maximum elevation value	M	1		Unrestricted
27	MinValue	Minimum elevation value	M	1		Unrestricted

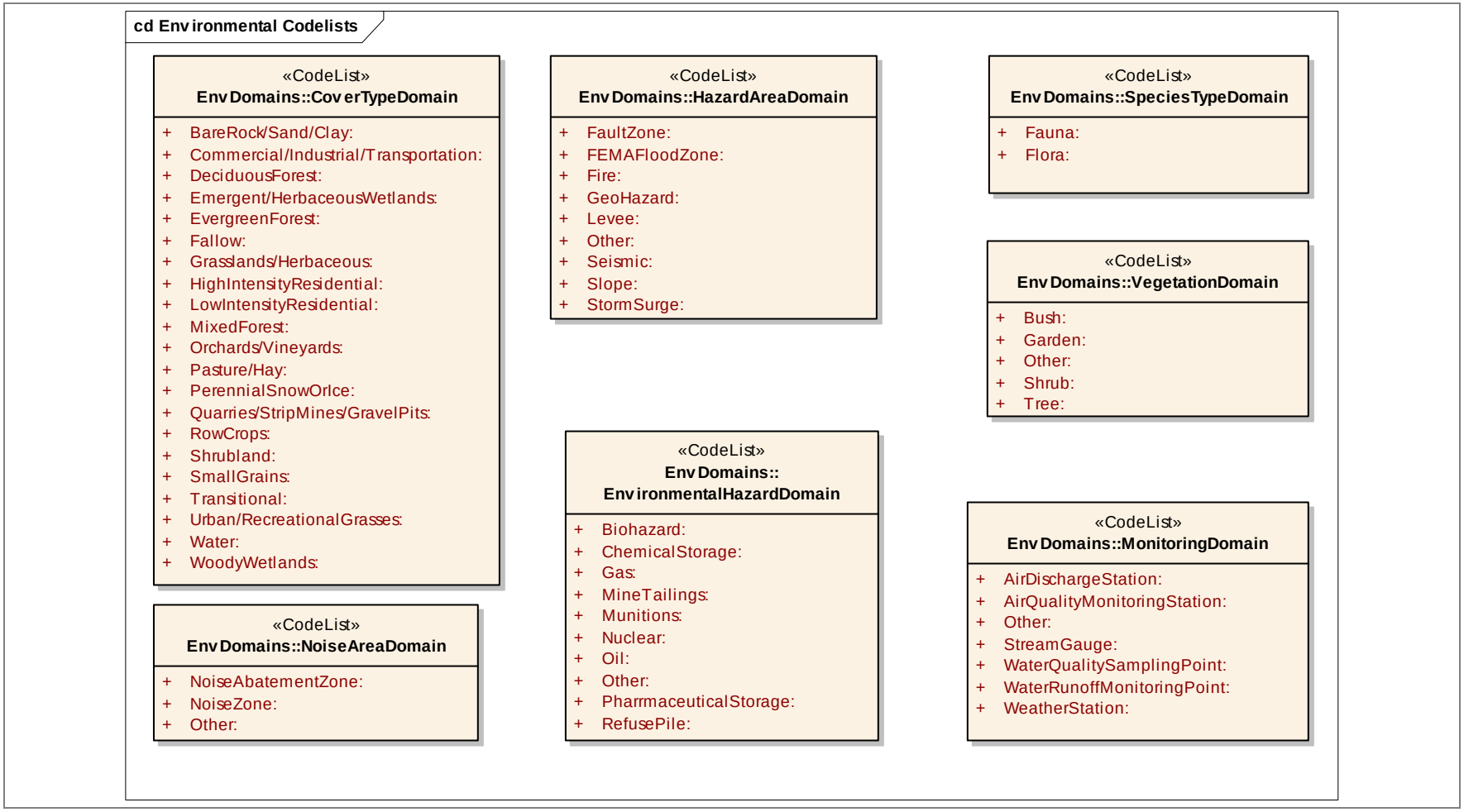
BaseMap						
Line	**Name/RoleName**	**Definition**	**Obligation / Condition**	**Maximum Occurrence**	**Data Type**	**Domain**
28	CadParcel	Parcel			<<Feature>>	Lines 29 - 42

29	Acreage	Parcel Acreage	M	1	real	Unrestricted
30	ImprovementAssess	Assessment value of the improvements of the parcel	M	1	real	Unrestricted
31	LandAssess	Total value of the parcel	M	1	real	Unrestricted
32	OwnerClass	Primary owner classification	M	1	OwnerClassDomain	Unrestricted
33	OwnerManagingAgency	Owning agency or organization	M	1	CharacterString	Unrestricted
34	ParcelAddress	Parcel address	M	1	CharacterString	Unrestricted
35	ParcelID	Unique parcel identifier as defined by the jurisdiction	M	1	CharacterString	Unrestricted
36	PublicParcelName	Commonly recognized name of publicly owned parcel	M	1	CharacterString	Unrestricted
37	SourceRef	Source reference for the parcel	M	1	CharacterString	Unrestricted
38	SourceRefDate	Source reference date	M	1	date	Unrestricted
39	SubdivisionName	Subdivision name	M	1	CharacterString	Unrestricted
40	TaxAddress	Postal service address for tax bill mailing	M	1	CharacterString	Unrestricted
41	UseClassification	Land use classification code	M	1	CharacterString	Unrestricted
42	ZoneCode	Current land use zoning code	M	1	CharacterString	Unrestricted
43	ElevContour	Elevation Contour			<<Feature>>	Lines 44 - 48
44	ContourDescription	Contour description	M	1	ContourDescriptionDomain	Unrestricted
45	ContourElevation	Elevation of contour	M	1	ElevationRangeDomain	Unrestricted
46	ContourInterval	Contour interval	M	1	ContourIntervalDomain	Unrestricted
47	ContourType	Contour type	M	1	ContourTypeDomain	Unrestricted
48	ContourUnits	Contour units	M	1	ContourUnitsDomain	Unrestricted
49	ElevSpotElevation	Spot elevation			<<Feature>>	Lines 50 - 51
50	Elevation	Elevation of the point above datum	M	1	real	Unrestricted
51	SpotID	Point identifier	M	1	CharacterString	Unrestricted
52	GeodeticControlPoint	Geodetic Control Point			<<Feature>>	Lines 53 - 62
53	DescriptiveID	Control Point Identification	M	1	CharacterString	Unrestricted
54	EllipsoidHeight	Ellipsoid Height	M	1	real	Unrestricted
55	HAccuracy	Horizontal Accuracy	M	1	real	Unrestricted
56	HGeodeticDatum	Horizontal Geodetic Datum	M	1	CharacterString	Unrestricted
57	Latitude	Latitude	M	1	real	Unrestricted
58	Longitude	Longitude	M	1	real	Unrestricted
59	OrthometricHeight	Orthometric Height	M	1	real	Unrestricted
60	PermanentIdentifierAssigner	Permanent Identifier Assigner	M	1	CharacterString	Unrestricted
61	VAccuracy	Vertical Accuracy	M	1	real	Unrestricted
62	VGeodeticDatum	Vertical Geodetic Datum	M	1	CharacterString	Unrestricted

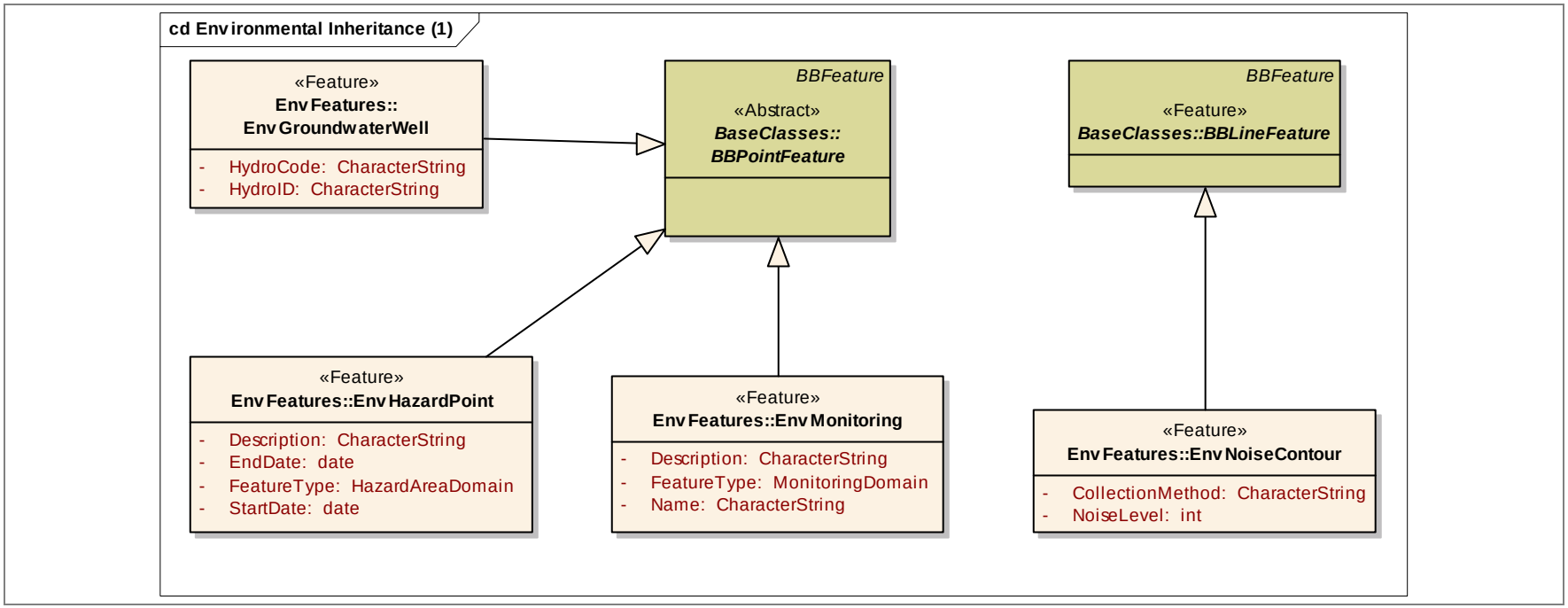
63	GeographicLandform	Geographic Landform			<<Feature>>	Lines 64 - 65
64	FeatureType	Geographic feature type	M	1	CharacterString	Unrestricted
65	Name	Geographic feature name	M	1	CharacterString	Unrestricted

RasterLayers						
Line	**Name/RoleName**	**Definition**	**Obligation / Condition**	**Maximum Occurrence**	**Data Type**	**Domain**
66	Bathymetry	Bathymetry				
67	DigitalElevationModel	Digital Elevation Model (DEM)				Lines 68 - 72
68	AxisNames	Primary axis name	M	1		Unrestricted
69	GridDimension	Dimension of grid	M	1		Unrestricted
70	MatrixDataOrder	Matrix Data Order	M	1		Unrestricted
71	OffsetVector	Offset vector	M	1		Unrestricted
72	Origin	Origin of digital elevation model	M	1		Unrestricted
73	NauticalChart	Nautical Chart				
74	Orthophoto	Orthophoto				
75	TopographicMap	Topographic Map				

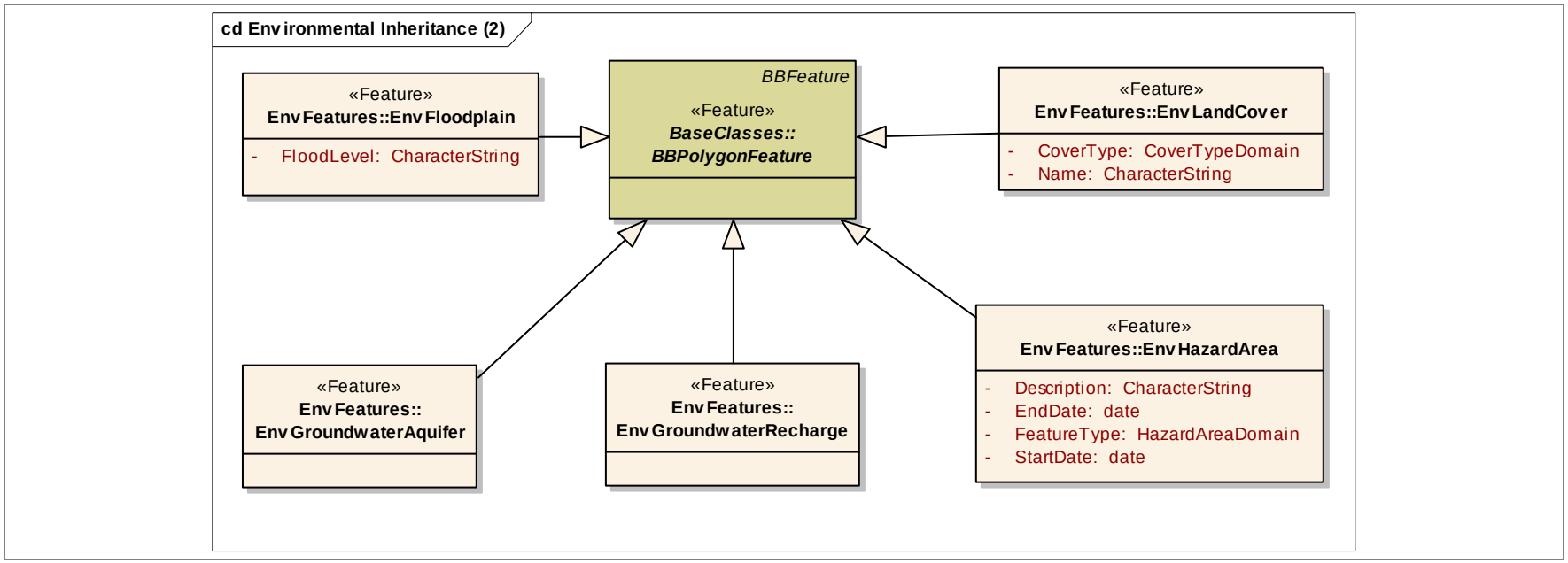
Environmental Codelists



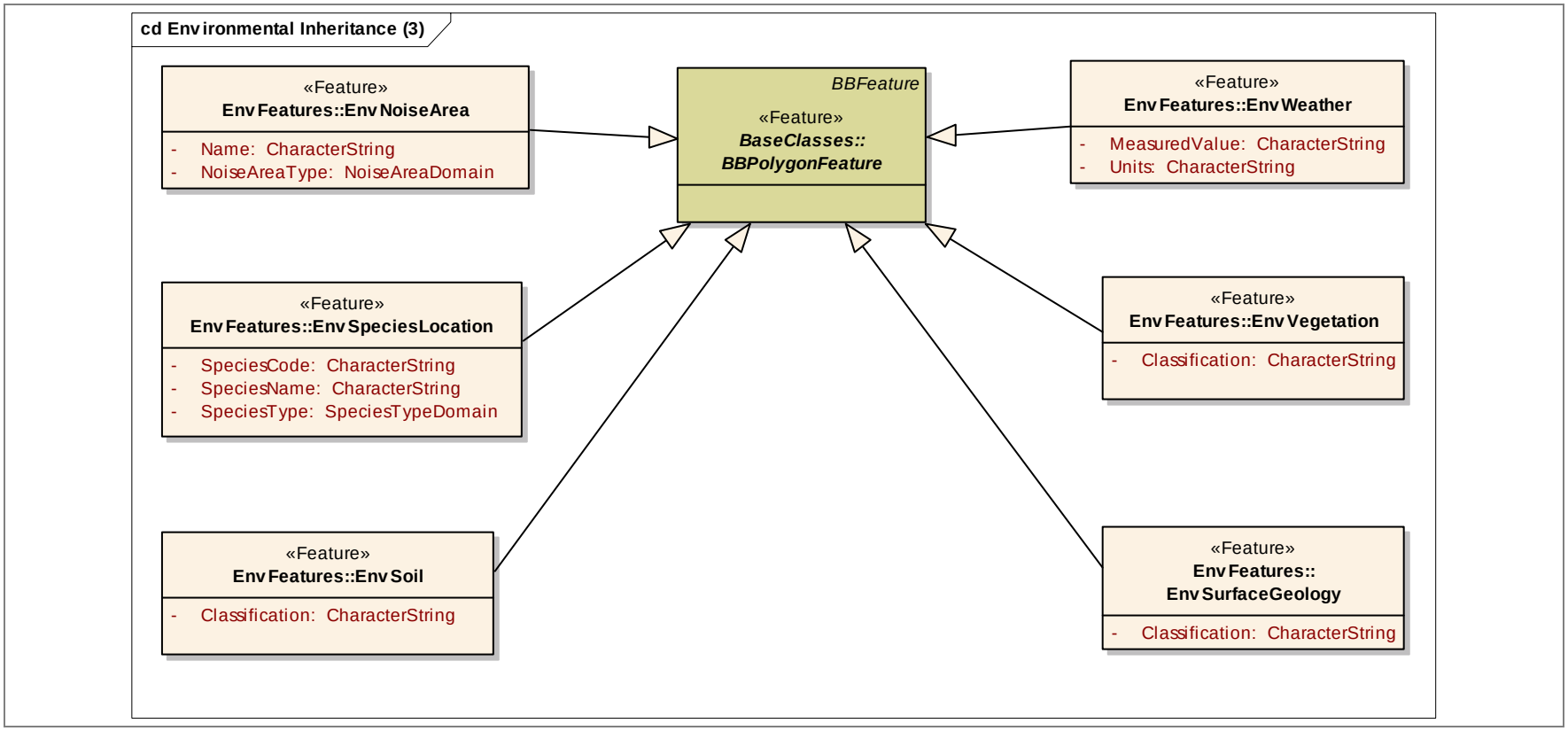
Environmental Inheritance (1 of 3)



Environmental Inheritance (2 of 3)



Environmental Inheritance (3 of 3)



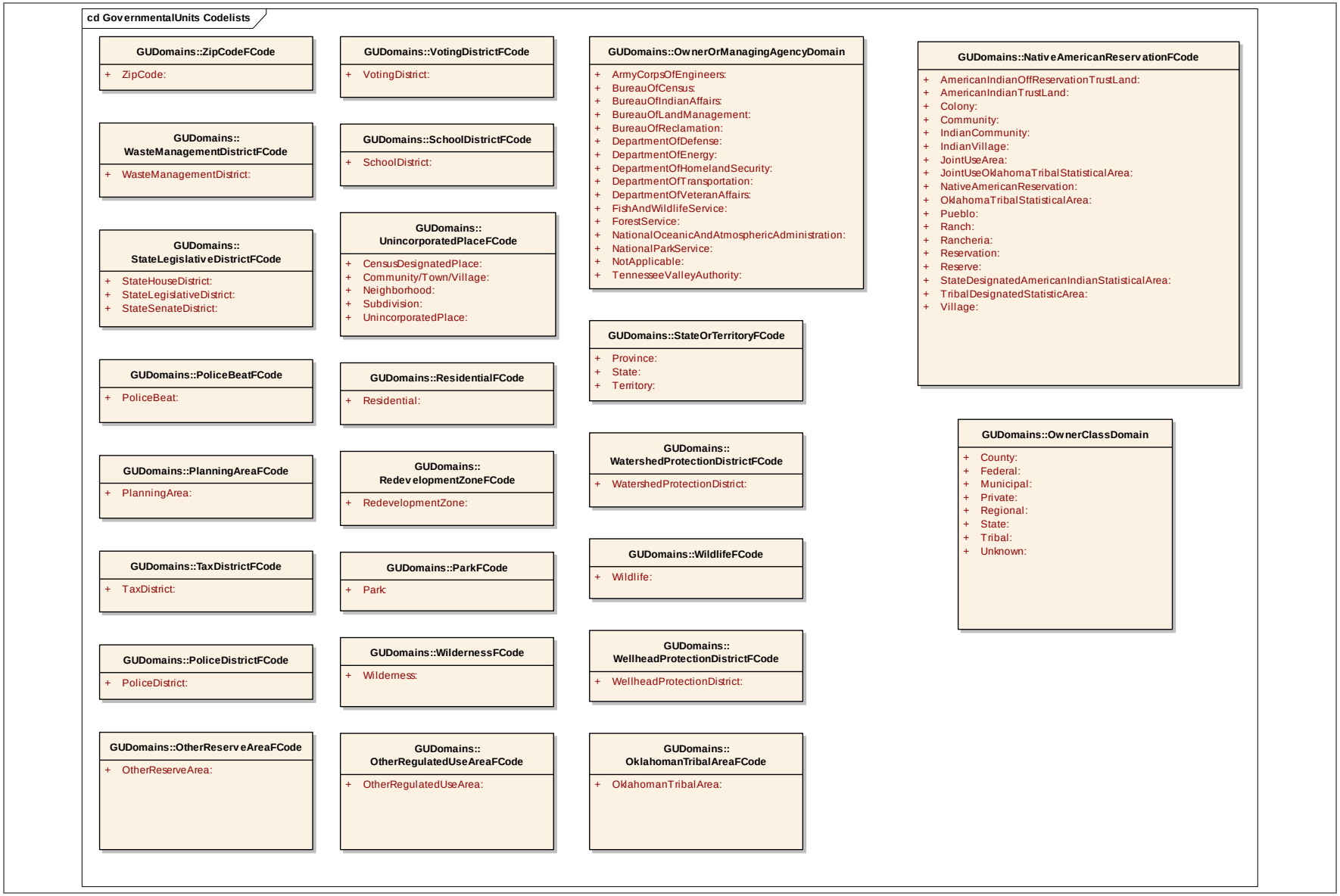
EnvDomains						
Line	**Name/RoleName**	**Definition**	**Obligation / Condition**	**Maximum Occurrence**	**Data Type**	**Domain**
1	CoverTypeDomain	Codes representing land cover feature types			<<CodeList>>	Lines 2 - 22
2	BareRock/Sand/Clay	Bare rock, sand, or clay	M	1		Unrestricted
3	Commercial/Industrial/Transportation	Commerical, industrial, or transportation	M	1		Unrestricted
4	DeciduousForest	Deciduous forest	M	1		Unrestricted
5	Emergent/HerbaceousWetlands	Emergent or herbaceous wetlands	M	1		Unrestricted
6	EvergreenForest	Evergreen forest	M	1		Unrestricted
7	Fallow	Fallow	M	1		Unrestricted
8	Grasslands/Herbaceous	Grasslands or herbaceous	M	1		Unrestricted
9	HighIntensityResidential	High intensity residential	M	1		Unrestricted
10	LowIntensityResidential	Low intensity residential	M	1		Unrestricted
11	MixedForest	Mixed forest	M	1		Unrestricted
12	Orchards/Vineyards	Orchards or vineyards	M	1		Unrestricted
13	Pasture/Hay	Pasture or hay	M	1		Unrestricted
14	PerennialSnowOrIce	Perennial snow or ice	M	1		Unrestricted
15	Quarries/StripMines/GravelPits	Quarries, strip mines, or gravel pits	M	1		Unrestricted
16	RowCrops	Row crops	M	1		Unrestricted
17	Shrubland	Shrubland	M	1		Unrestricted
18	SmallGrains	Small grains	M	1		Unrestricted
19	Transitional	Transitional	M	1		Unrestricted
20	Urban/RecreationalGrasses	Urban or recreational grasses	M	1		Unrestricted
21	Water	Water	M	1		Unrestricted
22	WoodyWetlands	Forested wetlands	M	1		Unrestricted
23	EnvironmentalHazardDomain	Codes representing environmental hazard area feature types			<<CodeList>>	Lines 24 - 33
24	Biohazard	Biohazard	M	1		Unrestricted
25	ChemicalStorage	Chemical storage	M	1		Unrestricted
26	Gas	Gas	M	1		Unrestricted
27	MineTailings	Mine tailings	M	1		Unrestricted
28	Munitions	Munitions	M	1		Unrestricted
29	Nuclear	Nuclear	M	1		Unrestricted
30	Oil	Oil	M	1		Unrestricted

31	Other	Other environmental hazard area feature type	M	1		Unrestricted
32	PharrmaceuticalStorage	Pharmaceutical Storage	M	1		Unrestricted
33	RefusePile	Refuse pile	M	1		Unrestricted
34	HazardAreaDomain	Codes representing hazard area features			<<CodeList>>	Lines 35 - 43
35	FaultZone	Fault zone	M	1		Unrestricted
36	FEMAFloodZone	Federal Emergency Management Agency flood zone	M	1		Unrestricted
37	Fire	Fire	M	1		Unrestricted
38	GeoHazard	Geologic hazard	M	1		Unrestricted
39	Levee	Levee	M	1		Unrestricted
40	Other	Other hazard area type	M	1		Unrestricted
41	Seismic	Seismic	M	1		Unrestricted
42	Slope	Slope	M	1		Unrestricted
43	StormSurge	Storm surge area	M	1		Unrestricted
44	MonitoringDomain	Codes representing environmental monitoring feature types			<<CodeList>>	Lines 45 - 51
45	AirDischargeStation	Air discharge station	M	1		Unrestricted
46	AirQualityMonitoringStation	Air quality monitoring station	M	1		Unrestricted
47	Other	Other environmental monitoring feature type	M	1		Unrestricted
48	StreamGauge	Stream gauge	M	1		Unrestricted
49	WaterQualitySamplingPoint	Water quality sampling location point	M	1		Unrestricted
50	WaterRunoffMonitoringPoint	Water run-off monitoring location point	M	1		Unrestricted
51	WeatherStation	Weather station	M	1		Unrestricted
52	NoiseAreaDomain	Codes representing noise area feature types			<<CodeList>>	Lines 53 - 55
53	NoiseAbatementZone	Noise abatement zone	M	1		Unrestricted
54	NoiseZone	Noise zone	M	1		Unrestricted
55	Other	Other noise area feature type	M	1		Unrestricted
56	SpeciesTypeDomain	Codes representing species feature types			<<CodeList>>	Lines 57 - 58
57	Fauna	Fauna species type	M	1		Unrestricted
58	Flora	Flora species type	M	1		Unrestricted
59	VegetationDomain	Codes representing vegetation feature types			<<CodeList>>	Lines 60 - 64
60	Bush	Bush	M	1		Unrestricted
61	Garden	Garden	M	1		Unrestricted
62	Other	Other vegetation feature type	M	1		Unrestricted
63	Shrub	Shrub	M	1		Unrestricted
64	Tree	Tree	M	1		Unrestricted

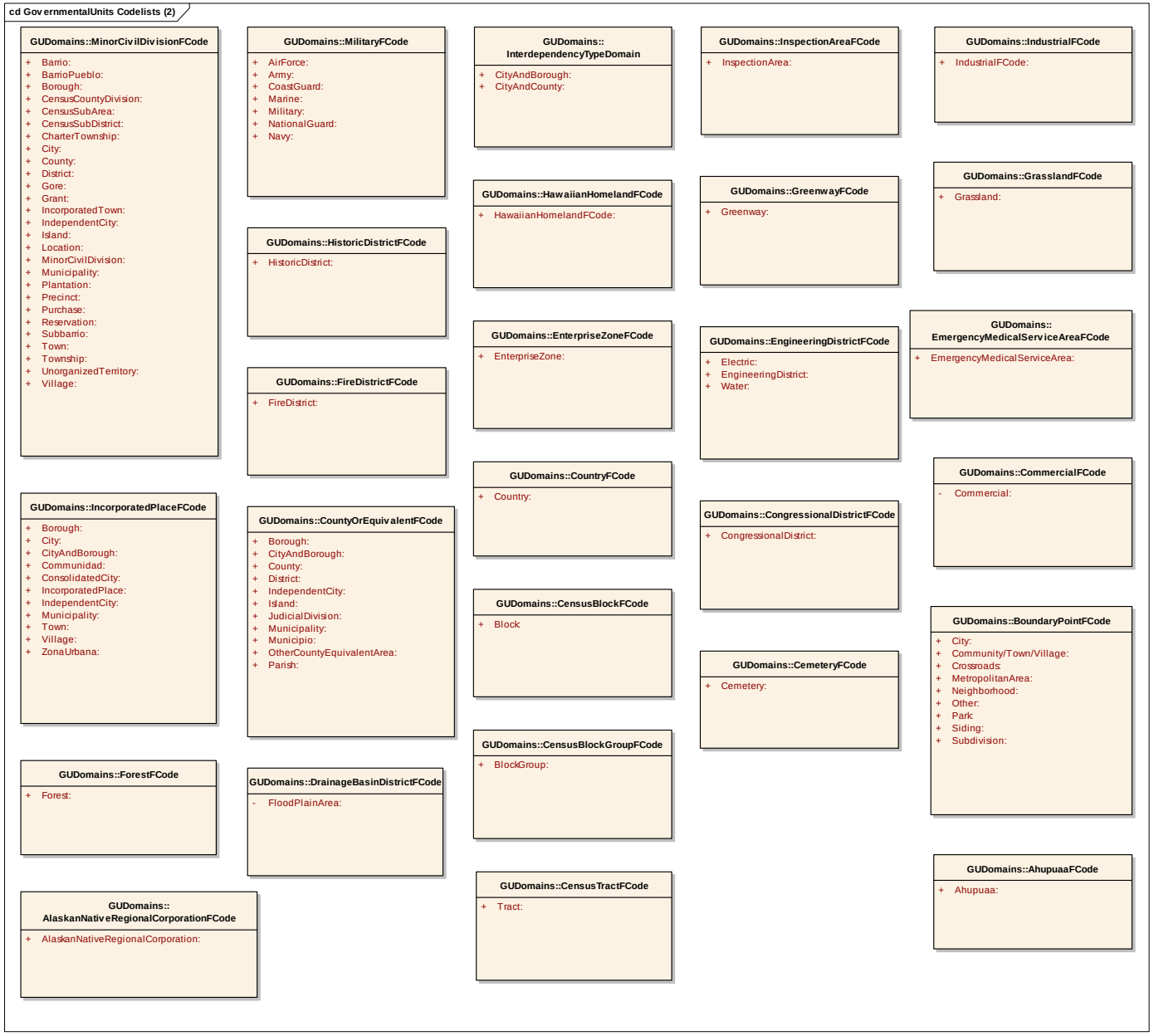
EnvFeatures						
Line	**Name/RoleName**	**Definition**	**Obligation / Condition**	**Maximum Occurrence**	**Data Type**	**Domain**
65	EnvFloodplain	Environmental Floodplain			<<Feature>>	Lines 66 - 66
66	FloodLevel	Flood levels	M	1	CharacterString	Unrestricted
67	EnvGroundwaterAquifer	Groundwater Aquifer			<<Feature>>	
68	EnvGroundwaterRecharge	Groundwater Recharge			<<Feature>>	
69	EnvGroundwaterWell	Environmental Groundwater Well			<<Feature>>	Lines 70 - 71
70	HydroCode	Hydrologic code	M	1	CharacterString	Unrestricted
71	HydroID	Hydrologic identifier	M	1	CharacterString	Unrestricted
72	EnvHazard	Environmental Hazard			<<Feature>>	Lines 73 - 76
73	FeatureType	Hazard feature type	M	1	EnvironmentalHazardDomain	Unrestricted
74	HazardType	Hazard type	M	1	CharacterString	Unrestricted
75	Name	Name	M	1	CharacterString	Unrestricted
76	Quantity	Quantity	M	1	int	Unrestricted
77	EnvHazardArea	Environmental Hazard Area			<<Feature>>	Lines 78 - 81
78	Description	Environmental hazard description	M	1	CharacterString	Unrestricted
79	EndDate	Environmental hazard end date	M	1	date	Unrestricted
80	FeatureType	Environmental hazard feature type	M	1	HazardAreaDomain	Unrestricted
81	StartDate	Environmental hazard start date	M	1	date	Unrestricted
82	EnvHazardPoint	Environmental Hazard Point			<<Feature>>	Lines 83 - 86
83	Description	Hazard description	M	1	CharacterString	Unrestricted
84	EndDate	Hazard end date	M	1	date	Unrestricted
85	FeatureType	Hazard feature type	M	1	HazardAreaDomain	Unrestricted
86	StartDate	Hazard start date	M	1	date	Unrestricted
87	EnvLandCover	Environmental Land Cover			<<Feature>>	Lines 88 - 89
88	CoverType	Land cover type	M	1	CoverTypeDomain	Unrestricted
89	Name	Land cover description	M	1	CharacterString	Unrestricted
90	EnvMonitoring	Environmental Monitoring			<<Feature>>	Lines 91 - 93
91	Description	Description of environmental monitoring	M	1	CharacterString	Unrestricted
92	FeatureType	Environmental monitoring feature type	M	1	MonitoringDomain	Unrestricted
93	Name	Name	M	1	CharacterString	Unrestricted
94	EnvNoiseArea	Environmental Noise Area			<<Feature>>	Lines 95 - 96
95	Name	Name	M	1	CharacterString	Unrestricted
96	NoiseAreaType	Noise area feature type	M	1	NoiseAreaDomain	Unrestricted

97	EnvNoiseContour	Noise Contour			<<Feature>>	Lines 98 - 99
98	CollectionMethod	Noise collection method	M	1	CharacterString	Unrestricted
99	NoiseLevel	Noise level	M	1	int	Unrestricted
100	EnvSoil	Environmental Soil			<<Feature>>	Lines 101 - 101
101	Classification	Soil classification	M	1	CharacterString	Unrestricted
102	EnvSpeciesLocation	Species Location			<<Feature>>	Lines 103 - 105
103	SpeciesCode	Species code	M	1	CharacterString	Unrestricted
104	SpeciesName	Species name	M	1	CharacterString	Unrestricted
105	SpeciesType	Species type	M	1	SpeciesTypeDomain	Unrestricted
106	EnvSurfaceGeology	Surficial Geology			<<Feature>>	Lines 107 - 107
107	Classification	Geologic classification	M	1	CharacterString	Unrestricted
108	EnvVegetation	Environmental Vegetation			<<Feature>>	Lines 109 - 109
109	Classification	Vegetation classification	M	1	CharacterString	Unrestricted
110	EnvWeather	Environmental Weather			<<Feature>>	Lines 111 - 112
111	MeasuredValue	Measure weather value	M	1	CharacterString	Unrestricted
112	Units	Measure value units	M	1	CharacterString	Unrestricted

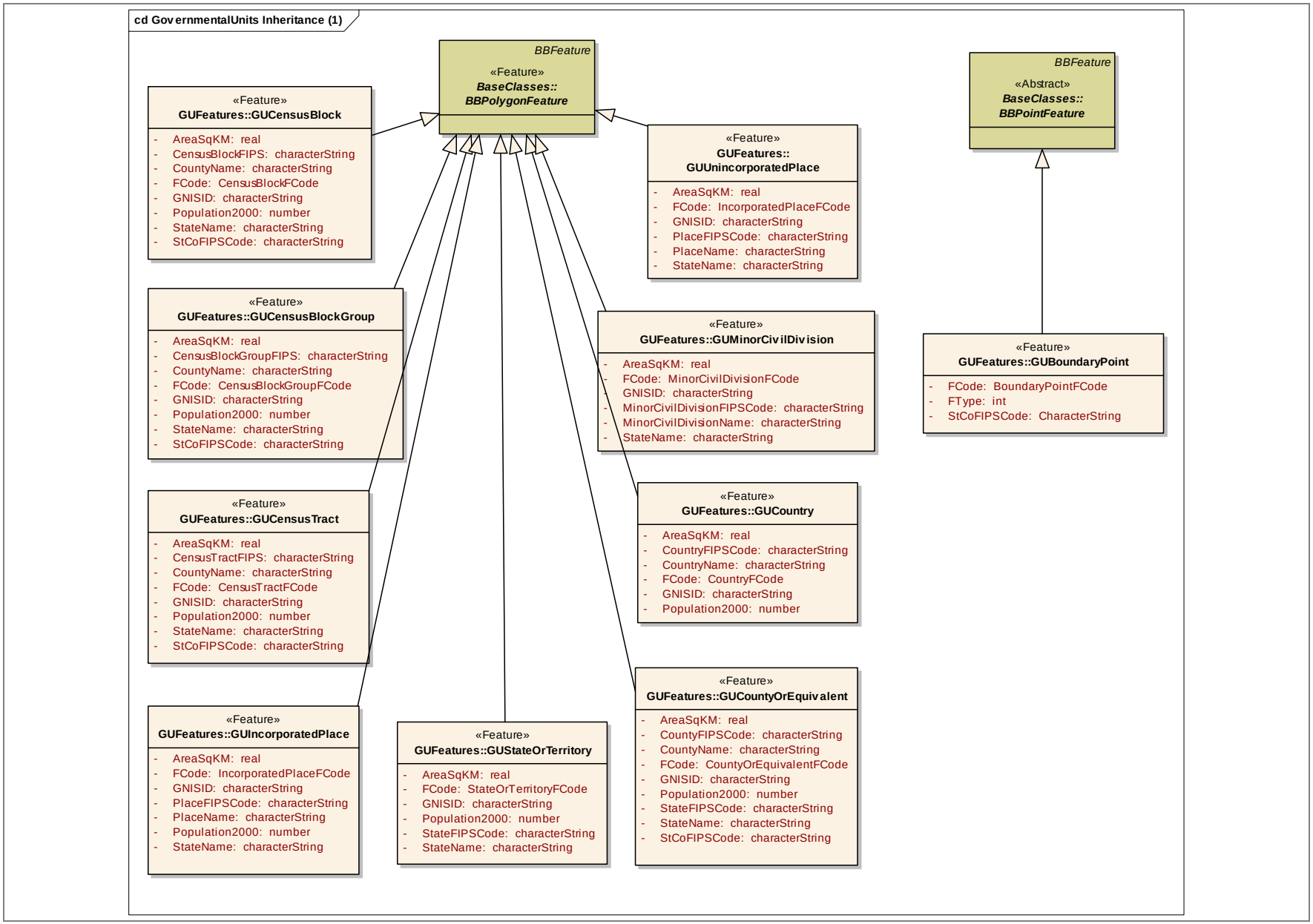
GovernmentalUnits Codelists (1 of 2)



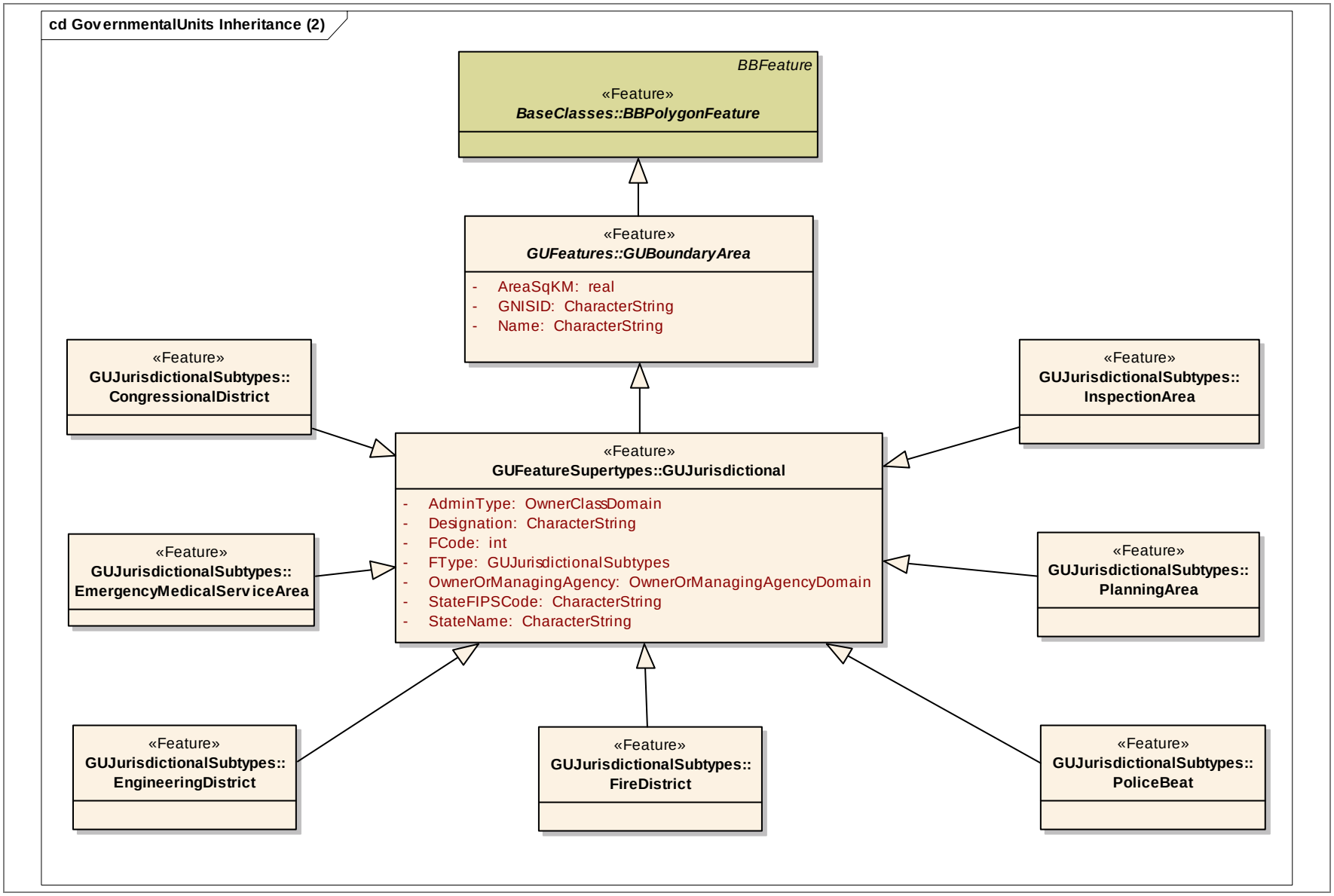
GovernmentalUnits Codelists (2 of 2)



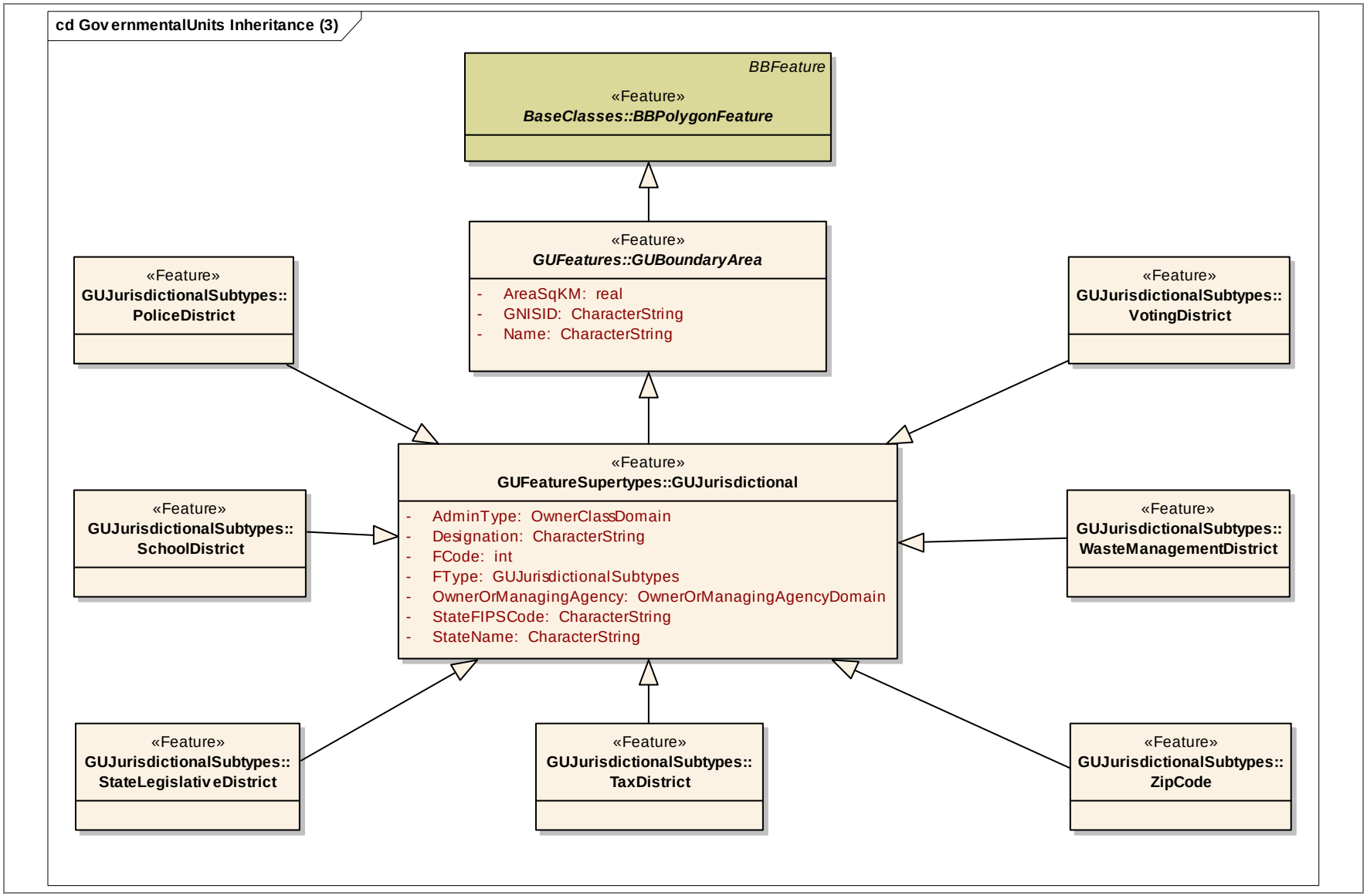
GovernmentalUnits Inheritance (1 of 7)



GovernmentalUnits Inheritance (2 of 7)



GovernmentalUnits Inheritance (3 of 7)



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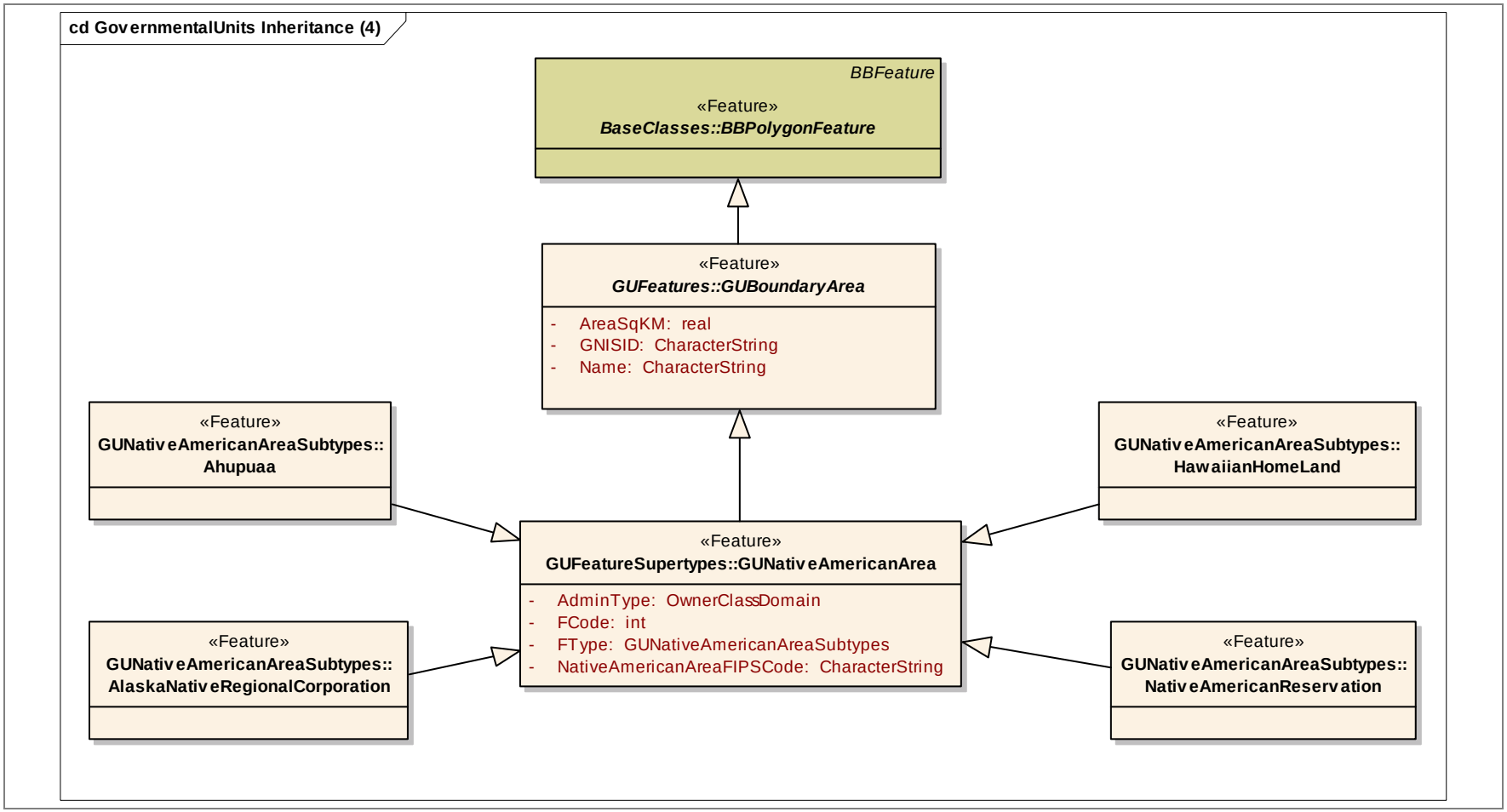

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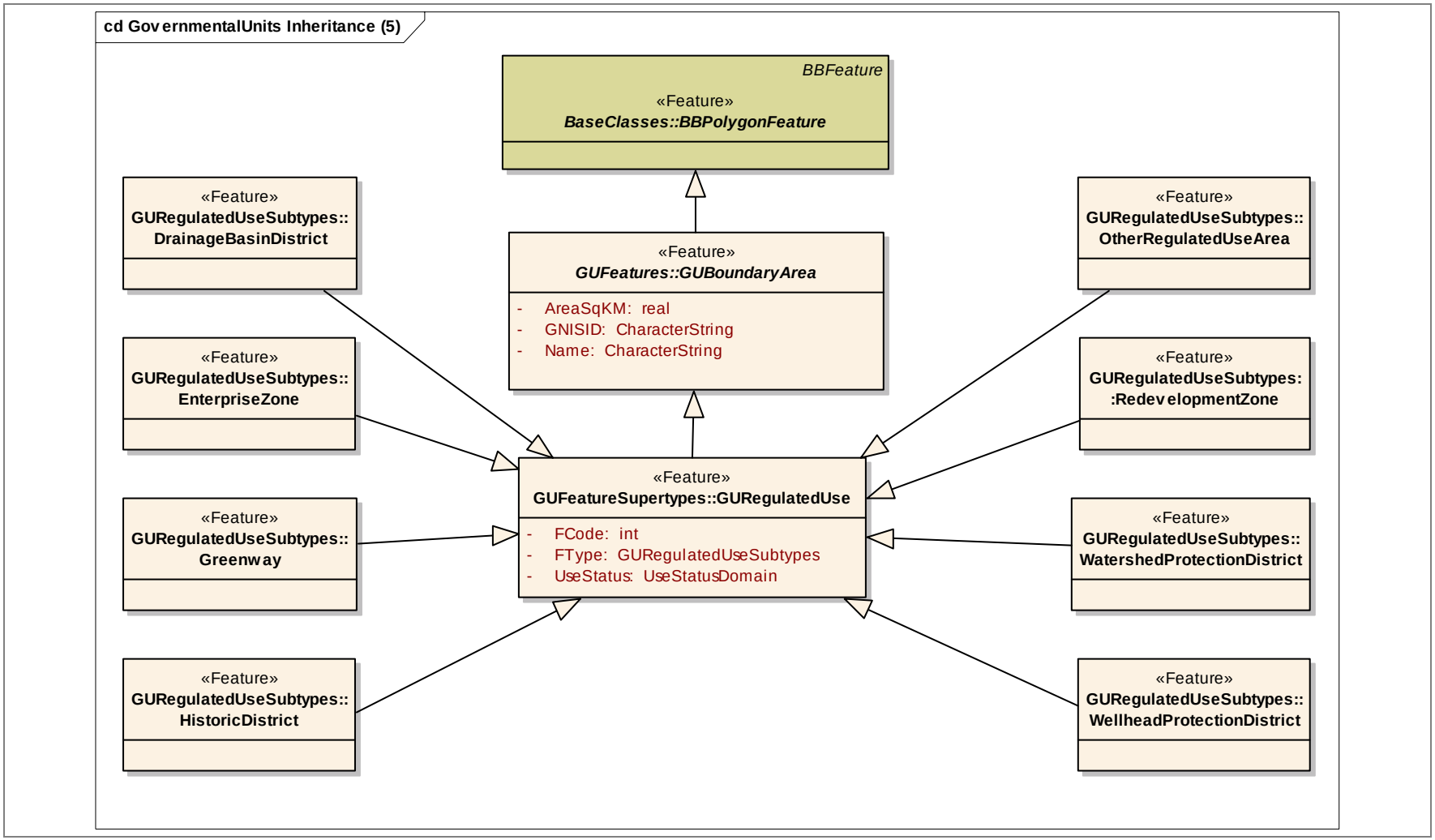

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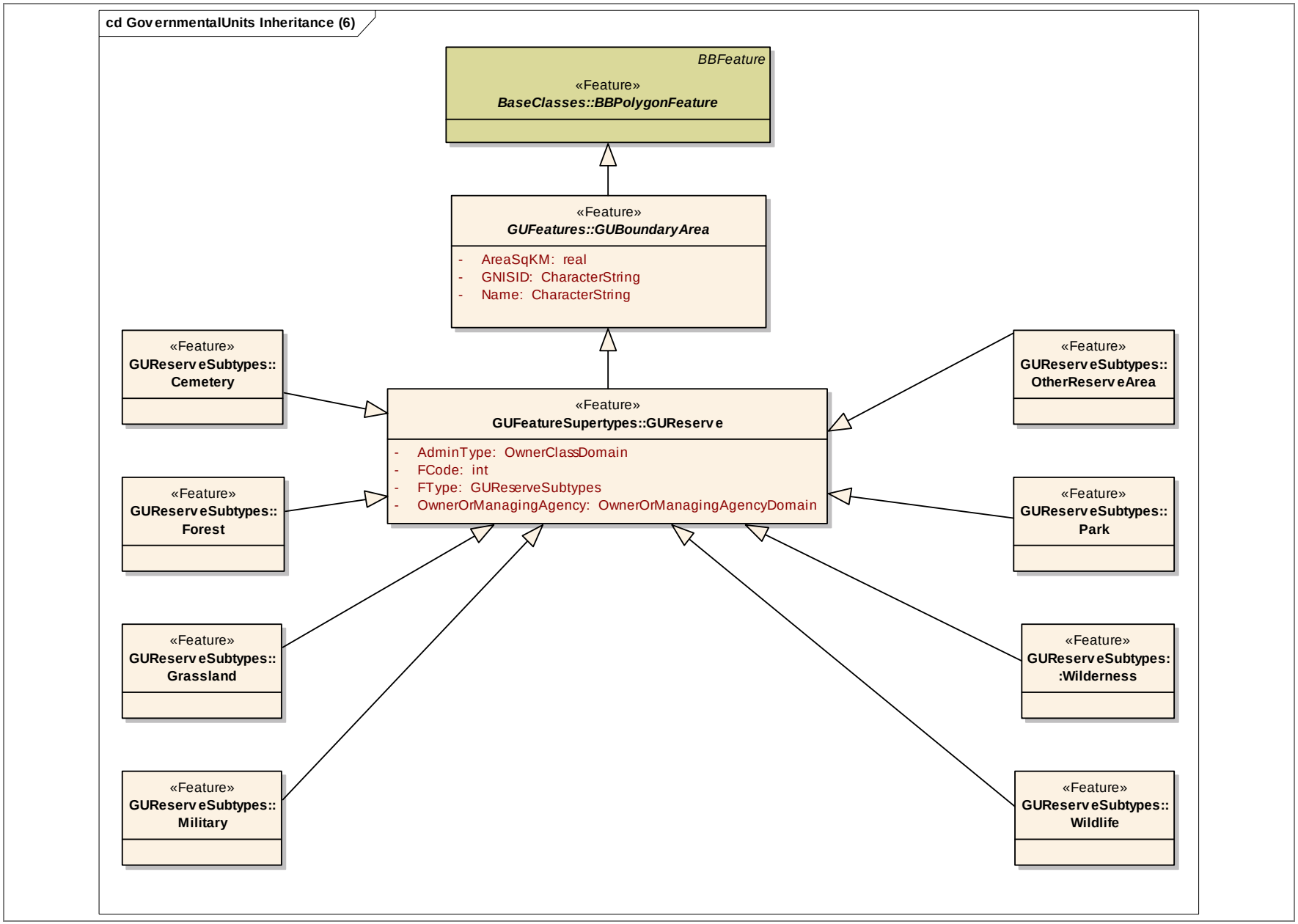
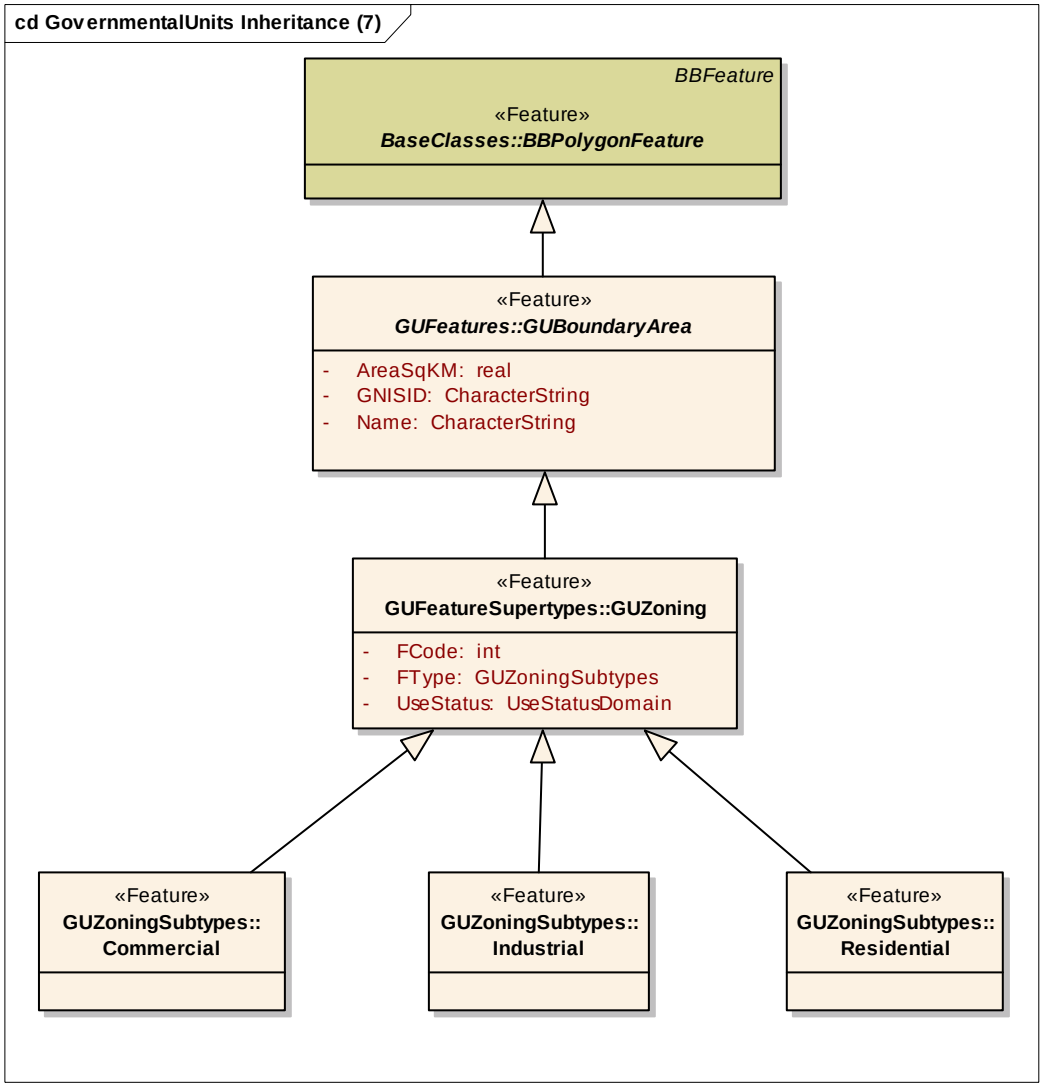
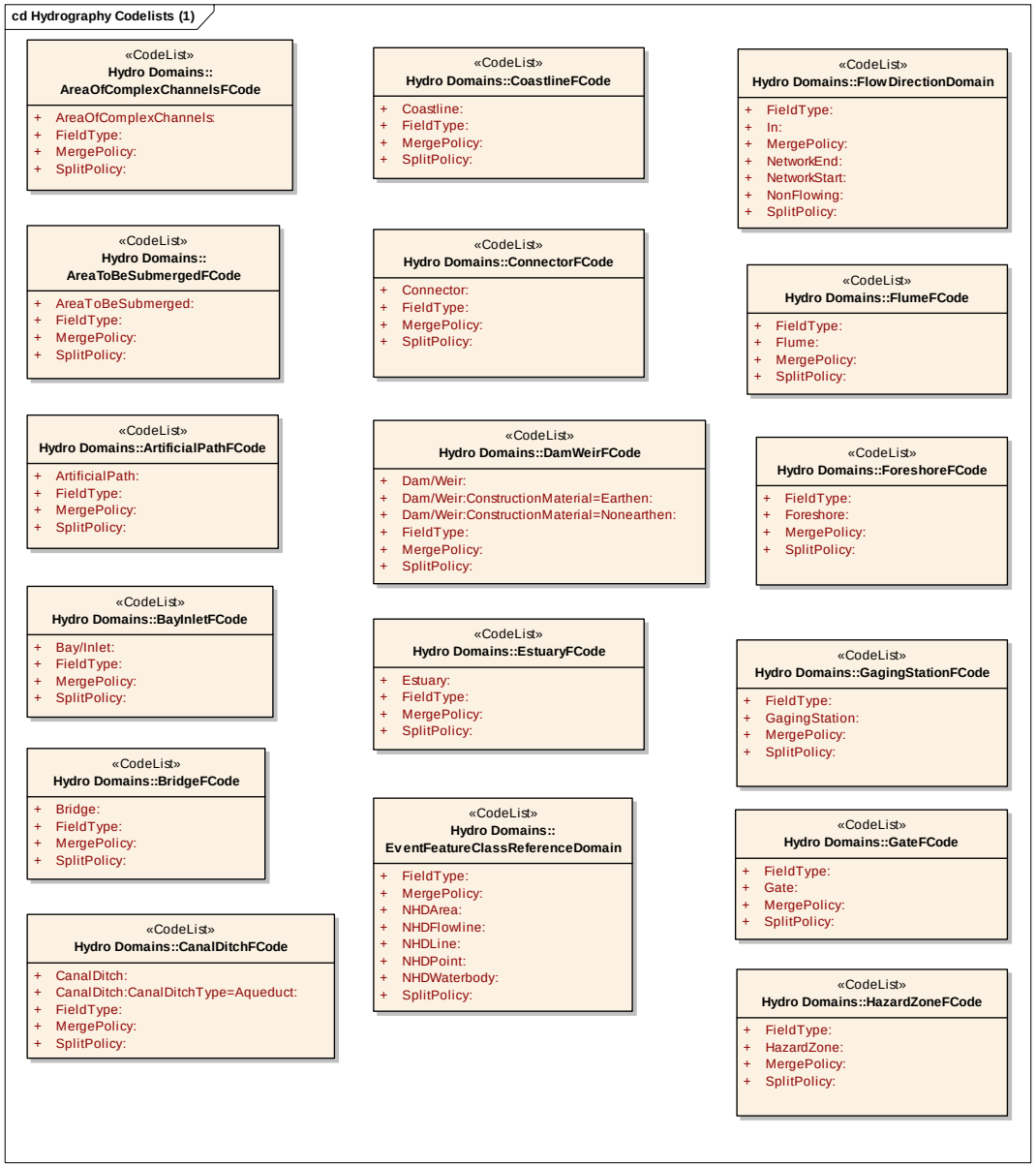
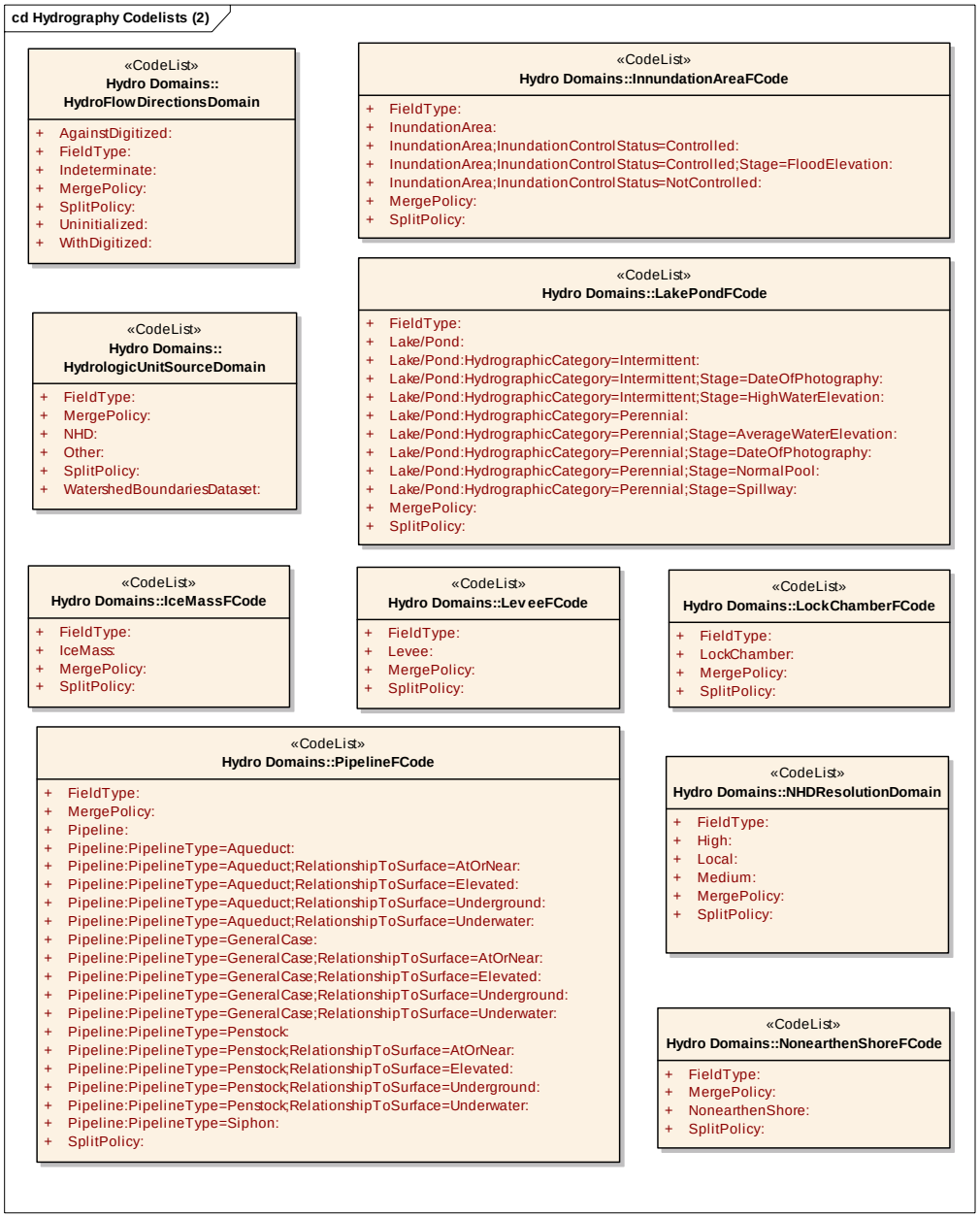


GovernmentalUnits Inheritance (7 of 7)



Hydrography Codelists (1 of 4)

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+ Lake/Pond:HydrographicCategory=Intermittent;Stage=DateOfPhotography:
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+ Lake/Pond:HydrographicCategory=Perennial:
+ Lake/Pond:HydrographicCategory=Perennial;Stage=AverageWaterElevation:
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+ MergePolicy:
+ SplitPolicy:
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+ MergePolicy:
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+ SplitPolicy:
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+ Pipeline:PipelineType=Aqueduct;RelationshipToSurface=AtOrNear:
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+ Pipeline:PipelineType=Aqueduct;RelationshipToSurface=Underground:
+ Pipeline:PipelineType=Aqueduct;RelationshipToSurface=Underwater:
+ Pipeline:PipelineType=GeneralCase:
+ Pipeline:PipelineType=GeneralCase;RelationshipToSurface=AtOrNear:
+ Pipeline:PipelineType=GeneralCase;RelationshipToSurface=Elevated:
+ Pipeline:PipelineType=GeneralCase;RelationshipToSurface=Underground:
+ Pipeline:PipelineType=GeneralCase;RelationshipToSurface=Underwater:
+ Pipeline:PipelineType=Penstock:
+ Pipeline:PipelineType=Penstock;RelationshipToSurface=AtOrNear:
+ Pipeline:PipelineType=Penstock;RelationshipToSurface=Elevated:
+ Pipeline:PipelineType=Penstock;RelationshipToSurface=Underground:
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+ Pipeline:PipelineType=Siphon:
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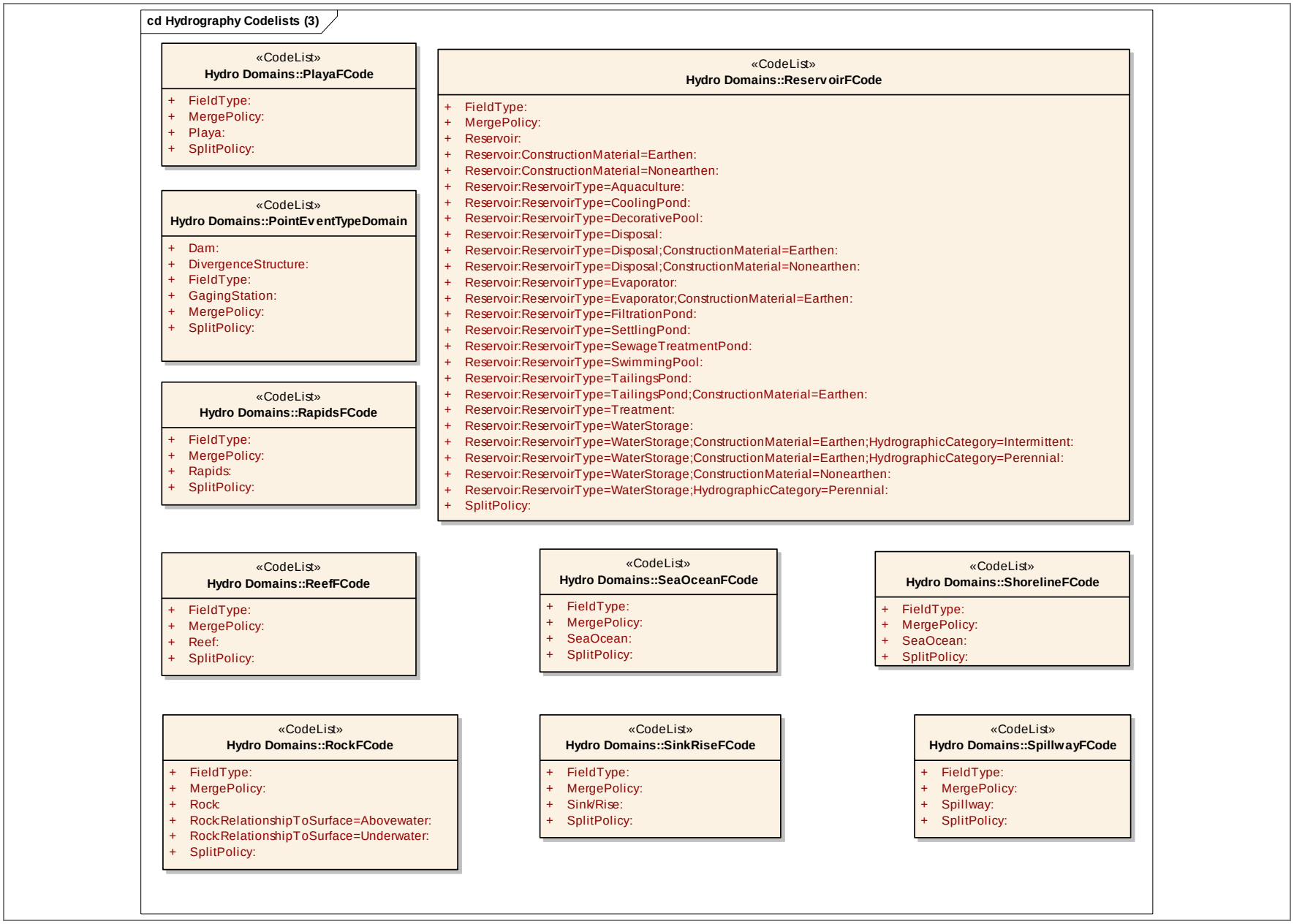
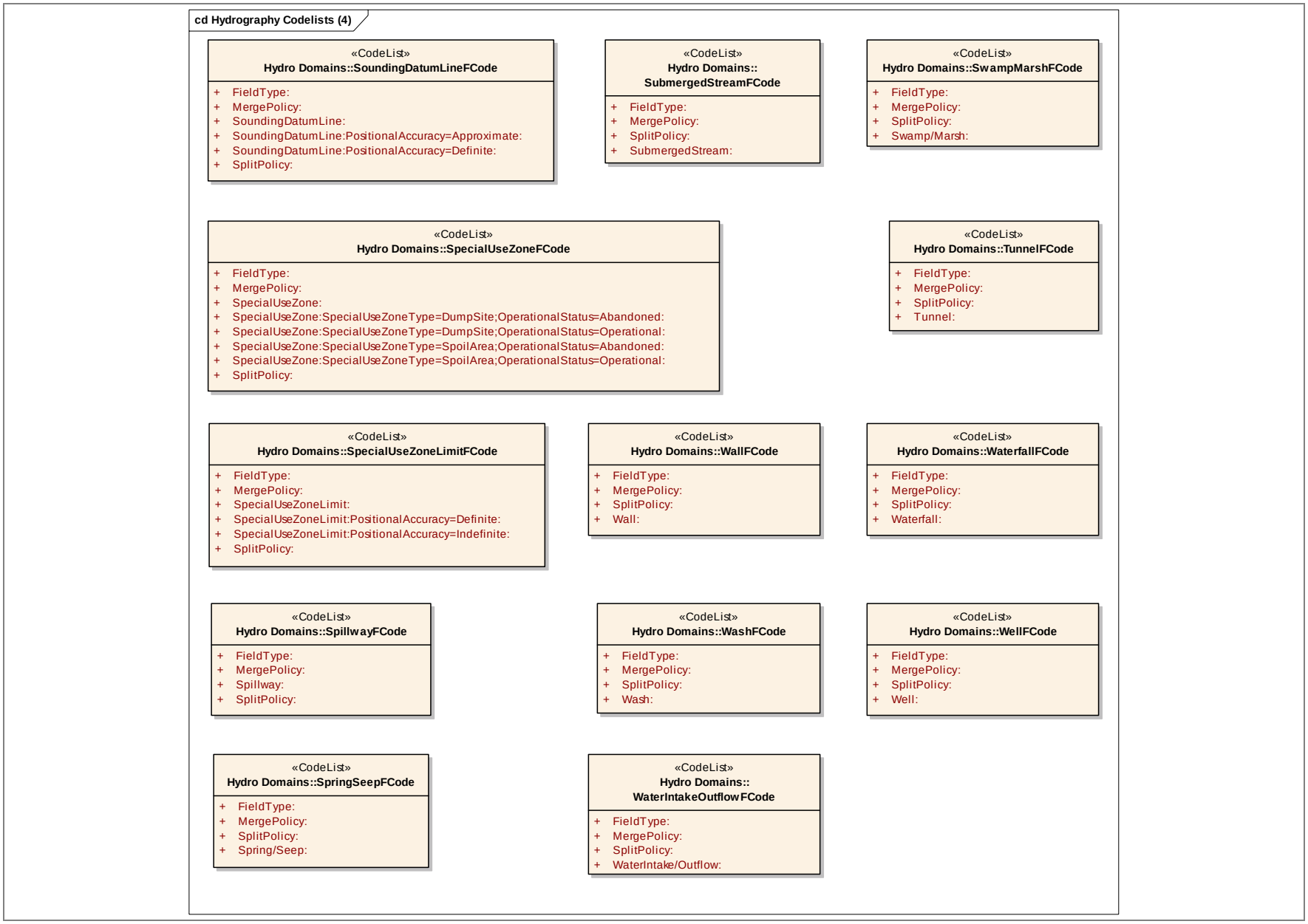
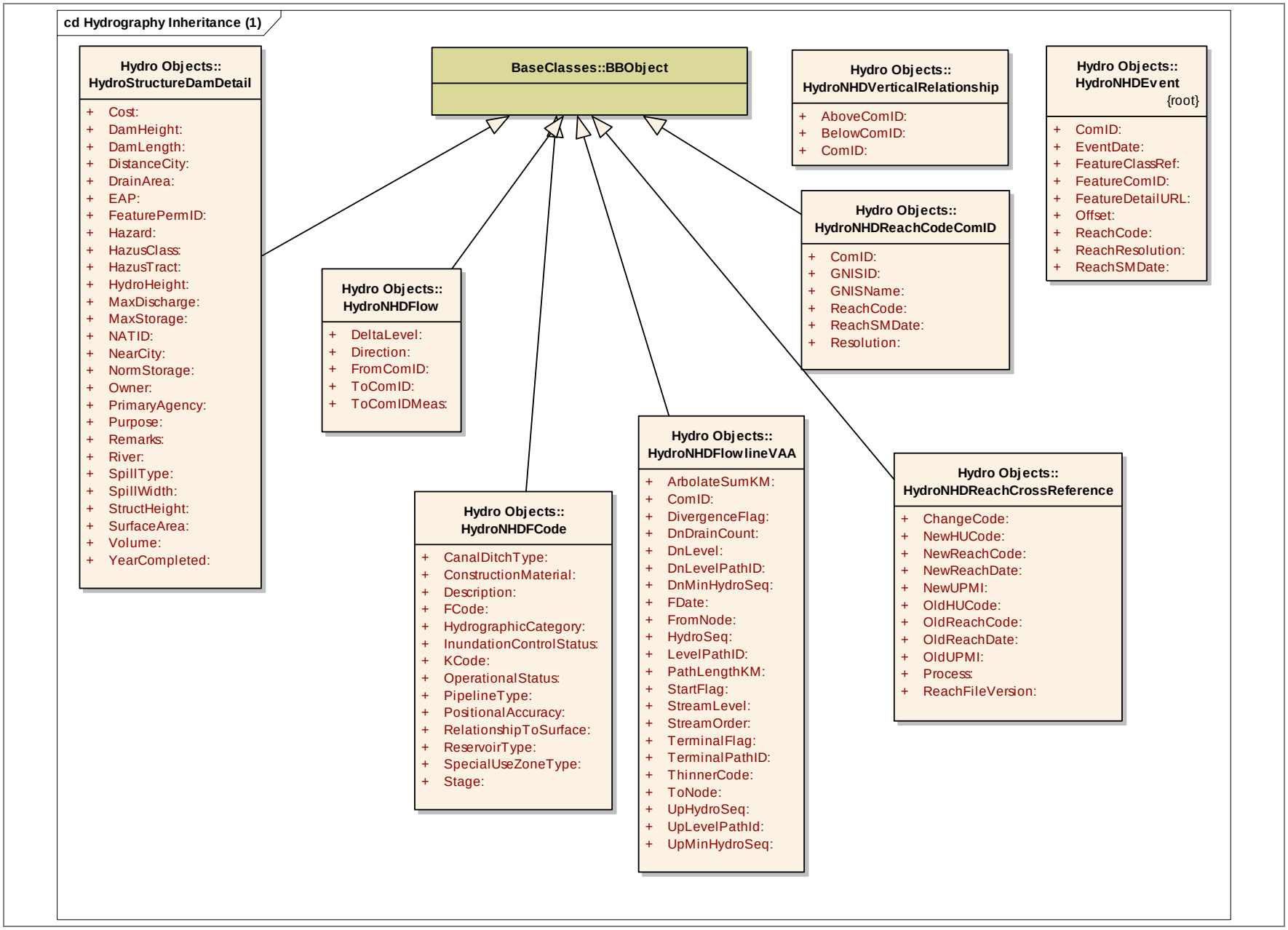
Hydrography Codelists (3 of 4)



Hydrography Codelists (4 of 4)



Hydrography Inheritance (1 of 5)



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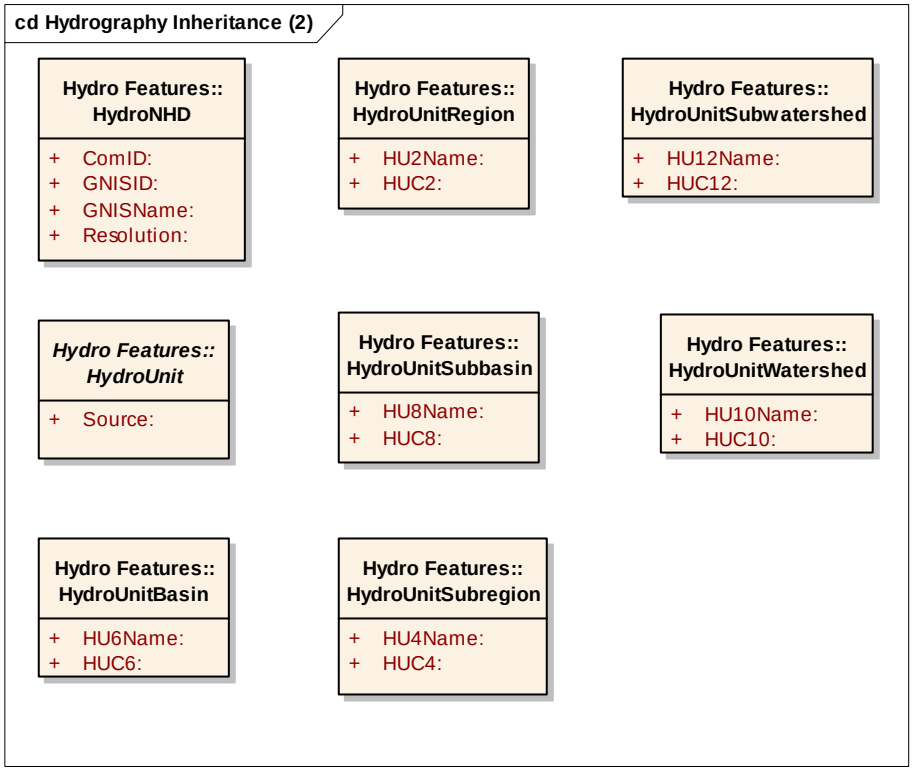
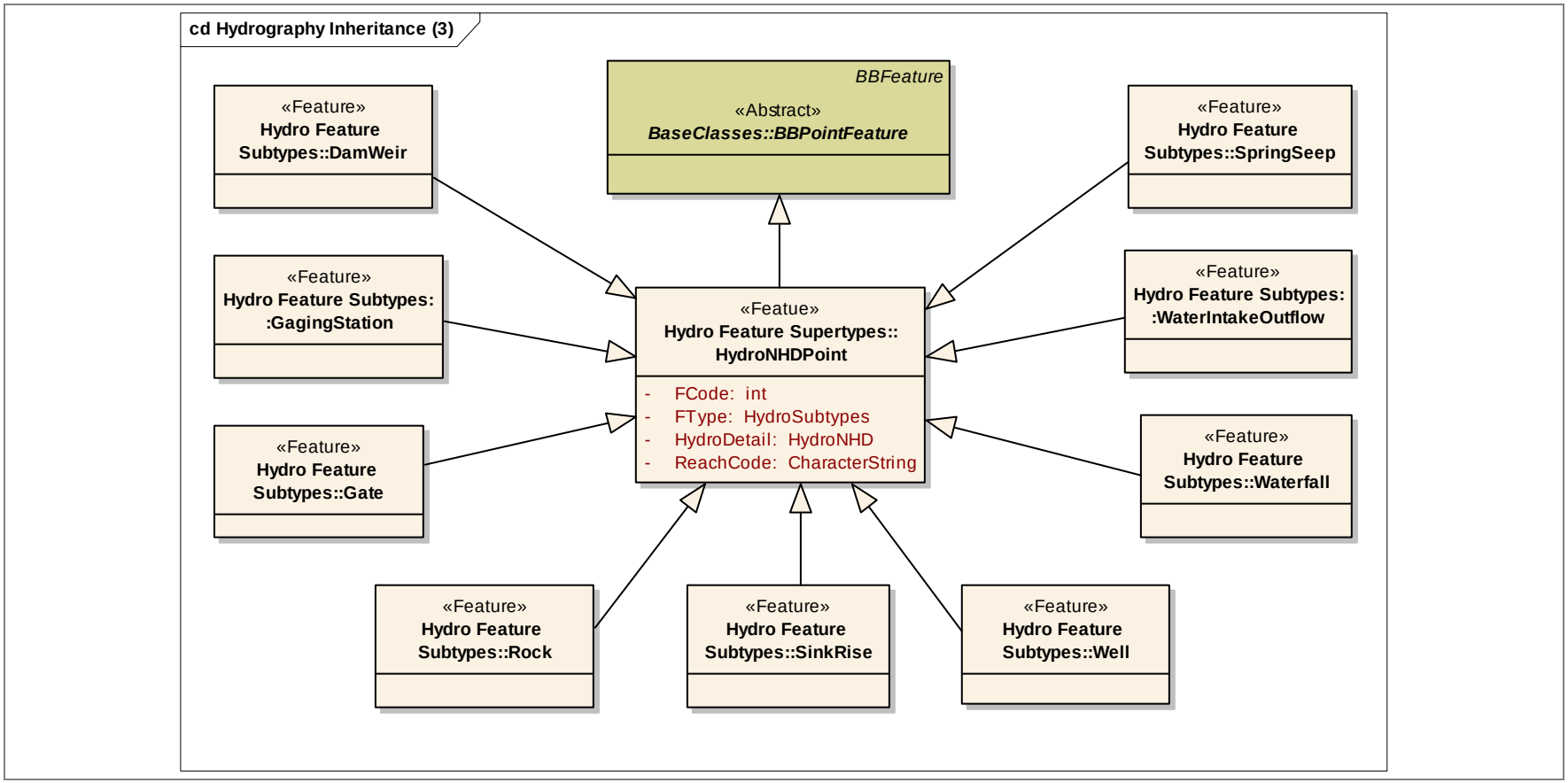
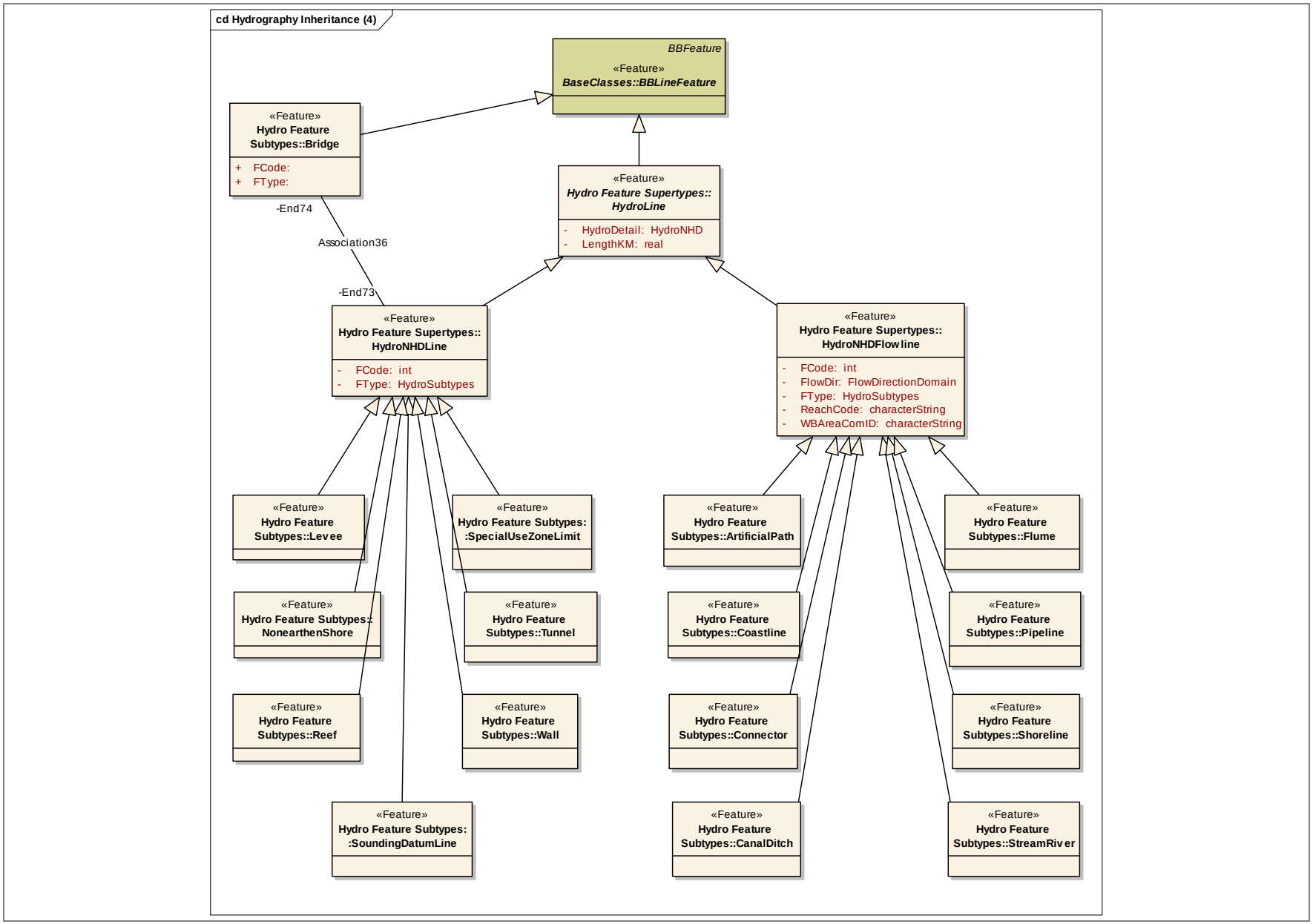


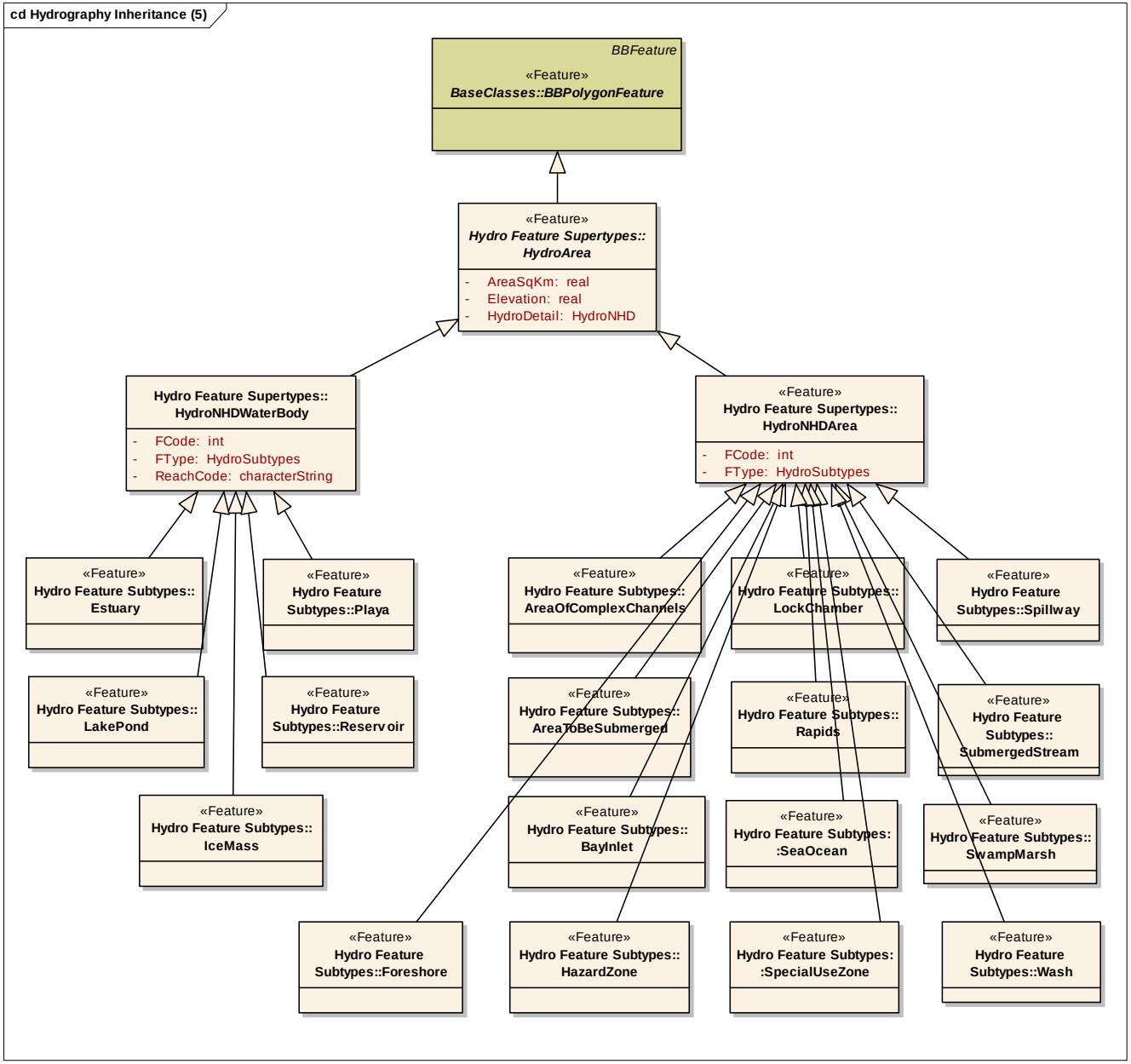
Hydrography Inheritance (3 of 5)



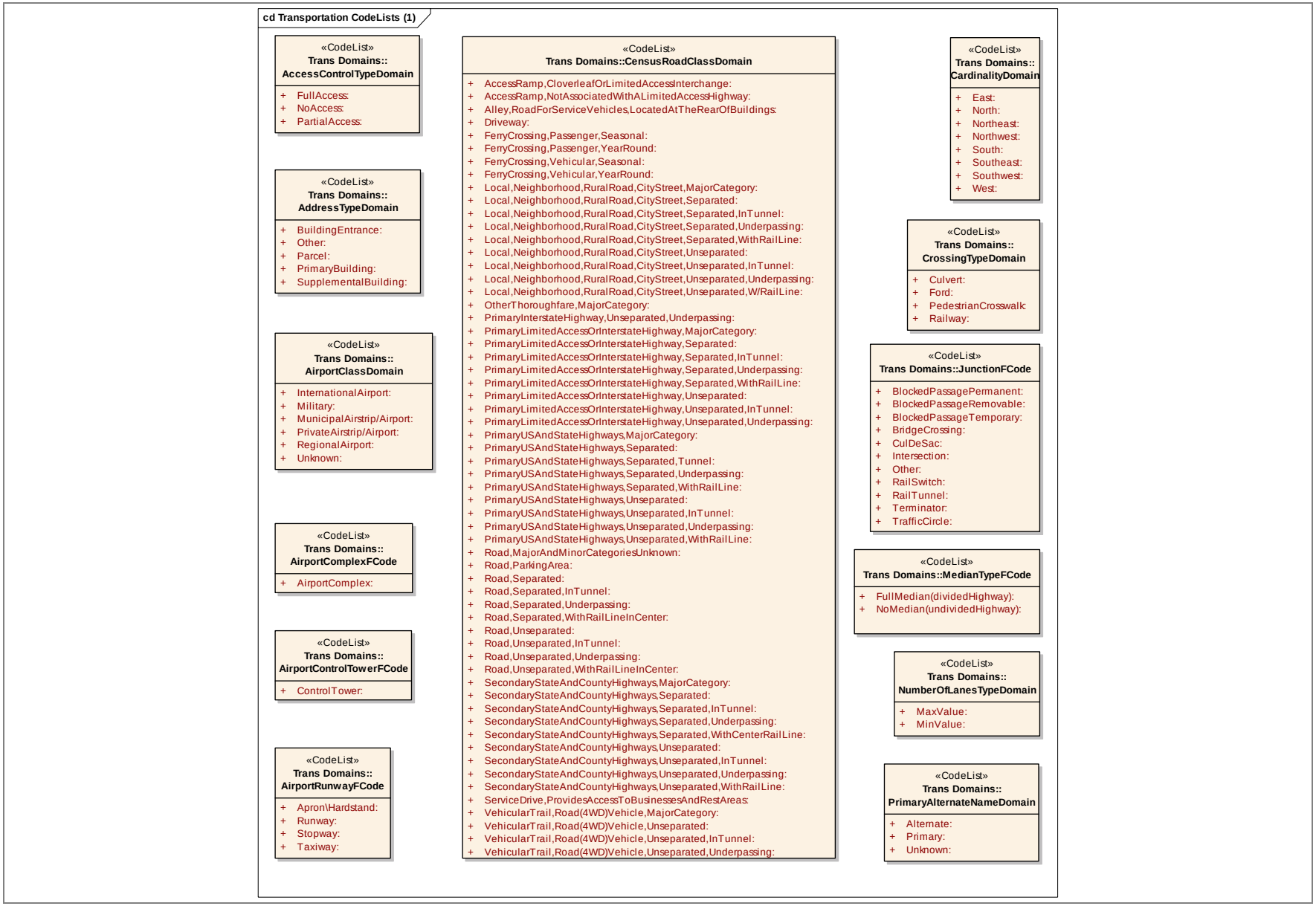
Hydrography Inheritance (4 of 5)



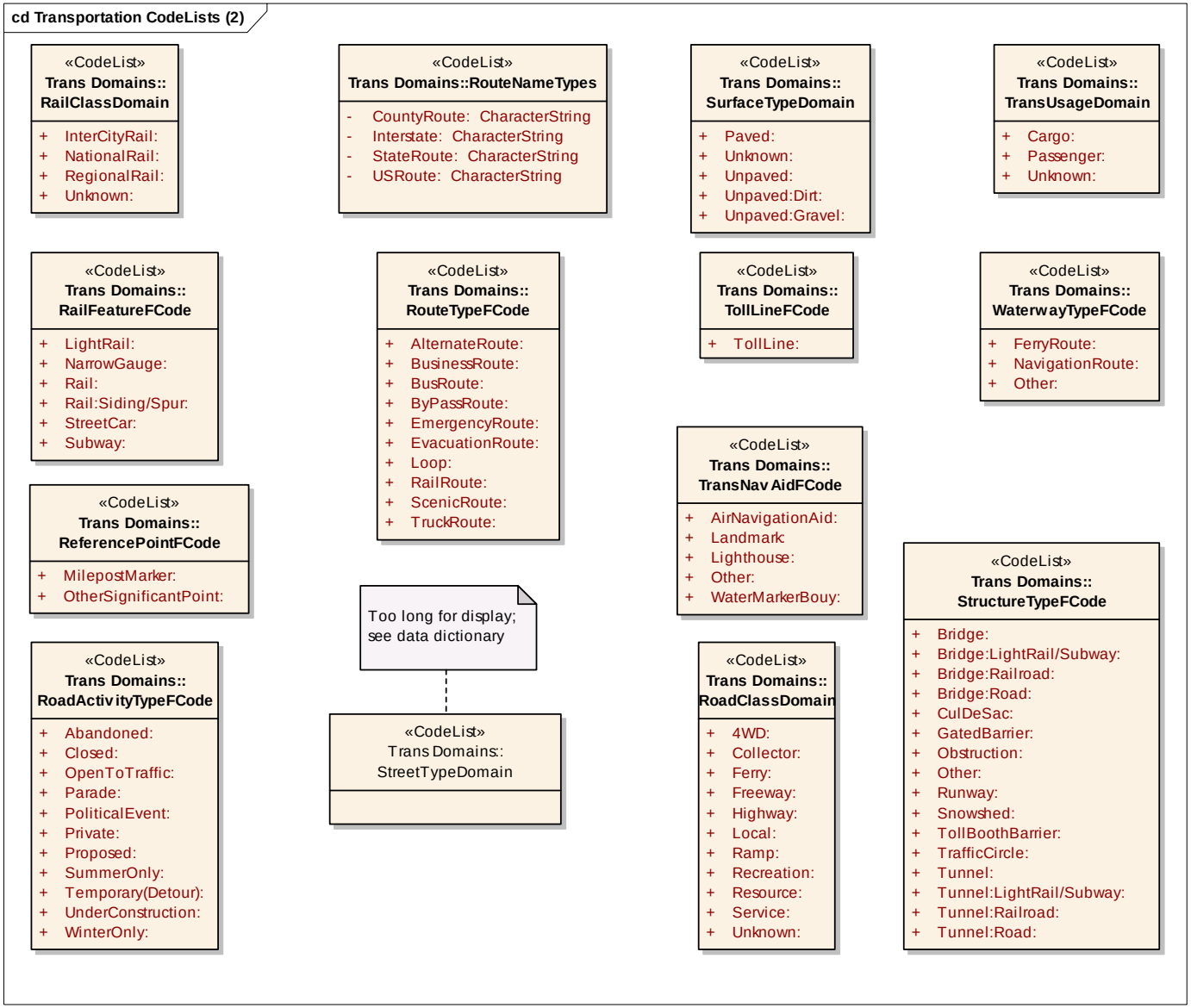
Hydrography Inheritance (5 of 5)



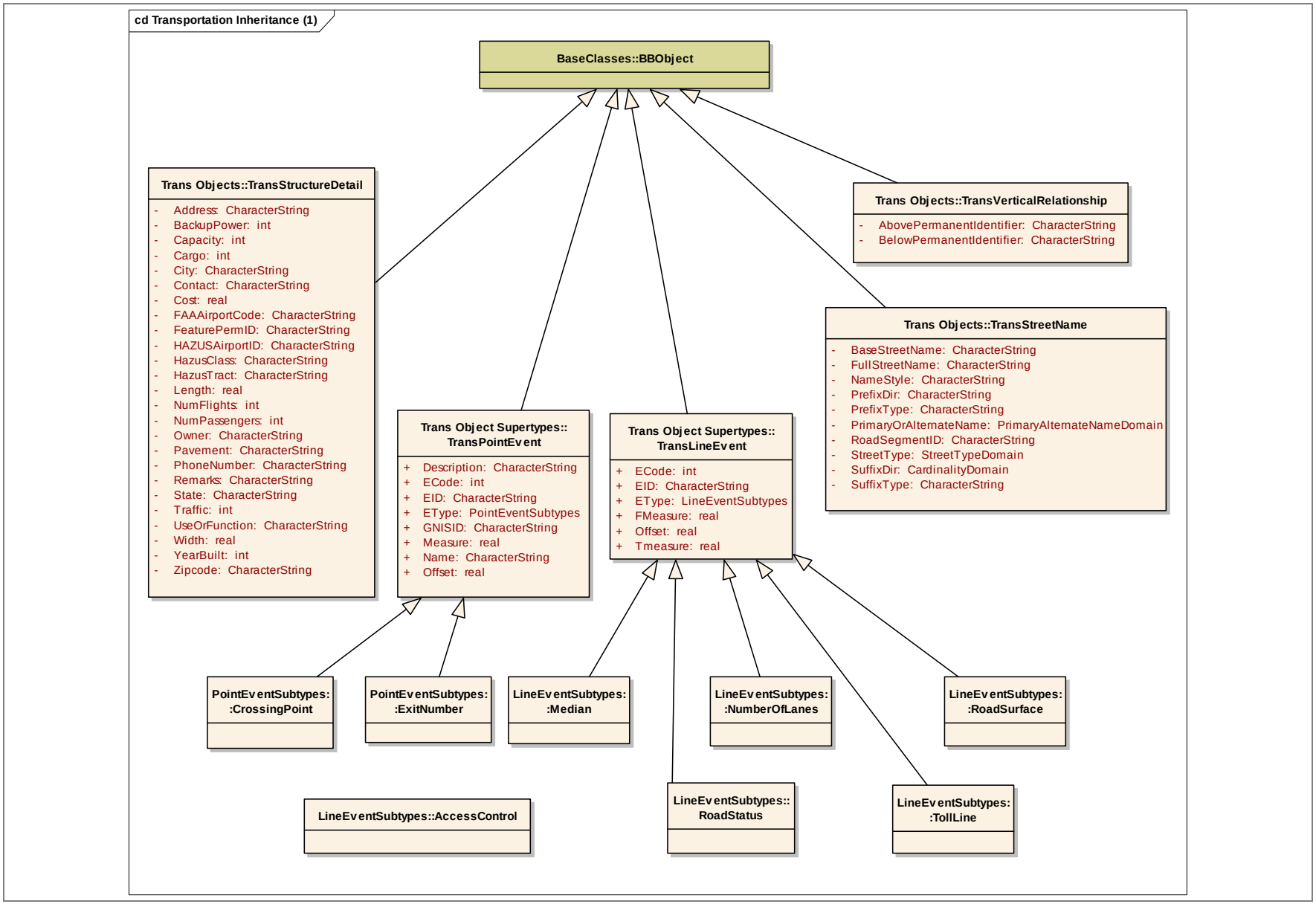
Transportation Codelists (1 of 2)



Transportation Codelists (2 of 2)



Transportation Inheritance (1 of 4)



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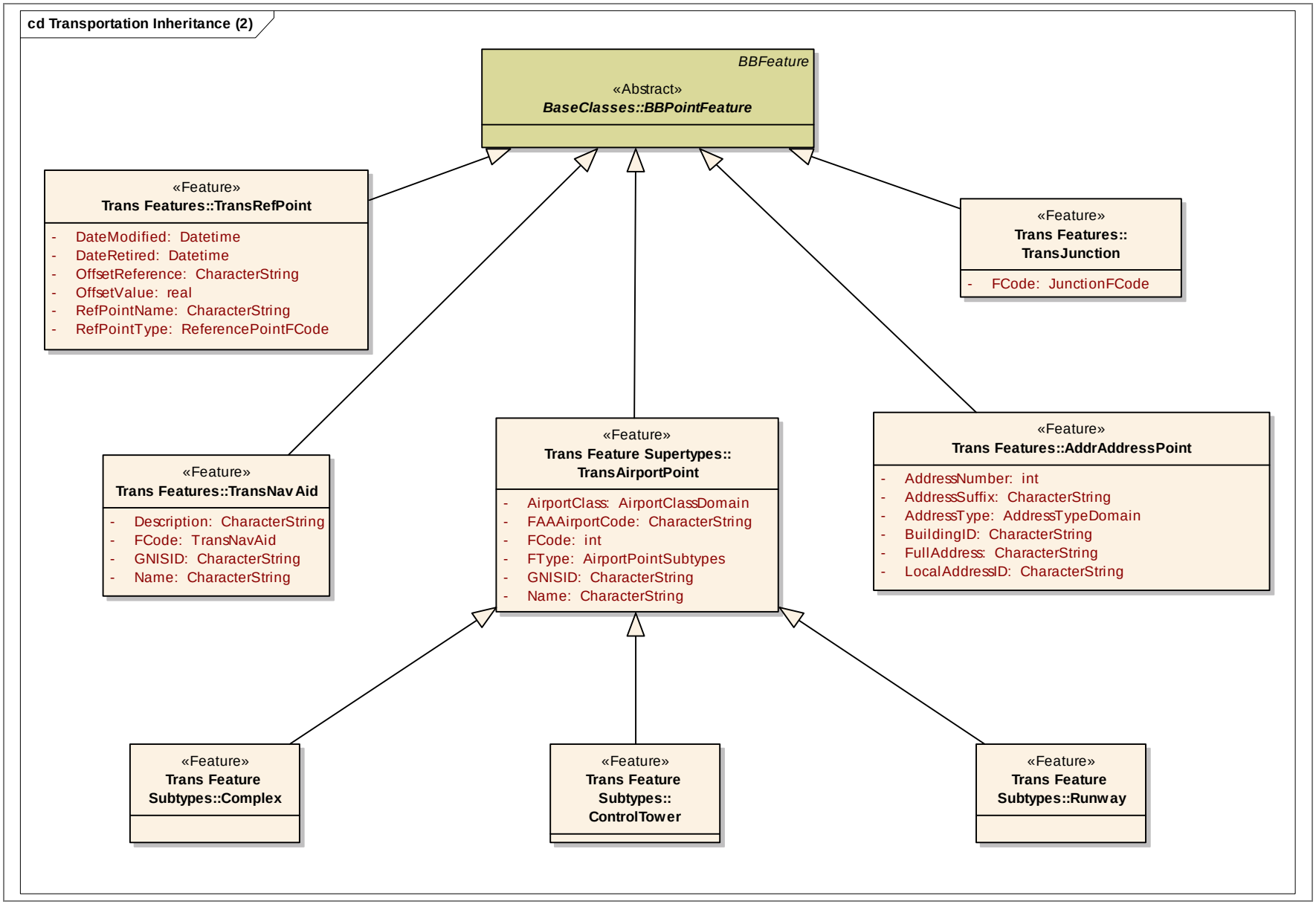
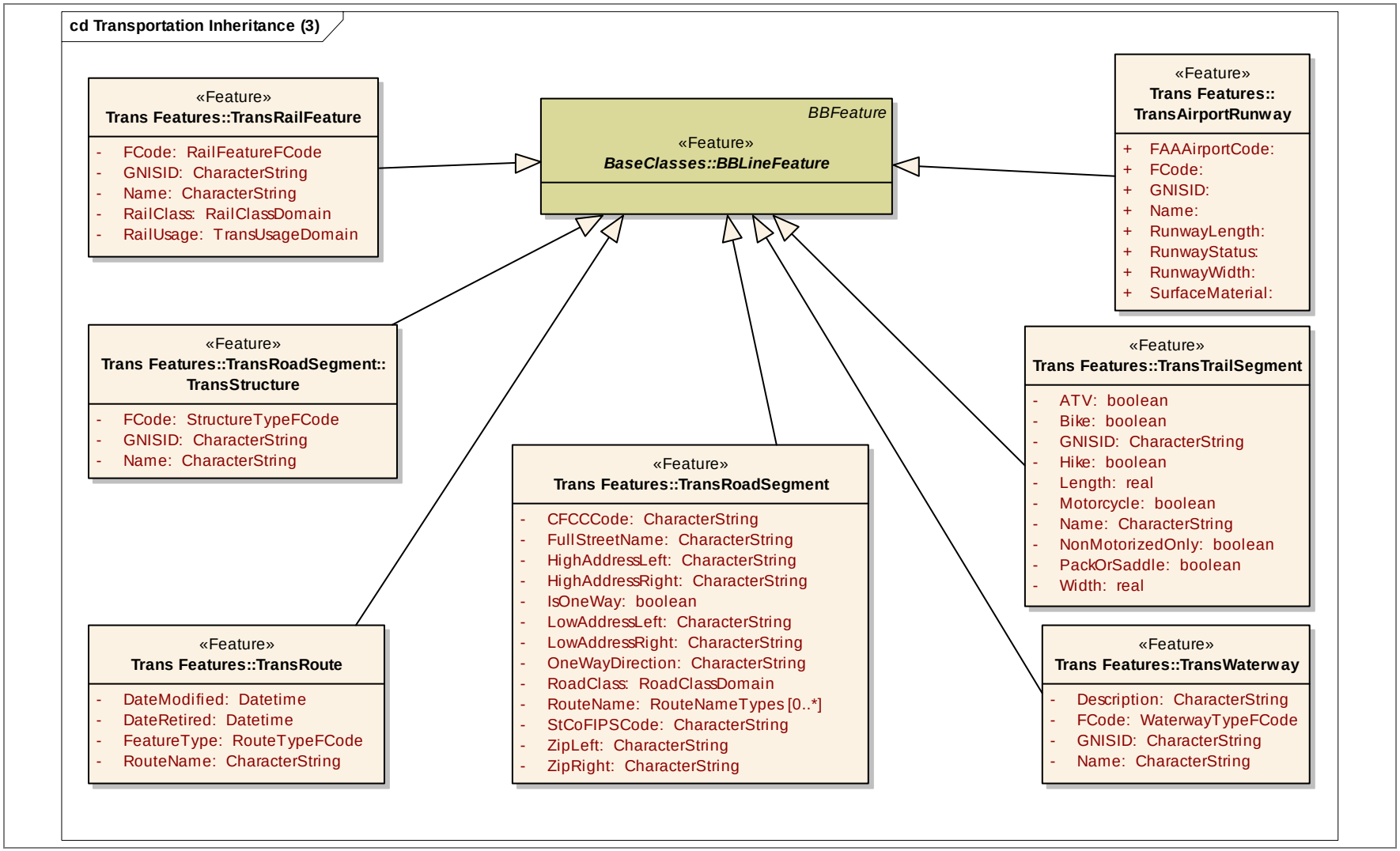


Transportation Inheritance (3 of 4)



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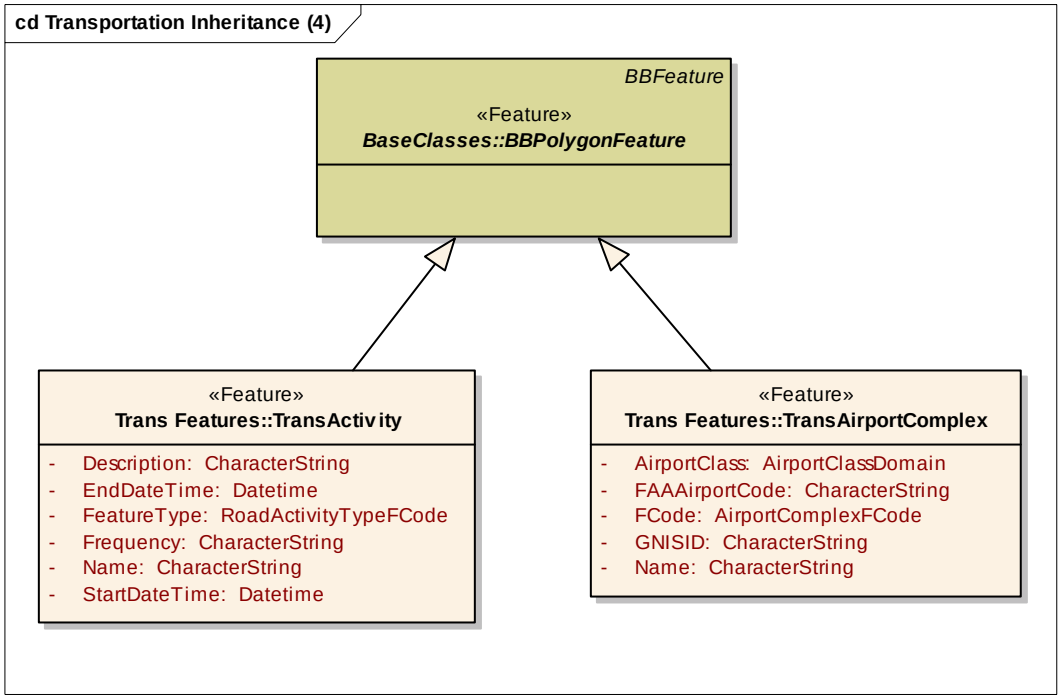
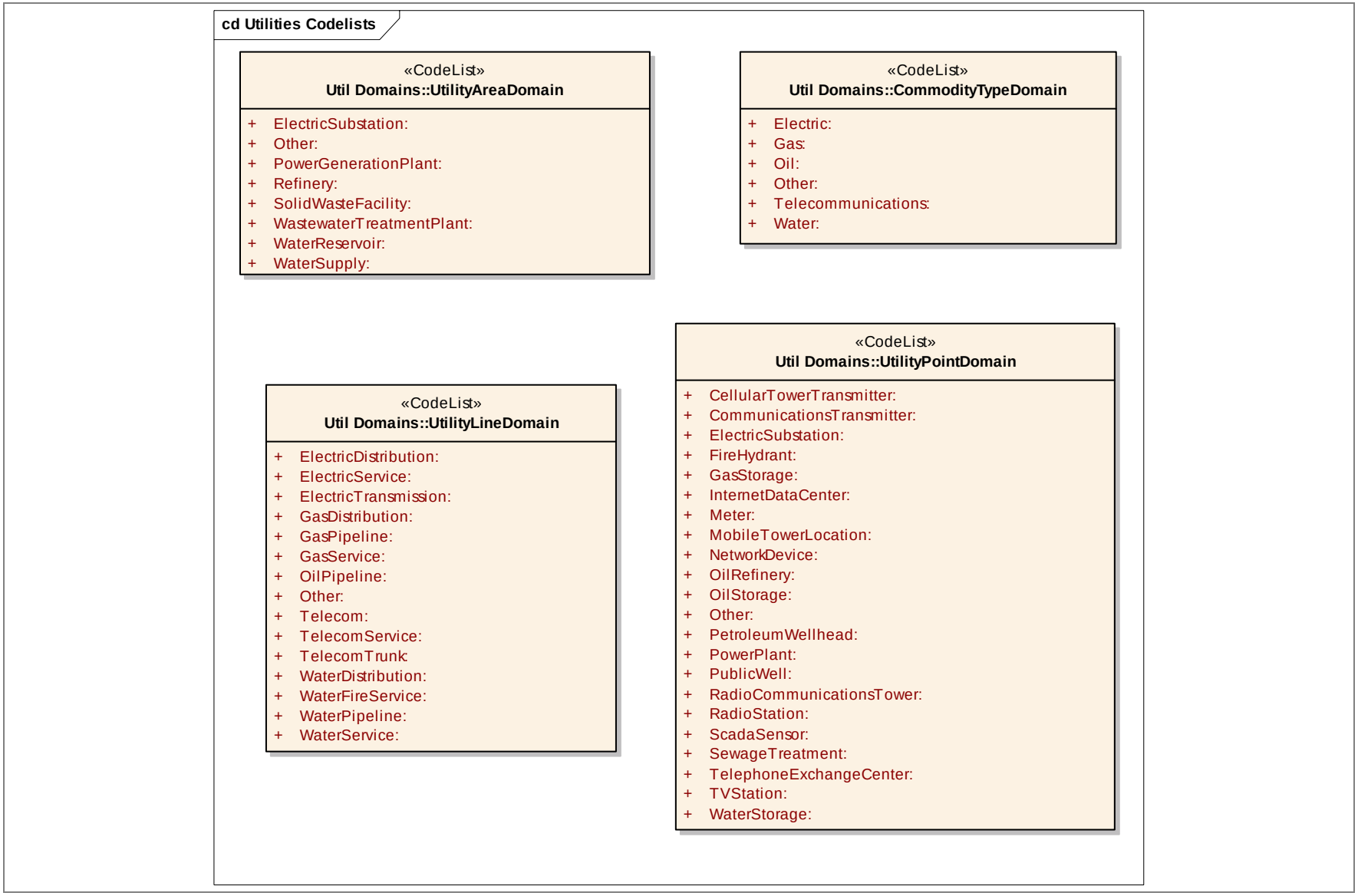
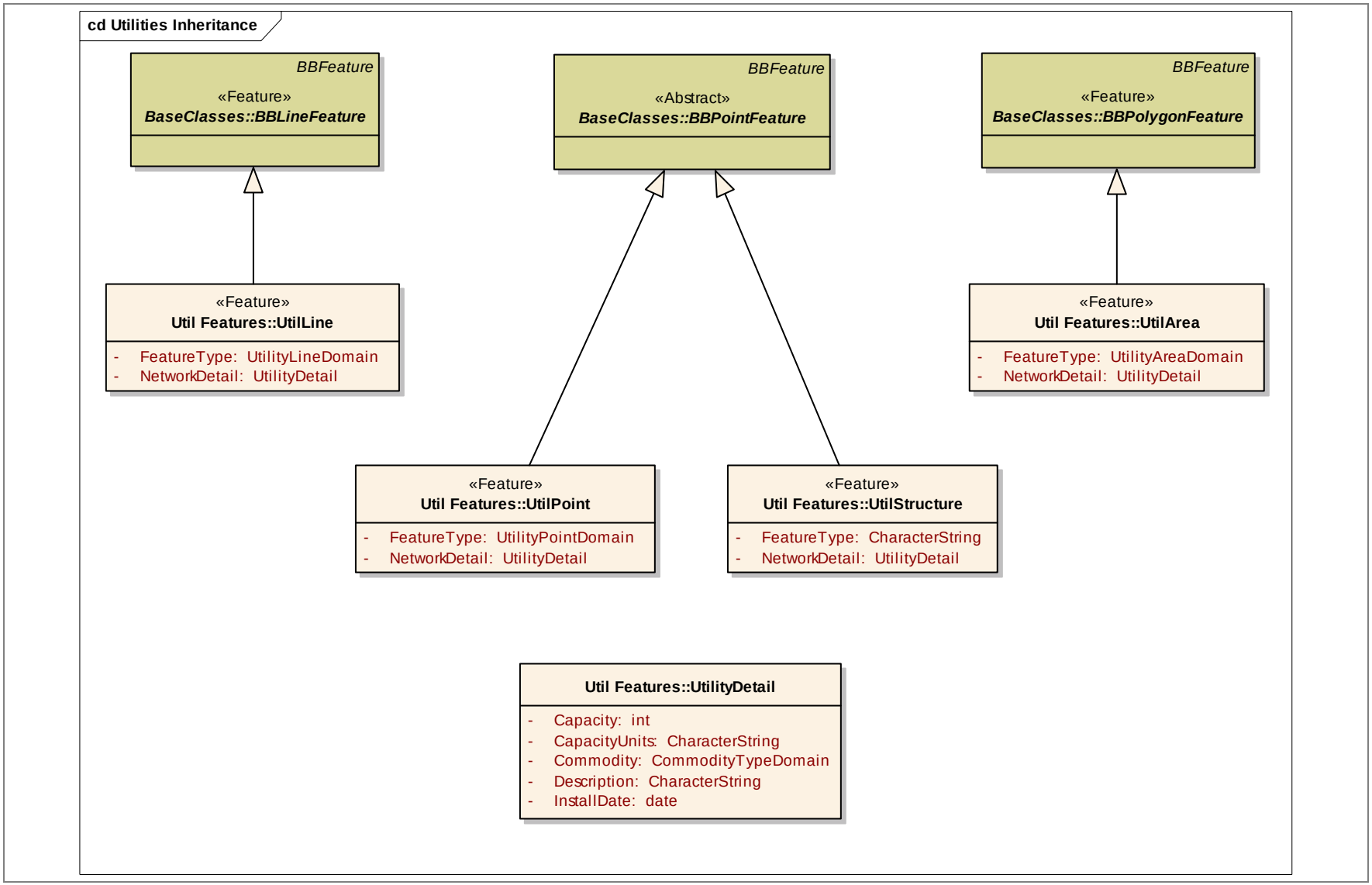


Utilities Codelists



Utilities Inheritance



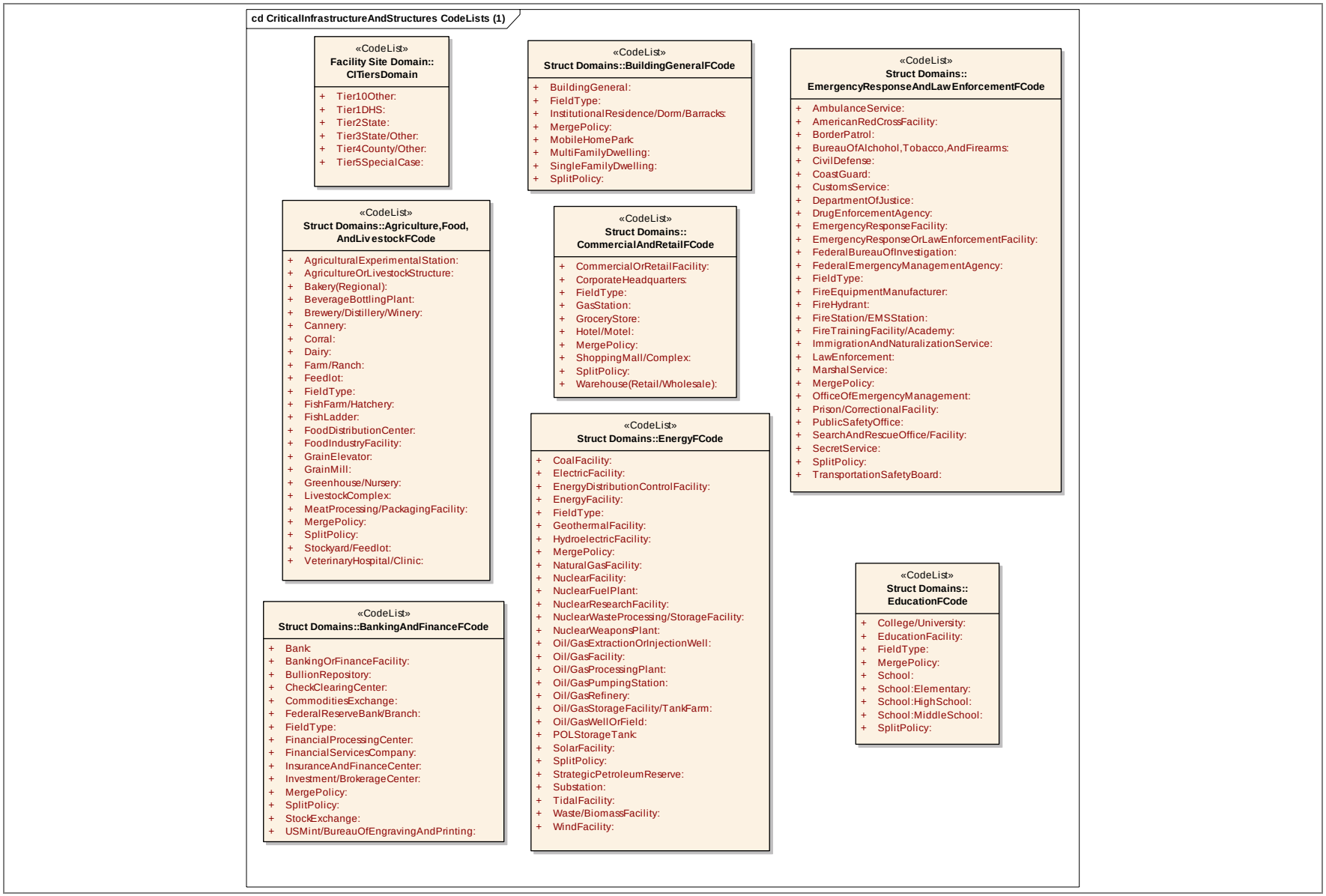
Util Domains						
Line	**Name/RoleName**	**Definition**	**Obligation / Condition**	**Maximum Occurrence**	**Data Type**	**Domain**
1	CommodityTypeDomain	Codes representing commodity feature types			<<CodeList>>	Lines 2 - 7
2	Electric	Electric	M	1		Unrestricted
3	Gas	Gas	M	1		Unrestricted
4	Oil	Oil	M	1		Unrestricted
5	Other	Other commodity feature type	M	1		Unrestricted
6	Telecommunications	Telecommunications	M	1		Unrestricted
7	Water	Water	M	1		Unrestricted
8	UtilityAreaDomain	Codes representing utility area feature types			<<CodeList>>	Lines 9 - 16
9	ElectricSubstation	Electric substation	M	1		Unrestricted
10	Other	Other utility area feature type	M	1		Unrestricted
11	PowerGenerationPlant	Power generation plant	M	1		Unrestricted
12	Refinery	Refinery	M	1		Unrestricted
13	SolidWasteFacility	Solid waste facility	M	1		Unrestricted
14	WastewaterTreatmentPlant	Wastewater treatment plant	M	1		Unrestricted
15	WaterReservoir	Water reservoir	M	1		Unrestricted
16	WaterSupply	Water supply	M	1		Unrestricted
17	UtilityLineDomain	Codes representing utility line feature types			<<CodeList>>	Lines 18 - 32
18	ElectricDistribution	Electric distribution	M	1		Unrestricted
19	ElectricService	Electric service	M	1		Unrestricted
20	ElectricTransmission	Electric transmission	M	1		Unrestricted
21	GasDistribution	Gas distribution	M	1		Unrestricted
22	GasPipeline	Gas pipeline	M	1		Unrestricted
23	GasService	Gas service	M	1		Unrestricted
24	OilPipeline	Oil pipeline	M	1		Unrestricted
25	Other	Other utility line feature type	M	1		Unrestricted
26	Telecom	Telecommunications	M	1		Unrestricted
27	TelecomService	Telecommunications service	M	1		Unrestricted
28	TelecomTrunk	Telecommunications trunk	M	1		Unrestricted
29	WaterDistribution	Water distribution	M	1		Unrestricted
30	WaterFireService	Water or fire service	M	1		Unrestricted

31	WaterPipeline	Water pipeline	M	1		Unrestricted
32	WaterService	Water service	M	1		Unrestricted
33	UtilityPointDomain	Codes representing utility point feature types			<<CodeList>>	Lines 34 - 55
34	CellularTowerTransmitter	Cellular tower transmitter	M	1		Unrestricted
35	CommunicationsTransmitter	Communications transmitter	M	1		Unrestricted
36	ElectricSubstation	Electric substation	M	1		Unrestricted
37	FireHydrant	Fire hydrant	M	1		Unrestricted
38	GasStorage	Gas storage	M	1		Unrestricted
39	InternetDataCenter	Internet data center	M	1		Unrestricted
40	Meter	Utility meter	M	1		Unrestricted
41	MobileTowerLocation	Mobile tower location	M	1		Unrestricted
42	NetworkDevice	Network device	M	1		Unrestricted
43	OilRefinery	Oil refinery	M	1		Unrestricted
44	OilStorage	Oil storage	M	1		Unrestricted
45	Other	Other utility point feature type	M	1		Unrestricted
46	PetroleumWellhead	Petroleum well head	M	1		Unrestricted
47	PowerPlant	Power plant	M	1		Unrestricted
48	PublicWell	Public well	M	1		Unrestricted
49	RadioCommunicationsTower	Radio communications tower	M	1		Unrestricted
50	RadioStation	Radio station	M	1		Unrestricted
51	ScadaSensor	Scada sensor	M	1		Unrestricted
52	SewageTreatment	Sewage treatment	M	1		Unrestricted
53	TelephoneExchangeCenter	Telephone exchange center	M	1		Unrestricted
54	TVStation	TV station	M	1		Unrestricted
55	WaterStorage	Water storage	M	1		Unrestricted

Util Features						
Line	**Name/RoleName**	**Definition**	**Obligation / Condition**	**Maximum Occurrence**	**Data Type**	**Domain**
56	UtilArea	Utility Area			<<Feature>>	Lines 57 - 58
57	FeatureType	Utility area feature type	M	1	UtilityAreaDomain	Unrestricted
58	NetworkDetail	Associated utility area network details	M	1	UtilityDetail	Unrestricted
59	UtilityDetail	Utility Details				Lines 60 - 64
60	Capacity	Capacity	M	1	int	Unrestricted
61	CapacityUnits	Capacity units	M	1	CharacterString	Unrestricted

62	Commodity	Associated commodity	M	1	CommodityTypeDomain	Unrestricted
63	Description	Description	M	1	CharacterString	Unrestricted
64	InstallDate	Install date of utility	M	1	date	Unrestricted
65	UtilLine	Utility Line			<<Feature>>	Lines 66 - 67
66	FeatureType	Utility feature type	M	1	UtilityLineDomain	Unrestricted
67	NetworkDetail	Associated utility network details	M	1	UtilityDetail	Unrestricted
68	UtilPoint	Utility Point			<<Feature>>	Lines 69 - 70
69	FeatureType	Utility feature type	M	1	UtilityPointDomain	Unrestricted
70	NetworkDetail	Associated utility network details	M	1	UtilityDetail	Unrestricted
71	UtilStructure	Utility Structure			<<Feature>>	Lines 72 - 73
72	FeatureType	Utility structure feature type	M	1	CharacterString	Unrestricted
73	NetworkDetail	Associated utility structure network detail	M	1	UtilityDetail	Unrestricted

Critical Infrastructure and Structures Codelists (1 of 3)



cd CriticalInfrastructureAndStructures CodeLists (2)

«CodeList»
Struct Domains::
GovernmentAndMilitaryFCode

- + BureauOfLandManagmentFacility:
- + City/TownHall:
- + CourtHouse:
- + CriticalFederalContractorFacility:
- + DeparmentOfMotorVehicleFacility:
- + DepartmentOfEnergyFacility:
- + DepartmentOfPublicWorks:
- + DepartmentOfStateFacility:
- + DoD/MilitaryFacility:
- + FieldType:
- + GovernmentOrMilitaryFacility:
- + GovernorResidence:
- + IntelligenceFacility:
- + LocalGovernmentFacility:
- + MergePolicy:
- + NASAFacility:
- + NationalGuardArmory/Base:
- + NationalParkServiceFacility:
- + SplitPolicy:
- + StateCapitol:
- + StateGovernmentFacility:
- + StateSupremeCourt:
- + TribalGovernmentFacility:
- + USCapitol:
- + USForestServiceFacility:
- + USGovernmentFacility:
- + USSupremeCourt:
- + WhiteHouse:

«CodeList»
Struct Domains::
HealthAndMedicalFCode

- + BloodBank:
- + CenterForDiseaseControlOffice:
- + DayCareFacility:
- + DiagnosticLaboratory:
- + FieldType:
- + HealthOrMedicalFacility:
- + HomelessShelter:
- + Hospital/MedicalCenter:
- + MedicalResearchLaboratory:
- + MedicalStockpileFacility:
- + MergePolicy:
- + Morgue:
- + Mortuary/Crematory:
- + NursingHome/LongTermCare:
- + OutpatientClinic:
- + Pharmacy:
- + PublicHealthOffice:
- + RehabilitationCenter:
- + SplitPolicy:

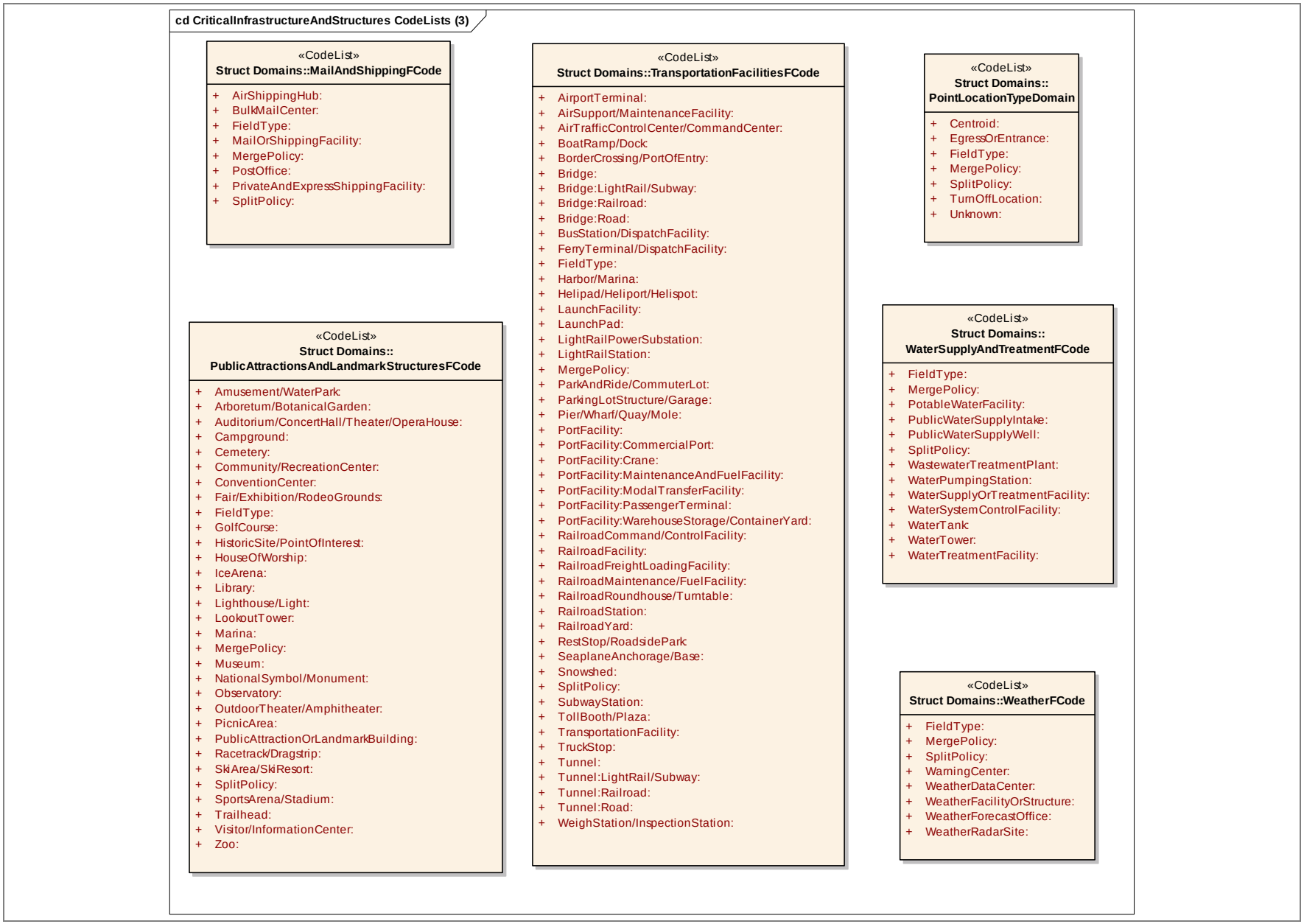
«CodeList»
Struct Domains::
InformationAndCommunicationFCode

- + CommunicationTower:
- + DataCenter:
- + FieldType:
- + InformationOrCommunicationFacility:
- + InternetDNSLocation/OtherNode:
- + InternetMetroAreaExchange/Hub:
- + InternetServiceProvider:
- + MergePolicy:
- + Radio/TVBroadcastFacility:
- + SatelliteGroundStation:
- + SplitPolicy:
- + TelephoneFacility:

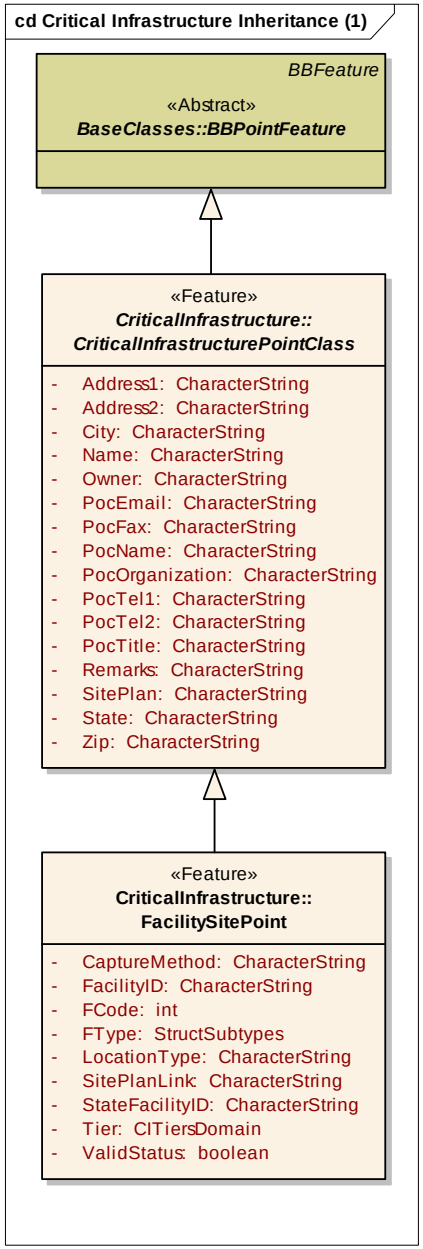
«CodeList»
Struct Domains::IndustryFCode

- + AircraftManufacturingFacility:
- + ArmamentManufacturingFacility:
- + AutomotiveManufacturingFacility:
- + ChemicalFacility:
- + Durable/NonDurableGoodsFacility:
- + ExplosivesFacility:
- + FertilizerFacility:
- + FieldType:
- + HazardousMaterialsFacility:
- + HazardousWasteFacility:
- + HouseholdProductsFacility:
- + IndustrialFacility:
- + Landfill:
- + LumberMill/SawMill:
- + MaintenanceYard:
- + ManufacturingFacility:
- + ManufacturingWarehouse:
- + MergePolicy:
- + Mine:
- + MineUraniumFacility:
- + MineWasteDisposalSite:
- + NuclearWeaponsFacility:
- + OreProcessingFacility:
- + Paper/PulpMill:
- + PharmaceuticalPlant:
- + SemiconductorAndMicrochipFacility:
- + Shipyard:
- + SplitPolicy:
- + SteelPlant:
- + SuperfundSite:
- + TextilePlant:

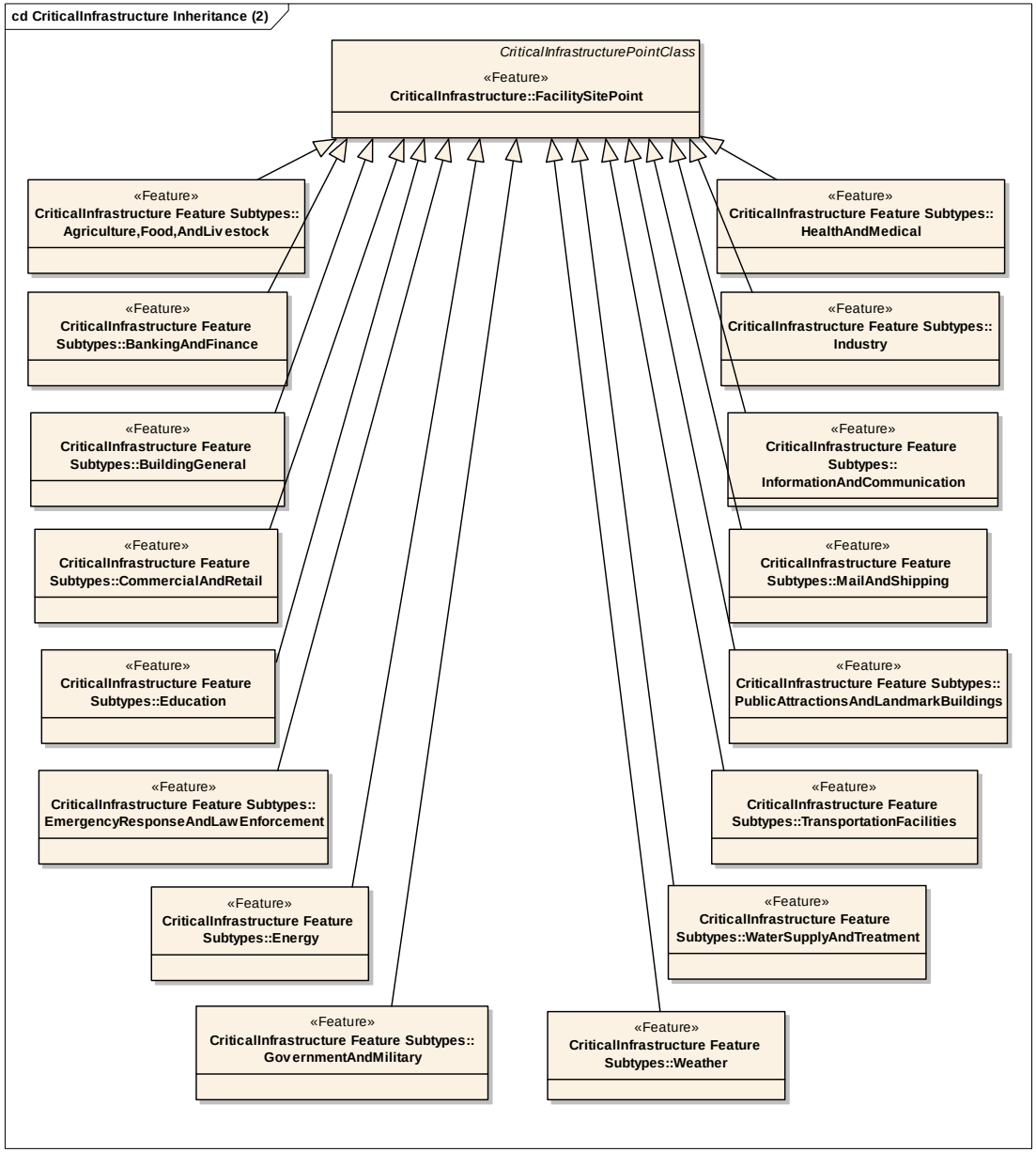
Critical Infrastructure and Structures Codelists (3 of 3)



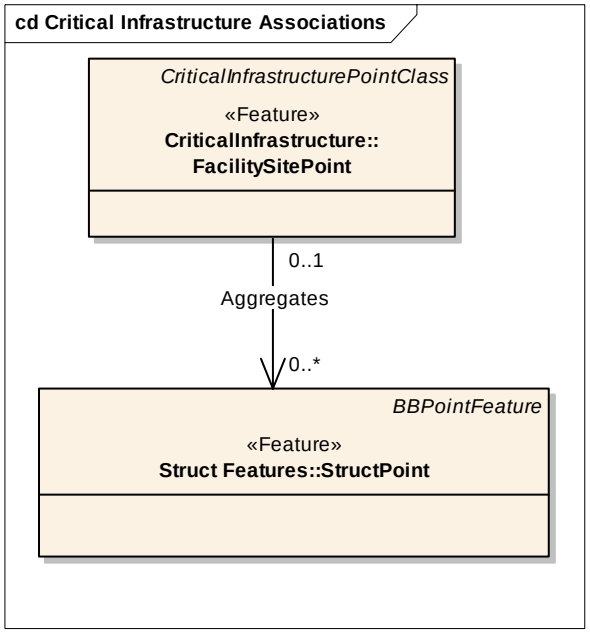
Critical Infrastructure Inheritance (1 of 2)



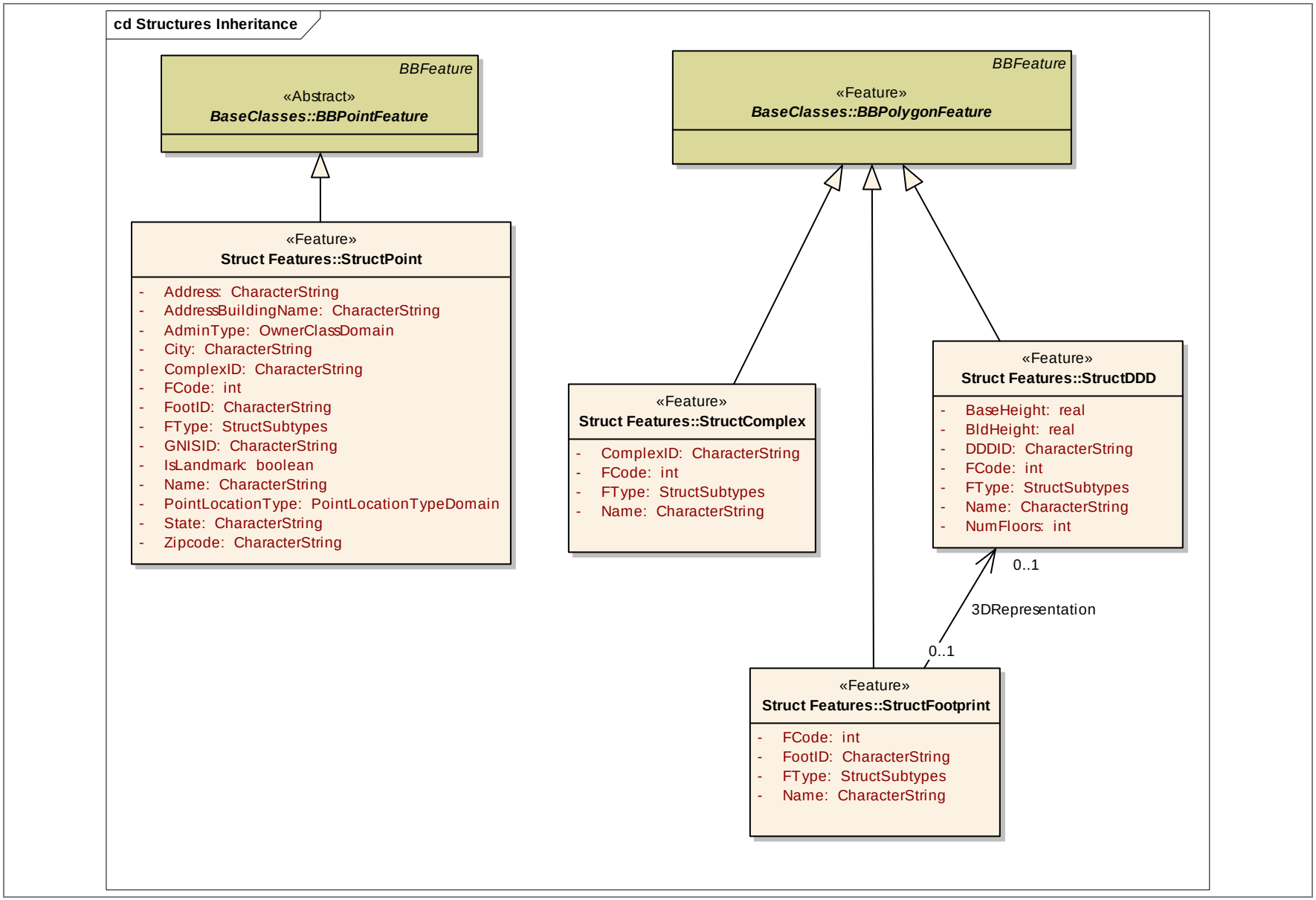
Critical Infrastructure Inheritance (2 of 2)



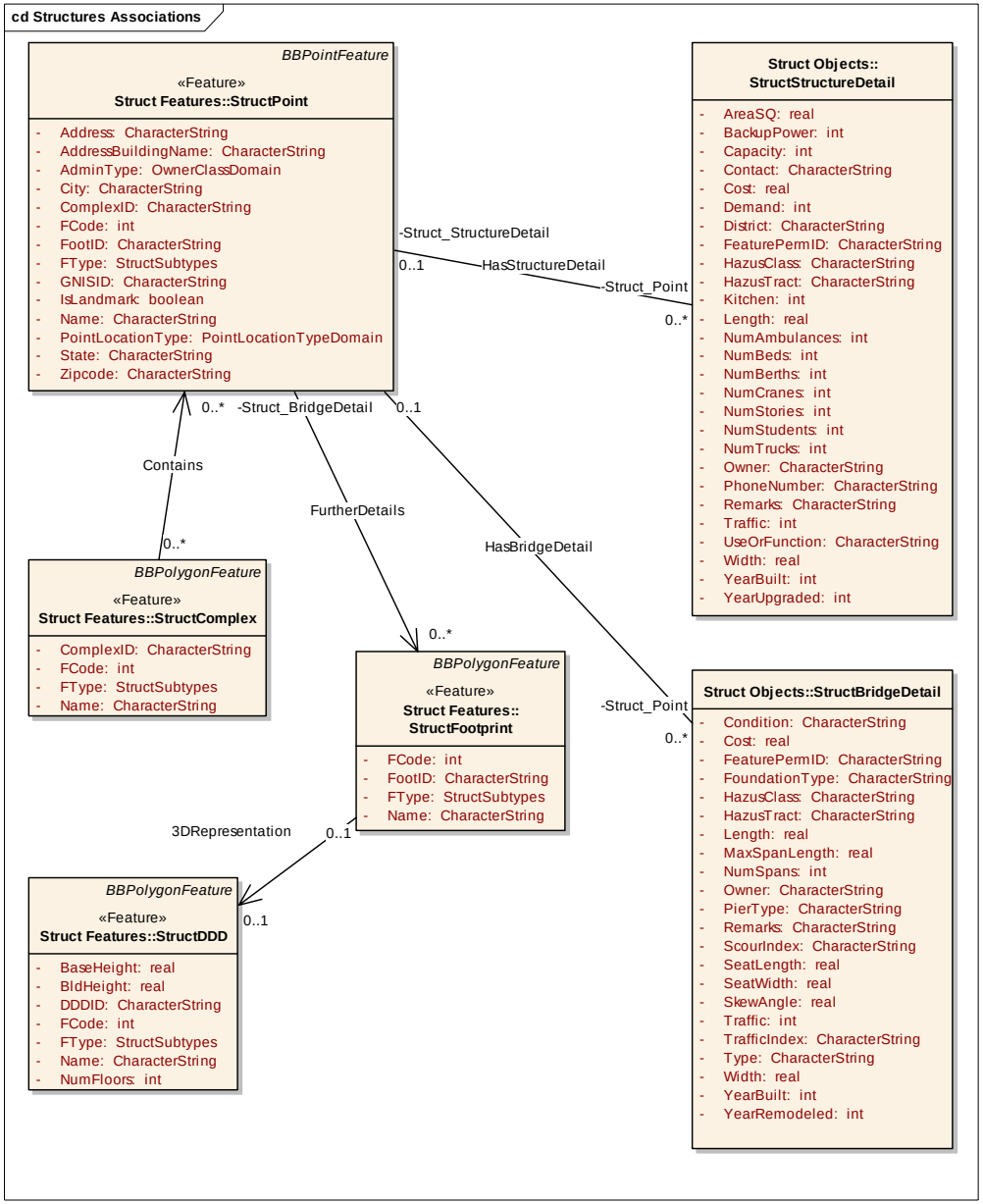
Critical Infrastructure Associations



Structures Inheritance



Structures Associations



CriticalInfrastructure						
Line	**Name/RoleName**	**Definition**	**Obligation / Condition**	**Maximum Occurrence**	**Data Type**	**Domain**
1	CriticalInfrastructurePointClass	Critical Infrastructure Point Class			<<Feature>>	Lines 2 - 17
2	Address1	Address1 of facility	M	1	CharacterString	Unrestricted
3	Address2	Address2 of facility	M	1	CharacterString	Unrestricted
4	City	City of facility address	M	1	CharacterString	Unrestricted
5	Name	Name of facility	M	1	CharacterString	Unrestricted
6	Owner	Facility owner	M	1	CharacterString	Unrestricted
7	PocEmail	Facility point of contact e-mail address	M	1	CharacterString	Unrestricted
8	PocFax	Point of contact fax number	M	1	CharacterString	Unrestricted
9	PocName	Point of contact name	M	1	CharacterString	Unrestricted
10	PocOrganization	Point of contact organization	M	1	CharacterString	Unrestricted
11	PocTel1	Point of contact telephone number1	M	1	CharacterString	Unrestricted
12	PocTel2	Point of contact telephone number2	M	1	CharacterString	Unrestricted
13	PocTitle	Point of contact title	M	1	CharacterString	Unrestricted
14	Remarks	Additional remarks regarding facility	M	1	CharacterString	Unrestricted
15	SitePlan	Link to facility site plan	M	1	CharacterString	Unrestricted
16	State	Facility address state	M	1	CharacterString	Unrestricted
17	Zip	Facility address zip code	M	1	CharacterString	Unrestricted
18	FacilitySitePoint	Facility Site Point			<<Feature>>	Lines 19 - 27
19	CaptureMethod	Method utilized to obtain structure features	M	1	CharacterString	Unrestricted
20	FacilityID	Facility identification	M	1	CharacterString	Unrestricted
21	FCode	Codes representing facility feature types	M	1	int	Unrestricted
22	FType	Facility types	M	1	StructSubtypes	Unrestricted
23	LocationType	The location on the feature where the point is located	M	1	CharacterString	Unrestricted
24	SitePlanLink	Link to facility site plan	M	1	CharacterString	Unrestricted
25	StateFacilityID	State facility identification	M	1	CharacterString	Unrestricted
26	Tier	Tier	M	1	CITiersDomain	Unrestricted
27	ValidStatus	Status of facility	M	1	boolean	Unrestricted

CriticalInfrastructure Feature Subtypes						
Line	**Name/RoleName**	**Definition**	**Obligation / Condition**	**Maximum Occurrence**	**Data Type**	**Domain**
28	Agriculture,Food,AndLivestock	Agriculture, Food, and Livestock			<<Feature>>	

29	BankingAndFinance	Building and Finance			<<Feature>>	
30	BuildingGeneral	Building General			<<Feature>>	
31	CommercialAndRetail	Commerical and Retail			<<Feature>>	
32	Education	Education			<<Feature>>	
33	EmergencyResponseAndLawEnforcement	Emergency Response and Law Enforcement			<<Feature>>	
34	Energy	Energy			<<Feature>>	
35	GovernmentAndMilitary	Government and Military			<<Feature>>	
36	HealthAndMedical	Health and Medical			<<Feature>>	
37	Industry	Industry			<<Feature>>	
38	InformationAndCommunication	Information and Communications			<<Feature>>	
39	MailAndShipping	Mail and Shipping			<<Feature>>	
40	PublicAttractionsAndLandmarkBuildings	Public Attractions and Landmark Buildings			<<Feature>>	
41	TransportationFacilities	Transportation Facilities			<<Feature>>	
42	WaterSupplyAndTreatment	Water Supply and Treatment			<<Feature>>	
43	Weather	Weather			<<Feature>>	

Facility Site Domain

Line	Name/RoleName	Definition	Obligation / Condition	Maximum Occurrence	Data Type	Domain
44	CITiersDomain	Critical Infrastructure Tiers Domain			<<CodeList>>	Lines 45 - 50
45	Tier10Other	Tier 10 Other	M	1		Unrestricted
46	Tier1DHS	Tier 1 DHS	M	1		Unrestricted
47	Tier2State	Tier 2 State	M	1		Unrestricted
48	Tier3State/Other	Tier 3 State/Other	M	1		Unrestricted
49	Tier4County/Other	Tier 4 County	M	1		Unrestricted
50	Tier5SpecialCase	Tier 5 Special Case	M	1		Unrestricted

Struct Domains

Line	Name/RoleName	Definition	Obligation / Condition	Maximum Occurrence	Data Type	Domain
51	Agriculture,Food,AndLivestockFCode	Codes representing agriculture, food, and livestock feature types			<<CodeList>>	Lines 52 - 75
52	AgriculturalExperimentalStation	Agricultural Experimental Station	M	1		Unrestricted
53	AgricultureOrLivestockStructure	Agriculture or Livestock Structure	M	1		Unrestricted
54	Bakery(Regional)	Regional Bakery	M	1		Unrestricted
55	BeverageBottlingPlant	Beverage Bottling Plant	M	1		Unrestricted
56	Brewery/Distillery/Winery	Brewery, Distillery, or Winery	M	1		Unrestricted

57	Cannery	Cannery	M	1		Unrestricted
58	Corral	Corral	M	1		Unrestricted
59	Dairy	Dairy	M	1		Unrestricted
60	Farm/Ranch	Farm or Ranch	M	1		Unrestricted
61	Feedlot	Feed Lot	M	1		Unrestricted
62	FieldType	Field Type	M	1		Unrestricted
63	FishFarm/Hatchery	Fish Farm or Hatchery	M	1		Unrestricted
64	FishLadder	Fish Ladder	M	1		Unrestricted
65	FoodDistributionCenter	Food Distribution Center	M	1		Unrestricted
66	FoodIndustryFacility	Food Industry Facility	M	1		Unrestricted
67	GrainElevator	Grain Elevator	M	1		Unrestricted
68	GrainMill	Grain Mill	M	1		Unrestricted
69	Greenhouse/Nursery	Greenhouse or Nursery	M	1		Unrestricted
70	LivestockComplex	Livestock Complex	M	1		Unrestricted
71	MeatProcessing/PackagingFacility	Meat Processing or Packaging Facility	M	1		Unrestricted
72	MergePolicy	Merge Policy	M	1		Unrestricted
73	SplitPolicy	Split Policy	M	1		Unrestricted
74	Stockyard/Feedlot	Stockyard or Feed Lot	M	1		Unrestricted
75	VeterinaryHospital/Clinic	Veterinary Hospital or Clinic	M	1		Unrestricted
76	BankingAndFinanceFCode	Codes representing bank and finance feature types			<<CodeList>>	Lines 77 - 91
77	Bank	Bank	M	1		Unrestricted
78	BankingOrFinanceFacility	Banking or Finance Facility	M	1		Unrestricted
79	BullionRepository	Bullion Repository	M	1		Unrestricted
80	CheckClearingCenter	Check Clearing Center	M	1		Unrestricted
81	CommoditiesExchange	Commodities Exchange	M	1		Unrestricted
82	FederalReserveBank/Branch	Federal Reserve Bank or Branch	M	1		Unrestricted
83	FieldType	Field Type	M	1		Unrestricted
84	FinancialProcessingCenter	Financial Processing Center	M	1		Unrestricted
85	FinancialServicesCompany	Financial Services Company	M	1		Unrestricted
86	InsuranceAndFinanceCenter	Insurance and Finance Center	M	1		Unrestricted
87	Investment/BrokerageCenter	Investment or Brokerage Center	M	1		Unrestricted
88	MergePolicy	Merge Policy	M	1		Unrestricted
89	SplitPolicy	Split Policy	M	1		Unrestricted
90	StockExchange	Stock Exchange	M	1		Unrestricted

91	USMint/BureauOfEngravingAndPrinting	United States Mint or Bureau of Engraving and Printing	M	1		Unrestricted
92	BuildingGeneralFCode	Codes representing general building feature types			<<CodeList>>	Lines 93 - 100
93	BuildingGeneral	General Building	M	1		Unrestricted
94	FieldType	Field Type	M	1		Unrestricted
95	InstitutionalResidence/Dorm/Barracks	Institutional Residence, Dorm, or Barracks	M	1		Unrestricted
96	MergePolicy	Merge Policy	M	1		Unrestricted
97	MobileHomePark	Mobile Home Park	M	1		Unrestricted
98	MultiFamilyDwelling	Multi-Family Dwelling	M	1		Unrestricted
99	SingleFamilyDwelling	Single Family Dwelling	M	1		Unrestricted
100	SplitPolicy	Split Policy	M	1		Unrestricted
101	CommercialAndRetailFCode	Codes representing commercial and retail feature types			<<CodeList>>	Lines 102 - 111
102	CommercialOrRetailFacility	Commercial or Retail Facility	M	1		Unrestricted
103	CorporateHeadquarters	Corporate Headquarters	M	1		Unrestricted
104	FieldType	Field Type	M	1		Unrestricted
105	GasStation	Gas Station	M	1		Unrestricted
106	GroceryStore	Grocery Store	M	1		Unrestricted
107	Hotel/Motel	Hotel or Motel	M	1		Unrestricted
108	MergePolicy	Merge Policy	M	1		Unrestricted
109	ShoppingMall/Complex	Shopping Mall or Complex	M	1		Unrestricted
110	SplitPolicy	Split Policy	M	1		Unrestricted
111	Warehouse(Retail/Wholesale)	Retail or Wholesale Warehouse	M	1		Unrestricted
112	EducationFCode	Codes representing education feature types			<<CodeList>>	Lines 113 - 121
113	College/University	College or University	M	1		Unrestricted
114	EducationFacility	Education Facility	M	1		Unrestricted
115	FieldType	Field Type	M	1		Unrestricted
116	MergePolicy	Merge Policy	M	1		Unrestricted
117	School	School	M	1		Unrestricted
118	School:Elementary	Elementary School	M	1		Unrestricted
119	School:HighSchool	High School	M	1		Unrestricted
120	School:MiddleSchool	Middle School	M	1		Unrestricted
121	SplitPolicy	Split Policy	M	1		Unrestricted
122	EmergencyResponseAndLawEnforcementFCode	Codes representing emergency response and law			<<CodeList>>	Lines 123 -

		enforcement feature types				151
123	AmbulanceService	Ambulance Service	M	1		Unrestricted
124	AmericanRedCrossFacility	American Red Cross Facility	M	1		Unrestricted
125	BorderPatrol	Border Patrol	M	1		Unrestricted
126	BureauOfAlchohol,Tobacco,AndFirearms	Bureau of Alcohol, Tobacco and Firearms	M	1		Unrestricted
127	CivilDefense	Civil Defense	M	1		Unrestricted
128	CoastGuard	Coast Guard	M	1		Unrestricted
129	CustomsService	Customs Service	M	1		Unrestricted
130	DepartmentOfJustice	Department of Justice	M	1		Unrestricted
131	DrugEnforcementAgency	Drug Enforcement Agency	M	1		Unrestricted
132	EmergencyResponseFacility	Emergency Response Facility	M	1		Unrestricted
133	EmergencyResponseOrLawEnforcementFacility	Emergency Response or Law Enforcement Facility	M	1		Unrestricted
134	FederalBureauOfInvestigation	Federal Bureau of Investigation	M	1		Unrestricted
135	FederalEmergencyManagementAgency	Federal Emergency Management Agency	M	1		Unrestricted
136	FieldType	Field Type	M	1		Unrestricted
137	FireEquipmentManufacturer	Fire Equipment Manufacturer	M	1		Unrestricted
138	FireHydrant	Fire Hydrant	M	1		Unrestricted
139	FireStation/EMSStation	Fire or Emergency Medical Services Station	M	1		Unrestricted
140	FireTrainingFacility/Academy	Fire Training Facility or Academy	M	1		Unrestricted
141	ImmigrationAndNaturalizationService	Immigration and Naturalization Service	M	1		Unrestricted
142	LawEnforcement	Law Enforcement	M	1		Unrestricted
143	MarshalService	Marshal Service	M	1		Unrestricted
144	MergePolicy	Merge Policy	M	1		Unrestricted
145	OfficeOfEmergencyManagement	Office of Emergency Management	M	1		Unrestricted
146	Prison/CorrectionalFacility	Prison or Correctional Facility	M	1		Unrestricted
147	PublicSafetyOffice	Public Safety Office	M	1		Unrestricted
148	SearchAndRescueOffice/Facility	Search and Rescue Office or Facility	M	1		Unrestricted
149	SecretService	Secret Service	M	1		Unrestricted
150	SplitPolicy	Split Policy	M	1		Unrestricted
151	TransportationSafetyBoard	Transportation and Safety Board	M	1		Unrestricted
152	EnergyFCode	Codes representing energy feature types			<<CodeList>>	Lines 153 - 181
153	CoalFacility	Coal Facility	M	1		Unrestricted
154	ElectricFacility	Electric Facility	M	1		Unrestricted

155	EnergyDistributionControlFacility	Energy Distribution Control Facility	M	1		Unrestricted
156	EnergyFacility	Energy Facility	M	1		Unrestricted
157	FieldType	Field Type	M	1		Unrestricted
158	GeothermalFacility	Geothermal Facility	M	1		Unrestricted
159	HydroelectricFacility	Hydroelectric Facility	M	1		Unrestricted
160	MergePolicy	Merge Policy	M	1		Unrestricted
161	NaturalGasFacility	Natural Gas Facility	M	1		Unrestricted
162	NuclearFacility	Nuclear Facility	M	1		Unrestricted
163	NuclearFuelPlant	Nuclear Fuel Plant	M	1		Unrestricted
164	NuclearResearchFacility	Nuclear Research Facility	M	1		Unrestricted
165	NuclearWasteProcessing/StorageFacility	Nuclear Waste Processing or Storage Facility	M	1		Unrestricted
166	NuclearWeaponsPlant	Nuclear Weapons Plant	M	1		Unrestricted
167	Oil/GasExtractionOrInjectionWell	Oil or Gas Extraction or Injection Well	M	1		Unrestricted
168	Oil/GasFacility	Oil or Gas Facility	M	1		Unrestricted
169	Oil/GasProcessingPlant	Oil or Gas Processing Plant	M	1		Unrestricted
170	Oil/GasPumpingStation	Oil or Gas Pumping Station	M	1		Unrestricted
171	Oil/GasRefinery	Oil or Gas Refinery	M	1		Unrestricted
172	Oil/GasStorageFacility/TankFarm	Oil or Gas Storage Facility or Tank Farm	M	1		Unrestricted
173	Oil/GasWellOrField	Oil or Gas Well or Field	M	1		Unrestricted
174	POLStorageTank	Refined Petroleum, Oils, or Lubricants Storage Tank	M	1		Unrestricted
175	SolarFacility	Solar Facility	M	1		Unrestricted
176	SplitPolicy	Split Policy	M	1		Unrestricted
177	StrategicPetroleumReserve	Strategic Petroleum Reserve	M	1		Unrestricted
178	Substation	Substation	M	1		Unrestricted
179	TidalFacility	Tidal Facility	M	1		Unrestricted
180	Waste/BiomassFacility	Waste or Biomass Facility	M	1		Unrestricted
181	WindFacility	Wind Facility	M	1		Unrestricted
182	GovernmentAndMilitaryFCode	Codes representing government and military feature types			<<CodeList>>	Lines 183 - 210
183	BureauOfLandManagmentFacility	Bureau of Land Management Facility	M	1		Unrestricted
184	City/TownHall	City or Town Hall	M	1		Unrestricted
185	CourtHouse	Court House	M	1		Unrestricted
186	CriticalFederalContractorFacility	Critical Federal Contractor Facility	M	1		Unrestricted
187	DeparmentOfMotorVehicleFacility	Department of Motor Vehicles Facility	M	1		Unrestricted

188	DepartmentOfEnergyFacility	Department of Energy Facility	M	1		Unrestricted
189	DepartmentOfPublicWorks	Department of Public Works	M	1		Unrestricted
190	DepartmentOfStateFacility	Department of State Facility	M	1		Unrestricted
191	DoD/MilitaryFacility	Department of Defense or Military Facility	M	1		Unrestricted
192	FieldType	Field Type	M	1		Unrestricted
193	GovernmentOrMilitaryFacility	Government or Military Facility	M	1		Unrestricted
194	GovernorResidence	Governor Residence	M	1		Unrestricted
195	IntelligenceFacility	Intelligence Facility	M	1		Unrestricted
196	LocalGovernmentFacility	Local Government Facility	M	1		Unrestricted
197	MergePolicy	Merge Policy	M	1		Unrestricted
198	NASAFacility	National Aeronautics and Space Administration Facility	M	1		Unrestricted
199	NationalGuardArmory/Base	National Guard Armory or Base	M	1		Unrestricted
200	NationalParkServiceFacility	National Park Service Facility	M	1		Unrestricted
201	SplitPolicy	Split Policy	M	1		Unrestricted
202	StateCapitol	State Capitol Facility	M	1		Unrestricted
203	StateGovernmentFacility	State Government Facility	M	1		Unrestricted
204	StateSupremeCourt	State Supreme Court Facility	M	1		Unrestricted
205	TribalGovernmentFacility	Tribal Government Facility	M	1		Unrestricted
206	USCapitol	US Capitol Facility	M	1		Unrestricted
207	USForestServiceFacility	United States Forest Service Facility	M	1		Unrestricted
208	USGovernmentFacility	United States Government Facility	M	1		Unrestricted
209	USSupremeCourt	United States Supreme Court Facility	M	1		Unrestricted
210	WhiteHouse	White House Facility	M	1		Unrestricted
211	HealthAndMedicalFCode	Codes representing health and medical feature types			<<CodeList>>	Lines 212 - 230
212	BloodBank	Blood Bank	M	1		Unrestricted
213	CenterForDiseaseControlOffice	Center for Disease Control Office	M	1		Unrestricted
214	DayCareFacility	Day Care Facility	M	1		Unrestricted
215	DiagnosticLaboratory	Diagnostic Laboratory	M	1		Unrestricted
216	FieldType	Field Type	M	1		Unrestricted
217	HealthOrMedicalFacility	Health or Medical Facility	M	1		Unrestricted
218	HomelessShelter	Homeless Shelter	M	1		Unrestricted
219	Hospital/MedicalCenter	Hospital or Medical Center	M	1		Unrestricted
220	MedicalResearchLaboratory	Medical Research Laboratory	M	1		Unrestricted

221	MedicalStockpileFacility	Medical Stockpile Facility	M	1		Unrestricted
222	MergePolicy	Merge Policy	M	1		Unrestricted
223	Morgue	Morge	M	1		Unrestricted
224	Mortuary/Crematory	Mortuary or Crematory	M	1		Unrestricted
225	NursingHome/LongTermCare	Nursing Home or Long Term Care Facility	M	1		Unrestricted
226	OutpatientClinic	Outpatient Clinic	M	1		Unrestricted
227	Pharmacy	Pharmacy	M	1		Unrestricted
228	PublicHealthOffice	Public Health Office	M	1		Unrestricted
229	RehabilitationCenter	Rehabilitatiion Center	M	1		Unrestricted
230	SplitPolicy	Split Policy	M	1		Unrestricted
231	IndustryFCode	Codes representing industry related feature types			<<CodeList>>	Lines 232 - 262
232	AircraftManufacturingFacility	Aircraft Manufacturing Facility	M	1		Unrestricted
233	ArmamentManufacturingFacility	Armament Manufacturing Facility	M	1		Unrestricted
234	AutomotiveManufacturingFacility	Automotive Manufacturing Facility	M	1		Unrestricted
235	ChemicalFacility	Chemical Facility	M	1		Unrestricted
236	Durable/NonDurableGoodsFacility	Durable and/or Non-Durable Goods Facility	M	1		Unrestricted
237	ExplosivesFacility	Explosives Facility	M	1		Unrestricted
238	FertilizerFacility	Fertilizer Facility	M	1		Unrestricted
239	FieldType	Field Type	M	1		Unrestricted
240	HazardousMaterialsFacility	Hazardous Materials Facility	M	1		Unrestricted
241	HazardousWasteFacility	Hazardous Waste Facility	M	1		Unrestricted
242	HouseholdProductsFacility	Household Products Facility	M	1		Unrestricted
243	IndustrialFacility	Industrial Facility	M	1		Unrestricted
244	Landfill	Landfill	M	1		Unrestricted
245	LumberMill/SawMill	Lumber and/or Saw Mill	M	1		Unrestricted
246	MaintenanceYard	Maintenance Yard	M	1		Unrestricted
247	ManufacturingFacility	Manufacturing Facility	M	1		Unrestricted
248	ManufacturingWarehouse	Manufacturing Warehouse	M	1		Unrestricted
249	MergePolicy	Merge Policy	M	1		Unrestricted
250	Mine	Mine	M	1		Unrestricted
251	MineUraniumFacility	Uranium Mine Facility	M	1		Unrestricted
252	MineWasteDisposalSite	Mine Waste Disposal Site	M	1		Unrestricted
253	NuclearWeaponsFacility	Nuclear Weapons Facility	M	1		Unrestricted

254	OreProcessingFacility	Ore Processing Facility	M	1		Unrestricted
255	Paper/PulpMill	Paper and/or Pulp Mill	M	1		Unrestricted
256	PharmaceuticalPlant	Pharmaceutical Plant	M	1		Unrestricted
257	SemiconductorAndMicrochipFacility	Semi-Conductor and Microchip Facility	M	1		Unrestricted
258	Shipyard	Shipyard	M	1		Unrestricted
259	SplitPolicy	Split Policy	M	1		Unrestricted
260	SteelPlant	Steel Plan	M	1		Unrestricted
261	SuperfundSite	Superfund Site	M	1		Unrestricted
262	TextilePlant	Textile Plant	M	1		Unrestricted
263	InformationAndCommunicationFCode	Codes representing information and communication feature types			<<CodeList>>	Lines 264 - 275
264	CommunicationTower	Communication Tower	M	1		Unrestricted
265	DataCenter	Data Center	M	1		Unrestricted
266	FieldType	Field Type	M	1		Unrestricted
267	InformationOrCommunicationFacility	Information or Communication Facility	M	1		Unrestricted
268	InternetDNSLocation/OtherNode	Internet Domain Name System Location and/or Other Node	M	1		Unrestricted
269	InternetMetroAreaExchange/Hub	Internet Metro Area Exhange and/or Hub	M	1		Unrestricted
270	InternetServiceProvider	Internet Service Provider	M	1		Unrestricted
271	MergePolicy	Merge Policy	M	1		Unrestricted
272	Radio/TVBroadcastFacility	Radio or TV Broadcast Facility	M	1		Unrestricted
273	SatelliteGroundStation	Satellite Ground Station	M	1		Unrestricted
274	SplitPolicy	Split Policy	M	1		Unrestricted
275	TelephoneFacility	Telephone Facility	M	1		Unrestricted
276	MailAndShippingFCode	Codes representing mail and shipping feature types			<<CodeList>>	Lines 277 - 284
277	AirShippingHub	Air Shipping Hub	M	1		Unrestricted
278	BulkMailCenter	Bulk Mail Center	M	1		Unrestricted
279	FieldType	Field Type	M	1		Unrestricted
280	MailOrShippingFacility	Mail or Shipping Facility	M	1		Unrestricted
281	MergePolicy	Merge Policy	M	1		Unrestricted
282	PostOffice	Post Office	M	1		Unrestricted
283	PrivateAndExpressShippingFacility	Private and Express Shipping Facility	M	1		Unrestricted
284	SplitPolicy	Split Policy	M	1		Unrestricted

285	PointLocationTypeDomain	Codes representing point location feature types			<<CodeList>>	Lines 286 - 292
286	Centroid	Centroid	M	1		Unrestricted
287	EgressOrEntrance	Egress or Entrance	M	1		Unrestricted
288	FieldType	Field Type	M	1		Unrestricted
289	MergePolicy	Merge Policy	M	1		Unrestricted
290	SplitPolicy	Split Policy	M	1		Unrestricted
291	TurnOffLocation	Turn Off Location	M	1		Unrestricted
292	Unknown	Unknown	M	1		Unrestricted
293	PublicAttractionsAndLandmarkStructuresFCode	Codes representing public attractions and landmark structure types			<<CodeList>>	Lines 294 - 324
294	Amusement/WaterPark	Amusement or Water Park	M	1		Unrestricted
295	Arboretum/BotanicalGarden	Arboretum or Botanical Garden	M	1		Unrestricted
296	Auditorium/ConcertHall/Theater/OperaHouse	Auditorium, Concert Hall, Theater, or Opera House	M	1		Unrestricted
297	Campground	Campground	M	1		Unrestricted
298	Cemetery	Cemetery	M	1		Unrestricted
299	Community/RecreationCenter	Community and/or Recreation Center	M	1		Unrestricted
300	ConventionCenter	Convention Center	M	1		Unrestricted
301	Fair/Exhibition/RodeoGrounds	Fair, Exhibition, or Rodeo Grounds	M	1		Unrestricted
302	FieldType	Field Type	M	1		Unrestricted
303	GolfCourse	Golf Course	M	1		Unrestricted
304	HistoricSite/PointOfInterest	Historic Site or Point of Interest	M	1		Unrestricted
305	HouseOfWorship	House of Worship	M	1		Unrestricted
306	IceArena	Ice Arena	M	1		Unrestricted
307	Library	Library	M	1		Unrestricted
308	Lighthouse/Light	Lighthouse and/or Light	M	1		Unrestricted
309	LookoutTower	Lookout Tower	M	1		Unrestricted
310	Marina	Marina	M	1		Unrestricted
311	MergePolicy	Merge Policy	M	1		Unrestricted
312	Museum	Museum	M	1		Unrestricted
313	NationalSymbol/Monument	National Symbol or Monument	M	1		Unrestricted
314	Observatory	Observatory	M	1		Unrestricted
315	OutdoorTheater/Amphitheater	Outdoor Theater or Ampitheater	M	1		Unrestricted
316	PicnicArea	Picnic Area	M	1		Unrestricted

317	PublicAttractionOrLandmarkBuilding	Public Attraction or Landmark Building	M	1		Unrestricted
318	Racetrack/Dragstrip	Racetrack or Dragstrip	M	1		Unrestricted
319	SkiArea/SkiResort	Ski Area or Resort	M	1		Unrestricted
320	SplitPolicy	Split Policy	M	1		Unrestricted
321	SportsArena/Stadium	Sports Arena or Stadium	M	1		Unrestricted
322	Trailhead	Trailhead	M	1		Unrestricted
323	Visitor/InformationCenter	Visitor and/or Information Center	M	1		Unrestricted
324	Zoo	Zoo	M	1		Unrestricted
325	TransportationFacilitiesFCode	Codes representing transportation facility feature types			<<CodeList>>	Lines 326 - 374
326	AirportTerminal	Airport Terminal Facility	M	1		Unrestricted
327	AirSupport/MaintenanceFacility	Air Support or Maintenance Facility	M	1		Unrestricted
328	AirTrafficControlCenter/CommandCenter	Air Traffic Control or Command Center	M	1		Unrestricted
329	BoatRamp/Dock	Boat Ramp or Dock	M	1		Unrestricted
330	BorderCrossing/PortOfEntry	Border Crossing or Port of Entry	M	1		Unrestricted
331	Bridge	Bridge	M	1		Unrestricted
332	Bridge:LightRail/Subway	Light Rail or Subway	M	1		Unrestricted
333	Bridge:Railroad	Railroad Bridge	M	1		Unrestricted
334	Bridge:Road	Road Bridge	M	1		Unrestricted
335	BusStation/DispatchFacility	Bus Station or Dispatch Facility	M	1		Unrestricted
336	FerryTerminal/DispatchFacility	Ferry Terminal or Dispatch Facility	M	1		Unrestricted
337	FieldType	Field Type	M	1		Unrestricted
338	Harbor/Marina	Harbor or Marina	M	1		Unrestricted
339	Helipad/Heliport/Helispot	Helipad, Heliport, or Helispot	M	1		Unrestricted
340	LaunchFacility	Launch Facility	M	1		Unrestricted
341	LaunchPad	Launch Pad	M	1		Unrestricted
342	LightRailPowerSubstation	Light Rail Power Substation	M	1		Unrestricted
343	LightRailStation	Light Rail Station	M	1		Unrestricted
344	MergePolicy	Merge Policy	M	1		Unrestricted
345	ParkAndRide/CommuterLot	Park and Ride or Commuter Lot	M	1		Unrestricted
346	ParkingLotStructure/Garage	Parking Lot Structure or Garage	M	1		Unrestricted
347	Pier/Wharf/Quay/Mole	Pier, Wharf, Quay, or Mole Facility	M	1		Unrestricted
348	PortFacility	Port Facility	M	1		Unrestricted
349	PortFacility:CommercialPort	Commercial Port Facility	M	1		Unrestricted

350	PortFacility:Crane	Crane Port Facility	M	1		Unrestricted
351	PortFacility:MaintenanceAndFuelFacility	Maintenance and Fuel Port Facility	M	1		Unrestricted
352	PortFacility:ModalTransferFacility	Modal Transfer Port Facility	M	1		Unrestricted
353	PortFacility:PassengerTerminal	Passenger Terminal Port Facility	M	1		Unrestricted
354	PortFacility:WarehouseStorage/ContainerYard	Warehouse Storage or Container Yard Port Facility	M	1		Unrestricted
355	RailroadCommand/ControlFacility	Railroad Command or Control Facility	M	1		Unrestricted
356	RailroadFacility	Railroad Facility	M	1		Unrestricted
357	RailroadFreightLoadingFacility	Railroad or Freight Loading Facility	M	1		Unrestricted
358	RailroadMaintenance/FuelFacility	Railroad Maintenance or Fuel Facility	M	1		Unrestricted
359	RailroadRoundhouse/Turntable	Railroad Roundhouse or Turntable Facility	M	1		Unrestricted
360	RailroadStation	Railroad Station	M	1		Unrestricted
361	RailroadYard	Railroad Yard	M	1		Unrestricted
362	RestStop/RoadsidePark	Rest Stop or Roadside Park Facility	M	1		Unrestricted
363	SeaplaneAnchorage/Base	Seaplane Anchorage or Base Facility	M	1		Unrestricted
364	Snowshed	Snow Shed	M	1		Unrestricted
365	SplitPolicy	Split Policy	M	1		Unrestricted
366	SubwayStation	Subway Station	M	1		Unrestricted
367	TollBooth/Plaza	Toll Booth Plaza	M	1		Unrestricted
368	TransportationFacility	Transportation Facility	M	1		Unrestricted
369	TruckStop	Truck Stop Facility	M	1		Unrestricted
370	Tunnel	Tunnel	M	1		Unrestricted
371	Tunnel:LightRail/Subway	Light Rail or Subway Tunnel	M	1		Unrestricted
372	Tunnel:Railroad	Railroad Tunnel	M	1		Unrestricted
373	Tunnel:Road	Road Tunnel	M	1		Unrestricted
374	WeighStation/InspectionStation	Weigh or Inspection Data Station	M	1		Unrestricted
375	WaterSupplyAndTreatmentFCode	Codes representing water supply and treatment feature types			<<CodeList>>	Lines 376 - 388
376	FieldType	Field Type	M	1		Unrestricted
377	MergePolicy	Merge Policy	M	1		Unrestricted
378	PotableWaterFacility	Potable Water Facility	M	1		Unrestricted
379	PublicWaterSupplyIntake	Public Water Supply Intake	M	1		Unrestricted
380	PublicWaterSupplyWell	Public Water Supply Well	M	1		Unrestricted
381	SplitPolicy	Split Policy	M	1		Unrestricted
382	WastewaterTreatmentPlant	Wastewater Treatment Plant	M	1		Unrestricted

383	WaterPumpingStation	Water Pumping Station	M	1		Unrestricted
384	WaterSupplyOrTreatmentFacility	Water Supply or Treatment Facility	M	1		Unrestricted
385	WaterSystemControlFacility	Water System Control Facility	M	1		Unrestricted
386	WaterTank	Water Tank	M	1		Unrestricted
387	WaterTower	Water Tower	M	1		Unrestricted
388	WaterTreatmentFacility	Water Treatment Facility	M	1		Unrestricted
389	WeatherFCode	Codes representing weather related feature types			<<CodeList>>	Lines 390 - 397
390	FieldType	Field Type	M	1		Unrestricted
391	MergePolicy	Merge Policy	M	1		Unrestricted
392	SplitPolicy	Split Policy	M	1		Unrestricted
393	WarningCenter	Warning Center	M	1		Unrestricted
394	WeatherDataCenter	Weather Data Center	M	1		Unrestricted
395	WeatherFacilityOrStructure	Weather Facility or Structure	M	1		Unrestricted
396	WeatherForecastOffice	Weather Forecast Office	M	1		Unrestricted
397	WeatherRadarSite	Weather Radar Site	M	1		Unrestricted

Struct Features						
Line	**Name/RoleName**	**Definition**	**Obligation / Condition**	**Maximum Occurrence**	**Data Type**	**Domain**
398	StructComplex	Structure Complex			<<Feature>>	Lines 399 - 402
399	ComplexID	Complex identification	M	1	CharacterString	Unrestricted
400	FCode	Codes representing structure feature types	M	1	int	Unrestricted
401	FType	Structure feature types	M	1	StructSubtypes	Unrestricted
402	Name	Name of structure complex feature	M	1	CharacterString	Unrestricted
403	StructDDD	Three-Dimensional Structure			<<Feature>>	Lines 404 - 411
404	BaseHeight	Elevation at ground level	M	1	real	Unrestricted
405	BldHeight	Building Height	M	1	real	Unrestricted
406	DDDID	Three-dimensional identification	M	1	CharacterString	Unrestricted
407	FCode	Codes representing three-dimensional structure feature types	M	1	int	Unrestricted
408	FType	Three-dimensional structure types	M	1	StructSubtypes	Unrestricted
409	Name	Name of structure feature	M	1	CharacterString	Unrestricted
410	NumFloors	Number of floors contained within structure feature	M	1	int	Unrestricted
411	Role name:	Role of structure feature	O	1	<Feature> StructDDD	
412	StructFootprint	Structure Footprint			<<Feature>>	Lines 413 - 416

413	FCode	Codes representing structure footprint feature types	M	1	int	Unrestricted
414	FootID	Structure footprint identification	M	1	CharacterString	Unrestricted
415	FType	Structure footprint feature types	M	1	StructSubtypes	Unrestricted
416	Name	Structure name	M	1	CharacterString	Unrestricted
417	StructPoint	Structure Point			<<Feature>>	Lines 418 - 431
418	Address	Street address of the structure	M	1	CharacterString	Unrestricted
419	AddressBuildingName	Name of the structure at the address	M	1	CharacterString	Unrestricted
420	AdminType	Type of administrative structure	M	1	OwnerClassDomain	Unrestricted
421	City	City address	M	1	CharacterString	Unrestricted
422	ComplexID	Complex identification	M	1	CharacterString	Unrestricted
423	FCode	Codes representing structure feature types	M	1	int	Unrestricted
424	FootID	Structure footprint identification	M	1	CharacterString	Unrestricted
425	FType	Structure feature types	M	1	StructSubtypes	Unrestricted
426	GNISID	Geographic Names Information System Identification	M	1	CharacterString	Unrestricted
427	IsLandmark	Is the structure a landmark?	M	1	boolean	Unrestricted
428	Name	Name of structure feature	M	1	CharacterString	Unrestricted
429	PointLocationType	Structure Location Type	M	1	PointLocationTypeDomain	Unrestricted
430	State	State the structure feature is located	M	1	CharacterString	Unrestricted
431	Zipcode	Structure feature address zip code	M	1	CharacterString	Unrestricted

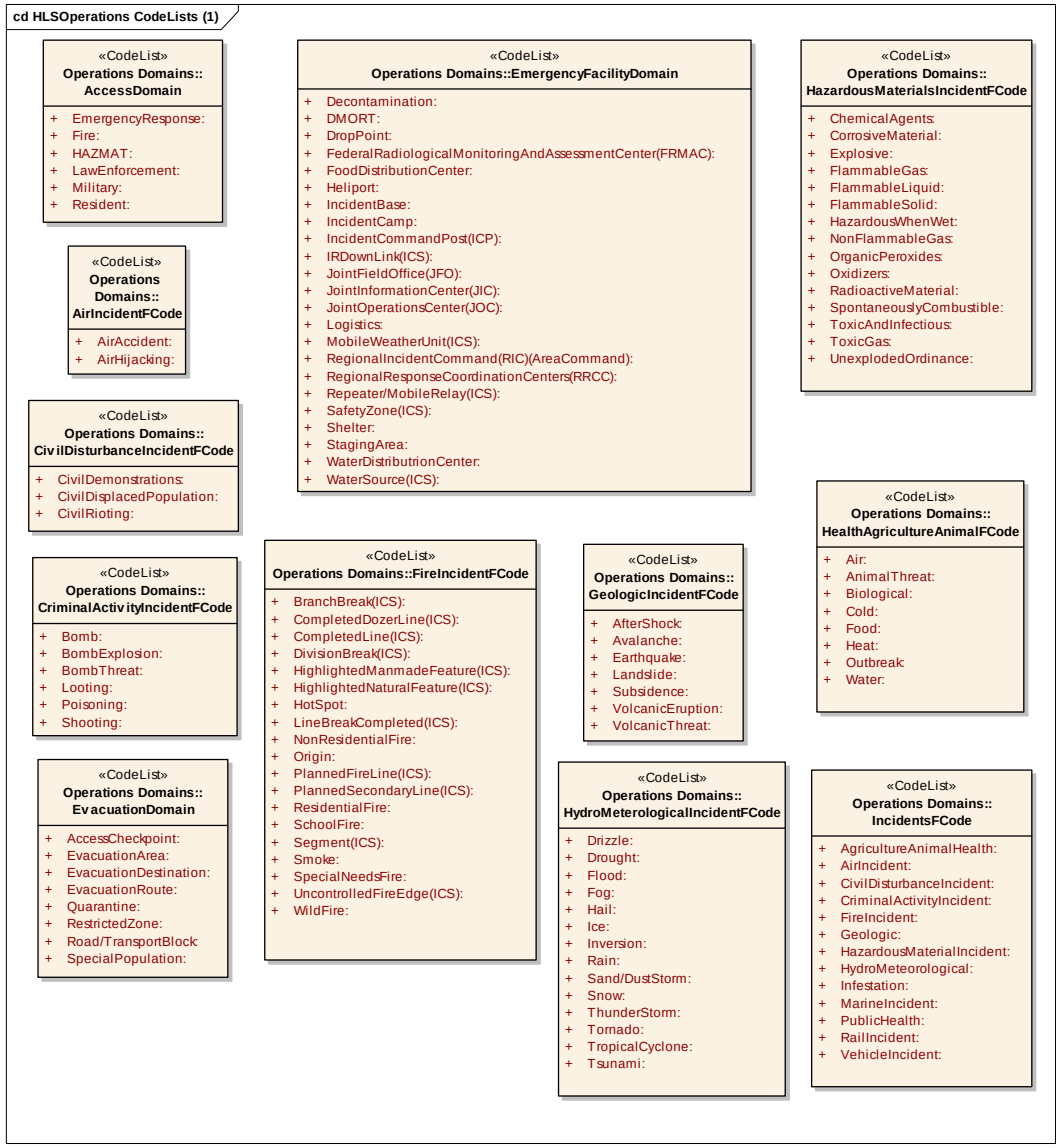
Struct Objects						
Line	**Name/RoleName**	**Definition**	**Obligation / Condition**	**Maximum Occurrence**	**Data Type**	**Domain**
432	StructBridgeDetail	Structure Bridge Detail				Lines 433 - 454
433	Condition	Condition	M	1	CharacterString	Unrestricted
434	Cost	Replacement cost	M	1	real	Unrestricted
435	FeaturePermID	Unique Feature Permanent Identification	M	1	CharacterString	Unrestricted
436	FoundationType	Foundation Type	M	1	CharacterString	Unrestricted
437	HazusClass	Occupancy Class	M	1	CharacterString	Unrestricted
438	HazusTract	Census Tract	M	1	CharacterString	Unrestricted
439	Length	Length of Bridge Structure	M	1	real	Unrestricted
440	MaxSpanLength	Maximum Span Length (feet)	M	1	real	Unrestricted
441	NumSpans	Number of Spans	M	1	int	Unrestricted
442	Owner	Structure Owner	M	1	CharacterString	Unrestricted

443	PierType	Pier Type	M	1	CharacterString	Unrestricted
444	Remarks	Additional remarks concerning structure feature	M	1	CharacterString	Unrestricted
445	ScourIndex	Scour Index	M	1	CharacterString	Unrestricted
446	SeatLength	Seat Length (feet)	M	1	real	Unrestricted
447	SeatWidth	Seat Width (feet)	M	1	real	Unrestricted
448	SkewAngle	Skew Angle (degrees)	M	1	real	Unrestricted
449	Traffic	Traffic	M	1	int	Unrestricted
450	TrafficIndex	Traffic Index	M	1	CharacterString	Unrestricted
451	Type	Type	M	1	CharacterString	Unrestricted
452	Width	Structure Width	M	1	real	Unrestricted
453	YearBuilt	Year structure was built	M	1	int	Unrestricted
454	YearRemodeled	Year structure was remodeled	M	1	int	Unrestricted
455	StructFCodeDetail	Codes representing structure complex detailed feature types				Lines 456 - 461
456	FCode	Codes representing structure feature types	M	1		Unrestricted
457	GDBDescription	Geodatabase description	M	1		Unrestricted
458	HAZUSLayer	Hazards United States Layer	M	1		Unrestricted
459	HSIPMEDSCategory	Homeland Security Information Program Minimal Essential Datasets Category	M	1		Unrestricted
460	HSIPMEDSDescription	Homeland Security Information Program Minimal Essential Datasets Description	M	1		Unrestricted
461	HSIPMEDSSector	Homeland Security Information Program Minimal Essential Datasets Sector	M	1		Unrestricted
462	StructStructureDetail	Structure Detail				Lines 463 - 489
463	AreaSQ	Area in square feet	M	1	real	Unrestricted
464	BackupPower	Does the structure have backup power?	M	1	int	Unrestricted
465	Capacity	Structure capacity	M	1	int	Unrestricted
466	Contact	Structure emergency point of contact	M	1	CharacterString	Unrestricted
467	Cost	Structure replacement cost (thousands of dollars)	M	1	real	Unrestricted
468	Demand	Demand	M	1	int	Unrestricted
469	District	Jurisdiction	M	1	CharacterString	Unrestricted
470	FeaturePermID	Unique Feature Permanent Identifier	M	1	CharacterString	Unrestricted
471	HazusClass	Occupancy class	M	1	CharacterString	Unrestricted
472	HazusTract	Census tract	M	1	CharacterString	Unrestricted

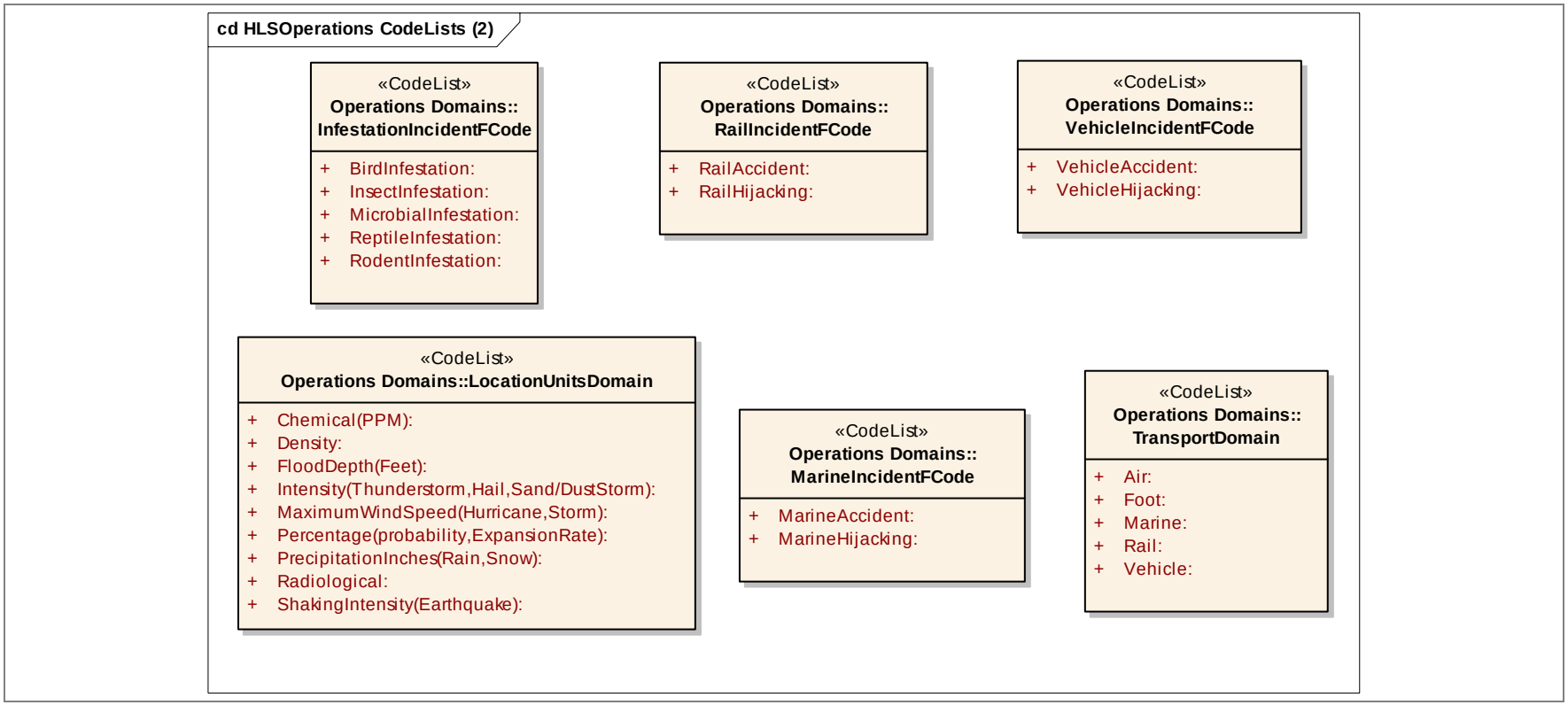
473	Kitchen	Kitchen	M	1	int	Unrestricted
474	Length	Length	M	1	real	Unrestricted
475	NumAmbulances	Number of ambulances	M	1	int	Unrestricted
476	NumBeds	Number of beds	M	1	int	Unrestricted
477	NumBerths	Number of berths	M	1	int	Unrestricted
478	NumCranes	Number of cranes	M	1	int	Unrestricted
479	NumStories	Number of stories	M	1	int	Unrestricted
480	NumStudents	Number of students	M	1	int	Unrestricted
481	NumTrucks	Number of trucks	M	1	int	Unrestricted
482	Owner	Structure owner	M	1	CharacterString	Unrestricted
483	PhoneNumber	Structure owner phone number	M	1	CharacterString	Unrestricted
484	Remarks	Additional remarks relating to structure	M	1	CharacterString	Unrestricted
485	Traffic	Hazards United States Index Value	M	1	int	Unrestricted
486	UseOrFunction	Primary use or function of structure	M	1	CharacterString	Unrestricted
487	Width	Structure width	M	1	real	Unrestricted
488	YearBuilt	Year structure built	M	1	int	Unrestricted
489	YearUpgraded	Year structure upgraded	M	1	int	Unrestricted

HLS Operations

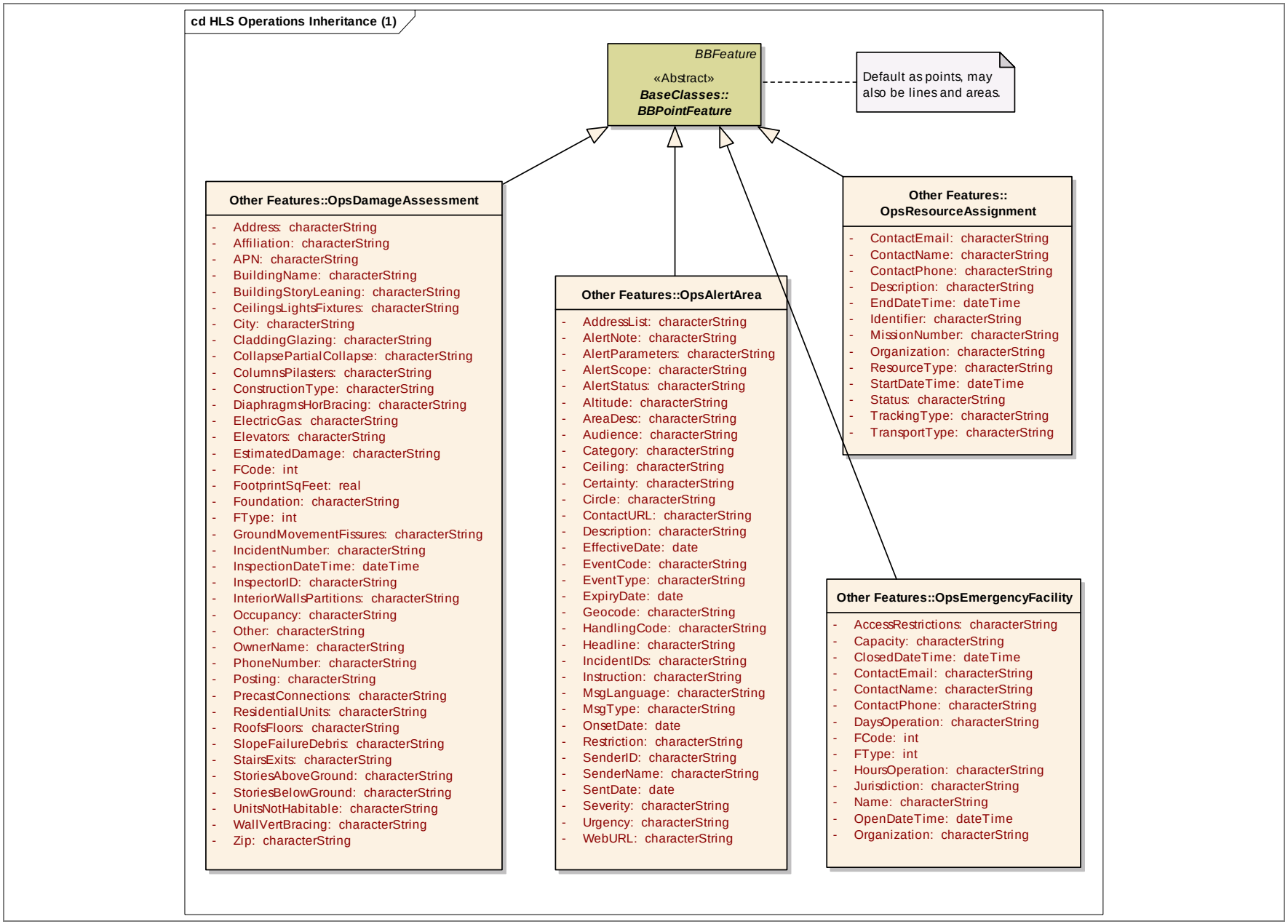
HLS Operations Codelists (1 of 2)



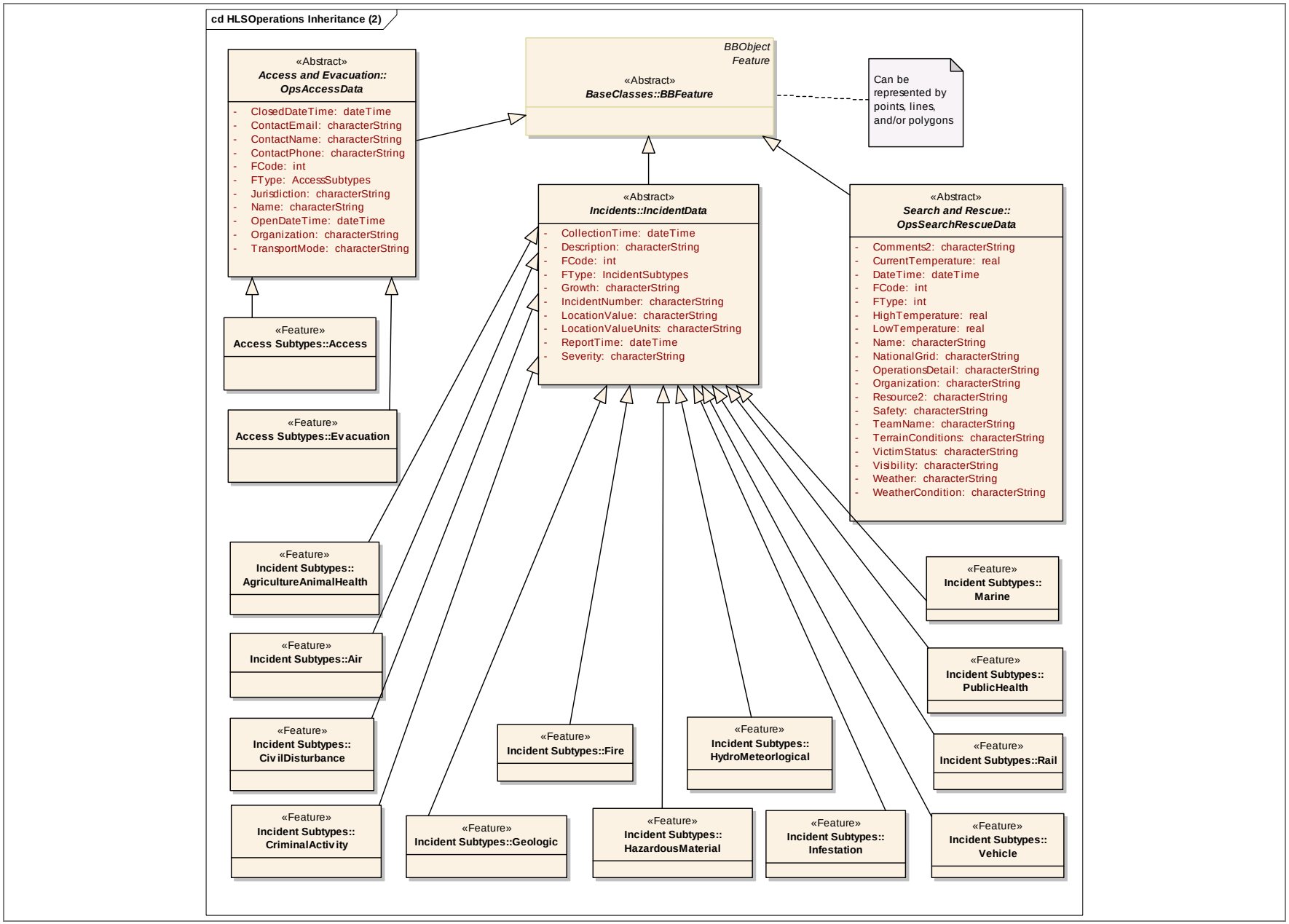
HLS Operations Codelists (2 of 2)



HLS Operations Inheritance (1 of 2)



HLS Operations Inheritance (2 of 2)



Access and Evacuation						
Line	**Name/RoleName**	**Definition**	**Obligation / Condition**	**Maximum Occurrence**	**Data Type**	**Domain**
1	OpsAccessArea	Operations Access Area			OpsAccessArea	
2	OpsAccessData	Operations Access Data			<<Abstract>>	Lines 3 - 13
3	ClosedDateTime	End of evacuation	M	1	dateTime	Unrestricted
4	ContactEmail	Contact e-mail address	M	1	characterString	Unrestricted
5	ContactName	Contact name	M	1	characterString	Unrestricted
6	ContactPhone	Contact Phone number	M	1	characterString	Unrestricted
7	FCode	Code representing the type of feature evacuation or access	M	1	int	Unrestricted
8	FType	Type of feature evacuation or access	M	1	AccessSubtypes	Unrestricted
9	Jurisdiction	The name of the jurisdiction in which the feature resides	M	1	characterString	Unrestricted
10	Name	Feature name	M	1	characterString	Unrestricted
11	OpenDateTime	Start of evacuation and/or reentry	M	1	dateTime	Unrestricted
12	Organization	Organization responsible for the facility	M	1	characterString	Unrestricted
13	TransportMode	Type of transport involved	M	1	characterString	Unrestricted
14	OpsAccessLine	Operations Access Line				
15	OpsAccessPoint	Operations Access Point				

Access Subtypes						
Line	**Name/RoleName**	**Definition**	**Obligation / Condition**	**Maximum Occurrence**	**Data Type**	**Domain**
16	Access	Feature type is access			<<Feature>>	
17	Evacuation	Feature type is evacuation			<<Feature>>	

Incidents						
Line	**Name/RoleName**	**Definition**	**Obligation / Condition**	**Maximum Occurrence**	**Data Type**	**Domain**
18	IncidentData	Incident Data			<<Abstract>>	Lines 19 - 28
19	CollectionTime	Time the incident data was collected	M	1	dateTime	Unrestricted
20	Description	Description of the incident	M	1	characterString	Unrestricted
21	FCode	Code representing the type of incident	M	1	int	Unrestricted
22	FType	Type of incident	M	1	IncidentSubtypes	Unrestricted
23	Growth	Incident progression growth	M	1	characterString	Unrestricted
24	IncidentNumber	Name or number of the incident	M	1	characterString	Unrestricted
25	LocationValue	Scaled value of incident location	M	1	characterString	Unrestricted
26	LocationValueUnits	Units for the value of the incident location	M	1	characterString	Unrestricted
27	ReportTime	Reported time of incident	M	1	dateTime	Unrestricted

28	Severity	Severity of incident	M	1	characterString	Unrestricted
29	OpsIncidentArea	Operations Incident Area				
30	OpsIncidentLine	Operations Incident Line				
31	OpsIncidentPoint	Operations Incident Point				

Incident Subtypes						
Line	**Name/RoleName**	**Definition**	**Obligation / Condition**	**Maximum Occurrence**	**Data Type**	**Domain**
32	AgricultureAnimalHealth	Agriculture, animal, health related incident			<<Feature>>	
33	Air	Air incident			<<Feature>>	
34	CivilDisturbance	Civil disturbance incident			<<Feature>>	
35	CriminalActivity	Criminal activity incident			<<Feature>>	
36	Fire	Fire incident			<<Feature>>	
37	Geologic	Geologic incident			<<Feature>>	
38	HazardousMaterial	Hazardous material incident			<<Feature>>	
39	HydroMeteorlogical	Hydro-meteorological incident			<<Feature>>	
40	Infestation	Infestation incident			<<Feature>>	
41	Marine	Marine incident			<<Feature>>	
42	PublicHealth	Public health incident			<<Feature>>	
43	Rail	Rail incident			<<Feature>>	
44	Vehicle	Vehicle incident			<<Feature>>	

Operations Domains						
Line	**Name/RoleName**	**Definition**	**Obligation / Condition**	**Maximum Occurrence**	**Data Type**	**Domain**
45	AccessDomain	Codes representing access types			<<CodeList>>	Lines 46 - 51
46	EmergencyResponse	Emergency Response	M	1		Unrestricted
47	Fire	Fire	M	1		Unrestricted
48	HAZMAT	Hazardous Material(HAZMAT)	M	1		Unrestricted
49	LawEnforcement	Law Enforcement	M	1		Unrestricted
50	Military	Military	M	1		Unrestricted
51	Resident	Resident	M	1		Unrestricted
52	AirIncidentFCode	Codes representing air incident feature types			<<CodeList>>	Lines 53 - 54
53	AirAccident	Air Accident	M	1		Unrestricted
54	AirHijacking	Air Hijacking	M	1		Unrestricted
55	CivilDisturbanceIncidentFCode	Codes representing civil disturbance incident			<<CodeList>>	Lines 56 - 58

		feature types				
56	CivilDemonstrations	Civil Demonstrations	M	1		Unrestricted
57	CivilDisplacedPopulation	Civil Displaced Population	M	1		Unrestricted
58	CivilRioting	Civil Rioting	M	1		Unrestricted
59	CriminalActivityIncidentFCode	Codes representing operations types			<<CodeList>>	Lines 60 - 65
60	Bomb	Bomb	M	1		Unrestricted
61	BombExplosion	Bomb Explosion	M	1		Unrestricted
62	BombThreat	Bomb Threat	M	1		Unrestricted
63	Looting	Looting	M	1		Unrestricted
64	Poisoning	Poisoning	M	1		Unrestricted
65	Shooting	Shooting	M	1		Unrestricted
66	EmergencyFacilityDomain	Emergency Facility Domain			<<CodeList>>	Lines 67 - 89
67	Decontamination	Decontamination Facility	M	1		Unrestricted
68	DMORT	Disaster Mortuary Operational Response Team Facility	M	1		Unrestricted
69	DropPoint	Drop Point Location	M	1		Unrestricted
70	FederalRadiologicalMonitoringAndAssessmentCenter(FRMAC)	Federal Radiological Monitoring And Assessment Center	M	1		Unrestricted
71	FoodDistributionCenter	Food Distribution Center	M	1		Unrestricted
72	Heliport	Heliport Landing Facility	M	1		Unrestricted
73	IncidentBase	Incident Base	M	1		Unrestricted
74	IncidentCamp	Incident Camp	M	1		Unrestricted
75	IncidentCommandPost(ICP)	Incident Command Post (ICP)	M	1		Unrestricted
76	IRDownLink(ICS)	IR Down Link (Incident Command System)	M	1		Unrestricted
77	JointFieldOffice(JFO)	Joint Field Office (JFO)	M	1		Unrestricted
78	JointInformationCenter(JIC)	Joint Information Center (JIC)	M	1		Unrestricted
79	JointOperationsCenter(JOC)	Joint Operations Center (JOC)	M	1		Unrestricted
80	Logistics	Logistics	M	1		Unrestricted
81	MobileWeatherUnit(ICS)	Mobile Weather Unit (Incident Command System)	M	1		Unrestricted
82	RegionalIncidentCommand(RIC)(AreaCommand)	Regional Incident Command (RIC) (Area Command)	M	1		Unrestricted
83	RegionalResponseCoordinationCenters(RRCC)	Regional Response Coordination Centers (RRCC)	M	1		Unrestricted
84	Repeater/MobileRelay(ICS)	Mobile Relay (Incident Command System)	M	1		Unrestricted

85	SafetyZone(ICS)	Safety Zone (Incident Command System)	M	1		Unrestricted
86	Shelter	Shelter	M	1		Unrestricted
87	StagingArea	Staging Area	M	1		Unrestricted
88	WaterDistributrionCenter	Water Distribution Center	M	1		Unrestricted
89	WaterSource(ICS)	Water Source (Incident Command System)	M	1		Unrestricted
90	EvacuationDomain	Codes representing evacuation related feature types			<<CodeList>>	Lines 91 - 98
91	AccessCheckpoint	Access Checkpoint	M	1		Unrestricted
92	EvacuationArea	Evacuation Area	M	1		Unrestricted
93	EvacuationDestination	Evacuation Destination	M	1		Unrestricted
94	EvacuationRoute	Evacuation Route	M	1		Unrestricted
95	Quarantine	Quarantine	M	1		Unrestricted
96	RestrictedZone	Restricted Zones	M	1		Unrestricted
97	Road/TransportBlock	Road or Transport Block	M	1		Unrestricted
98	SpecialPopulation	Special Population	M	1		Unrestricted
99	FireIncidentFCode	Codes representing fire incident feature types			<<CodeList>>	Lines 100 - 118
100	BranchBreak(ICS)	Branch Break (Incident Command System)	M	1		Unrestricted
101	CompletedDozerLine(ICS)	Completed Dozer Line (Incident Command System)	M	1		Unrestricted
102	CompletedLine(ICS)	Completed Line (Incident Command System)	M	1		Unrestricted
103	DivisionBreak(ICS)	Division Break (Incident Command System)	M	1		Unrestricted
104	HighlightedManmadeFeature(ICS)	Highlighted Manmade Feature (Incident Command System)	M	1		Unrestricted
105	HighlightedNaturalFeature(ICS)	Highlighted Natural Feature (Incident Command System)	M	1		Unrestricted
106	HotSpot	Hot Spot	M	1		Unrestricted
107	LineBreakCompleted(ICS)	Line Break Completed (Incident Command System)	M	1		Unrestricted
108	NonResidentialFire	Non-Residential Fire	M	1		Unrestricted
109	Origin	Origin of Fire	M	1		Unrestricted
110	PlannedFireLine(ICS)	Planned Fire Line (Incident Command System)	M	1		Unrestricted
111	PlannedSecondaryLine(ICS)	Planned Secondary Line (Incident Command System)	M	1		Unrestricted

112	ResidentialFire	Residential Fire	M	1		Unrestricted
113	SchoolFire	School Fire	M	1		Unrestricted
114	Segment(ICS)	Segment (Incident Command System)	M	1		Unrestricted
115	Smoke	Smoke	M	1		Unrestricted
116	SpecialNeedsFire	Special Needs Fire	M	1		Unrestricted
117	UncontrolledFireEdge(ICS)	Uncontrolled Fire Edge (Incident Command System)	M	1		Unrestricted
118	WildFire	Wildfire	M	1		Unrestricted
119	GeologicIncidentFCode	Codes representing geologic incident types			<<CodeList>>	Lines 120 - 126
120	AfterShock	After shock	M	1		Unrestricted
121	Avalanche	Avalanche	M	1		Unrestricted
122	Earthquake	Earthquake	M	1		Unrestricted
123	Landslide	Landslide	M	1		Unrestricted
124	Subsidence	Subsidence	M	1		Unrestricted
125	VolcanicEruption	Volcanic eruption	M	1		Unrestricted
126	VolcanicThreat	Volcanic threat	M	1		Unrestricted
127	HazardousMaterialsIncidentFCode	Codes representing hazardous materials incident types			<<CodeList>>	Lines 128 - 142
128	ChemicalAgents	Chemical Agents	M	1		Unrestricted
129	CorrosiveMaterial	Corrosive Material	M	1		Unrestricted
130	Explosive	Explosive	M	1		Unrestricted
131	FlammableGas	Flammable Gas	M	1		Unrestricted
132	FlammableLiquid	Flammable Liquid	M	1		Unrestricted
133	FlammableSolid	Flammable Solid	M	1		Unrestricted
134	HazardousWhenWet	Hazardous When Wet	M	1		Unrestricted
135	NonFlammableGas	Non-Flammable Gas	M	1		Unrestricted
136	OrganicPeroxides	Organic Peroxides	M	1		Unrestricted
137	Oxidizers	Oxidizers	M	1		Unrestricted
138	RadioactiveMaterial	Radioactive Material	M	1		Unrestricted
139	SpontaneouslyCombustible	Spontaneous Combustible	M	1		Unrestricted
140	ToxicAndInfectious	Toxic and Infectious	M	1		Unrestricted
141	ToxicGas	Toxic Gas	M	1		Unrestricted
142	UnexplodedOrdinance	Unexploded Ordinance	M	1		Unrestricted

143	HealthAgricultureAnimalFCode	Codes representing Health, Agriculture, and Animal Related Incidents			<<CodeList>>	Lines 144 - 151
144	Air	Air	M	1		Unrestricted
145	AnimalThreat	Animal Threat	M	1		Unrestricted
146	Biological	Biological	M	1		Unrestricted
147	Cold	Cold	M	1		Unrestricted
148	Food	Food	M	1		Unrestricted
149	Heat	Heat	M	1		Unrestricted
150	Outbreak	Outbreak	M	1		Unrestricted
151	Water	Water	M	1		Unrestricted
152	HydroMeterologicalIncidentFCode	Codes representing Hydro-Meteorological incident types			<<CodeList>>	Lines 153 - 166
153	Drizzle	Drizzle	M	1		Unrestricted
154	Drought	Drought	M	1		Unrestricted
155	Flood	Flood	M	1		Unrestricted
156	Fog	Fog	M	1		Unrestricted
157	Hail	Hail	M	1		Unrestricted
158	Ice	Ice	M	1		Unrestricted
159	Inversion	Inversion	M	1		Unrestricted
160	Rain	Rain	M	1		Unrestricted
161	Sand/DustStorm	Sand or Dust Storm	M	1		Unrestricted
162	Snow	Snow	M	1		Unrestricted
163	ThunderStorm	Thunderstorm	M	1		Unrestricted
164	Tornado	Tornado	M	1		Unrestricted
165	TropicalCyclone	Tropical Cyclone	M	1		Unrestricted
166	Tsunami	Tsunami	M	1		Unrestricted
167	IncidentsFCode	Codes represening general incident types			<<CodeList>>	Lines 168 - 180
168	AgricultureAnimalHealth	Agriculture, Animal, Health Related Incident	M	1		Unrestricted
169	AirIncident	Air Incident	M	1		Unrestricted
170	CivilDisturbanceIncident	Civil Disturbance Incident	M	1		Unrestricted
171	CriminalActivityIncident	Criminal Activity Incident	M	1		Unrestricted
172	FireIncident	Fire Incident	M	1		Unrestricted
173	Geologic	Geologic Incident	M	1		Unrestricted

174	HazardousMaterialIncident	Hazardous Material Incident	M	1		Unrestricted
175	HydroMeteorological	Hydro-Meteorological Incident	M	1		Unrestricted
176	Infestation	Infestation Incident	M	1		Unrestricted
177	MarineIncident	Marine Incident	M	1		Unrestricted
178	PublicHealth	Public Health Incident	M	1		Unrestricted
179	RailIncident	Rail Incident	M	1		Unrestricted
180	VehicleIncident	Vehicle Incident	M	1		Unrestricted
181	InfestationIncidentFCode	Codes representing infestation incident types			<<CodeList>>	Lines 182 - 186
182	BirdInfestation	Bird infestation	M	1		Unrestricted
183	InsectInfestation	Insect infestation	M	1		Unrestricted
184	MicrobialInfestation	Microbial infestation	M	1		Unrestricted
185	ReptileInfestation	Reptile infestation	M	1		Unrestricted
186	RodentInfestation	Rodent infestation	M	1		Unrestricted
187	LocationUnitsDomain	Codes representing location unit types			<<CodeList>>	Lines 188 - 196
188	Chemical(PPM)	Chemical (Parts Per Million)	M	1		Unrestricted
189	Density	Density	M	1		Unrestricted
190	FloodDepth(Feet)	Flood Depth (Feet)	M	1		Unrestricted
191	Intensity(Thunderstorm,Hail,Sand/DustStorm)	Intensity of Thunderstorm, Hail, Sand, or Dust Storm	M	1		Unrestricted
192	MaximumWindSpeed(Hurricane,Storm)	Maximum Wind Speed of Hurricane or Storm	M	1		Unrestricted
193	Percentage(probability,ExpansionRate)	Percentage for Probability or Expansion Rate	M	1		Unrestricted
194	PrecipitationInches(Rain,Snow)	Precipitation in Inches of Rain or Snow	M	1		Unrestricted
195	Radiological	Radiological	M	1		Unrestricted
196	ShakingIntensity(Earthquake)	Shaking Intensity of Earthquake	M	1		Unrestricted
197	MarineIncidentFCode	Codes representing marine incident types			<<CodeList>>	Lines 198 - 199
198	MarineAccident	Marine Accident	M	1		Unrestricted
199	MarineHijacking	Marine Hijacking	M	1		Unrestricted
200	RailIncidentFCode	Codes representing rail incident types			<<CodeList>>	Lines 201 - 202
201	RailAccident	Rail Accident	M	1		Unrestricted
202	RailHijacking	Rail Hijacking	M	1		Unrestricted
203	TransportDomain	Codes representing transportation feature			<<CodeList>>	Lines 204 -

		types				208
204	Air	Air	M	1		Unrestricted
205	Foot	Foot	M	1		Unrestricted
206	Marine	Marine	M	1		Unrestricted
207	Rail	Rail	M	1		Unrestricted
208	Vehicle	Vehicle	M	1		Unrestricted
209	VehicleIncidentFCode	Codes representing vehicle incident types			<<CodeList>>	Lines 210 - 211
210	VehicleAccident	Vehicle Accident	M	1		Unrestricted
211	VehicleHijacking	Vehicle Hijacking	M	1		Unrestricted

Other Features						
Line	**Name/RoleName**	**Definition**	**Obligation / Condition**	**Maximum Occurrence**	**Data Type**	**Domain**
212	OpsAlertArea	Operations Alert Area				Lines 213 - 245
213	AddressList	Address list of intended recipients of the alert message	M	1	characterString	Unrestricted
214	AlertNote	Text describing the purpose or significance of the alert message	M	1	characterString	Unrestricted
215	AlertParameters	Group listing of additional parameters associated with the alert message	M	1	characterString	Unrestricted
216	AlertScope	Code denoting the intended distribution of the alert message	M	1	characterString	Unrestricted
217	AlertStatus	Code denoting the appropriate handling of the alert message	M	1	characterString	Unrestricted
218	Altitude	Specific or minimum altitude of the affected area of the alert message	M	1	characterString	Unrestricted
219	AreaDesc	Description of the subject event of the alert message	M	1	characterString	Unrestricted
220	Audience	Intended audience of the alert message	M	1	characterString	Unrestricted
221	Category	Code denoting the category of the subject event of the alert message	M	1	characterString	Unrestricted
222	Ceiling	Maximum altitude of the affected area of the alert message	M	1	characterString	Unrestricted
223	Certainty	Code denoting the certainty of the subject event of the alert message	M	1	characterString	Unrestricted
224	Circle	Paired values of a point and radius delineating the affected area of the alert message	M	1	characterString	Unrestricted
225	ContactURL	The identifier of the hyperlink associating additional contact information of the alert message	M	1	characterString	Unrestricted
226	Description	Text describing the subject event of the alert message	M	1	characterString	Unrestricted
227	EffectiveDate	Effective time of the information of the alert message	M	1	date	Unrestricted
228	EventCode	System specific code identifying the event type of the alert message	M	1	characterString	Unrestricted
229	EventType	Type of event associated with the alert message	M	1	characterString	Unrestricted

230	ExpiryDate	Expiry time of the information of the alert message	M	1	date	Unrestricted
231	Geocode	Geographic code delineating the affected area of the alert message	M	1	characterString	Unrestricted
232	HandlingCode	Code denoting the special handling of the alert message	M	1	characterString	Unrestricted
233	Headline	Text headline of the alert message	M	1	characterString	Unrestricted
234	IncidentIDs	Group listing naming the referent incident(s) of the alert message	M	1	characterString	Unrestricted
235	Instruction	Text describing the recommended action to be taken by recipients of the alert message	M	1	characterString	Unrestricted
236	MsgLanguage	Text describing the nature of the alert message	M	1	characterString	Unrestricted
237	MsgType	Code denoting the nature of the alert message	M	1	characterString	Unrestricted
238	OnsetDate	Expected time of the beginning of the subject event of the alert message	M	1	date	Unrestricted
239	Restriction	Text describing the rule for limiting distribution of the restricted	M	1	characterString	Unrestricted
240	SenderID	Identifier of the alert message	M	1	characterString	Unrestricted
241	SenderName	Text naming the originator of the alert message	M	1	characterString	Unrestricted
242	SentDate	Time and date of the origination of the alert message	M	1	date	Unrestricted
243	Severity	Code denoting the severity of the subject event of the alert message	M	1	characterString	Unrestricted
244	Urgency	Code denoting the urgency of the subject event of the alert message notification	M	1	characterString	Unrestricted
245	WebURL	Identifier of the hyperlink associating additional information with the alert message	M	1	characterString	Unrestricted
246	OpsDamageAssessment	Operations Damage Assessment				Lines 247 - 285
247	Address	Building address	M	1	characterString	Unrestricted
248	Affiliation	Affiliation of building	M	1	characterString	Unrestricted
249	APN	Assessor's parcel number	M	1	characterString	Unrestricted
250	BuildingName	Building Name	M	1	characterString	Unrestricted
251	BuildingStoryLeaning	Exterior building specific damage assessment	M	1	characterString	Unrestricted
252	CeilingsLightsFixtures	Interior building specific damage assessment	M	1	characterString	Unrestricted
253	City	Building address	M	1	characterString	Unrestricted
254	CladdingGlazing	Cladding or glazing damage assessment	M	1	characterString	Unrestricted
255	CollapsePartialCollapse	Building collapse damage assessment	M	1	characterString	Unrestricted
256	ColumnsPilasters	Columns or pilasters damage assessment	M	1	characterString	Unrestricted
257	ConstructionType	Building construction type	M	1	characterString	Unrestricted
258	DiaphragmsHorBracing	Diaphragms or hor bracing damage assessment	M	1	characterString	Unrestricted
259	ElectricGas	Electric or gas utility damage assessment	M	1	characterString	Unrestricted

260	Elevators	Elevator damage assessment	M	1	characterString	Unrestricted
261	EstimatedDamage	Estimated damage to building	M	1	characterString	Unrestricted
262	FCode	Codes representing damage assessment	M	1	int	Unrestricted
263	FootprintSqFeet	Area of building footprint in square feet	M	1	real	Unrestricted
264	Foundation	Building foundation damage assessment	M	1	characterString	Unrestricted
265	FType	Building type	M	1	int	Unrestricted
266	GroundMovementFissures	Ground, movement, or fissures related damage assessment	M	1	characterString	Unrestricted
267	IncidentNumber	Incident number associated with damage	M	1	characterString	Unrestricted
268	InspectionDateTime	Damage inspection date and time	M	1	dateTime	Unrestricted
269	InspectorID	Damage inspector identification	M	1	characterString	Unrestricted
270	InteriorWallsPartitions	Interior walls or partitions damage assessment	M	1	characterString	Unrestricted
271	Occupancy	Primary occupancy type of building	M	1	characterString	Unrestricted
272	Other	Other pertinent information related to the damaged area	M	1	characterString	Unrestricted
273	OwnerName	Building owner name	M	1	characterString	Unrestricted
274	PhoneNumber	Building owner phone number	M	1	characterString	Unrestricted
275	Posting	Posting indicating severity of building damage (red, yellow, green)	M	1	characterString	Unrestricted
276	PrecastConnections	Pre-cast connections damage assessment	M	1	characterString	Unrestricted
277	ResidentialUnits	Residential units damage assessment	M	1	characterString	Unrestricted
278	RoofsFloors	Building roof and/or floor damage assessment	M	1	characterString	Unrestricted
279	SlopeFailureDebris	Slope failure or debris damage assessment	M	1	characterString	Unrestricted
280	StairsExits	Stairs and exits damage assessments	M	1	characterString	Unrestricted
281	StoriesAboveGround	Building stories above ground	M	1	characterString	Unrestricted
282	StoriesBelowGround	Building stories below ground	M	1	characterString	Unrestricted
283	UnitsNotHabitable	Number of units not habitable	M	1	characterString	Unrestricted
284	WallVertBracing	Wall vertical bracing damage assessment	M	1	characterString	Unrestricted
285	Zip	Building zip code	M	1	characterString	Unrestricted
286	OpsEmergencyFacility	Operations Emergency Facility				Lines 287 - 300
287	AccessRestrictions	Access restrictions to the facility	M	1	characterString	Unrestricted
288	Capacity	Capacity of the facility	M	1	characterString	Unrestricted
289	ClosedDateTime	Close date and time	M	1	dateTime	Unrestricted
290	ContactEmail	Facility contact e-mail address	M	1	characterString	Unrestricted
291	ContactName	Facility contact name	M	1	characterString	Unrestricted
292	ContactPhone	Facility contact phone number	M	1	characterString	Unrestricted

293	DaysOperation	Facility days of operation	M	1	characterString	Unrestricted
294	FCode	Codes representing emergency facility feature types	M	1	int	Unrestricted
295	FType	Type of emergency facility features	M	1	int	Unrestricted
296	HoursOperation	Facility hours of operation	M	1	characterString	Unrestricted
297	Jurisdiction	Governmental level or NGO	M	1	characterString	Unrestricted
298	Name	Name of the facility	M	1	characterString	Unrestricted
299	OpenDateTime	Open date and time	M	1	dateTime	Unrestricted
300	Organization	Organization responsible for the facility	M	1	characterString	Unrestricted
301	OpsResourceAssignment	Operations Resource Assignment				Lines 302 - 314
302	ContactEmail	Resource contact e-mail address	M	1	characterString	Unrestricted
303	ContactName	Resource contact name	M	1	characterString	Unrestricted
304	ContactPhone	Resource contact phone number	M	1	characterString	Unrestricted
305	Description	Text describing resource assignments	M	1	characterString	Unrestricted
306	EndDateTime	End date and time	M	1	dateTime	Unrestricted
307	Identifier	Resource assignment identification	M	1	characterString	Unrestricted
308	MissionNumber	Mission number assignment	M	1	characterString	Unrestricted
309	Organization	Organization the owns or manages the resource or assignment	M	1	characterString	Unrestricted
310	ResourceType	Type of resource	M	1	characterString	Unrestricted
311	StartDateTime	Start date and time	M	1	dateTime	Unrestricted
312	Status	Status of resource assignment	M	1	characterString	Unrestricted
313	TrackingType	Segment of deployment cycle	M	1	characterString	Unrestricted
314	TransportType	Resource transport mode	M	1	characterString	Unrestricted

Search and Rescue

Line	Name/RoleName	Definition	Obligation / Condition	Maximum Occurrence	Data Type	Domain
315	OpsSearchRescueArea	Operations Search and Rescue Area				
316	OpsSearchRescueData	Operations Search and Rescue Data			<<Abstract>>	Lines 317 - 335
317	Comments2	Comments associated with the search and rescue effort	M	1	characterString	Unrestricted
318	CurrentTemperature	Current temperature at the report location	M	1	real	Unrestricted
319	DateTime	Date and time	M	1	dateTime	Unrestricted
320	FCode	Codes representing type of search and rescue feature	M	1	int	Unrestricted
321	FType	Search and rescue feature types	M	1	int	Unrestricted
322	HighTemperature	High temperature at report location	M	1	real	Unrestricted
323	LowTemperature	Low temperature at report location	M	1	real	Unrestricted

324	Name	Name of person responsible for the information	M	1	characterString	Unrestricted
325	NationalGrid	National grid equivalent	M	1	characterString	Unrestricted
326	OperationsDetail	Operations detail	M	1	characterString	Unrestricted
327	Organization	Organization	M	1	characterString	Unrestricted
328	Resource2	Special resource requirements for the location	M	1	characterString	Unrestricted
329	Safety	Safety concerns	M	1	characterString	Unrestricted
330	TeamName	Name of team responsible for the information	M	1	characterString	Unrestricted
331	TerrainConditions	Terrain conditions at report location	M	1	characterString	Unrestricted
332	VictimStatus	Status of reported victim	M	1	characterString	Unrestricted
333	Visibility	Visibility at report location	M	1	characterString	Unrestricted
334	Weather	Current weather at report location	M	1	characterString	Unrestricted
335	WeatherCondition	Rating of weather condition at report location	M	1	characterString	Unrestricted
336	OpsSearchRescueLine	Operations Search and Rescue Line				
337	OpsSearchRescuePoint	Operations Search and Rescue Point				