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1 Draft DataType Model

1.1 AgentEventLink models diagram

Class diagram for Agent, Event, and Link objects.

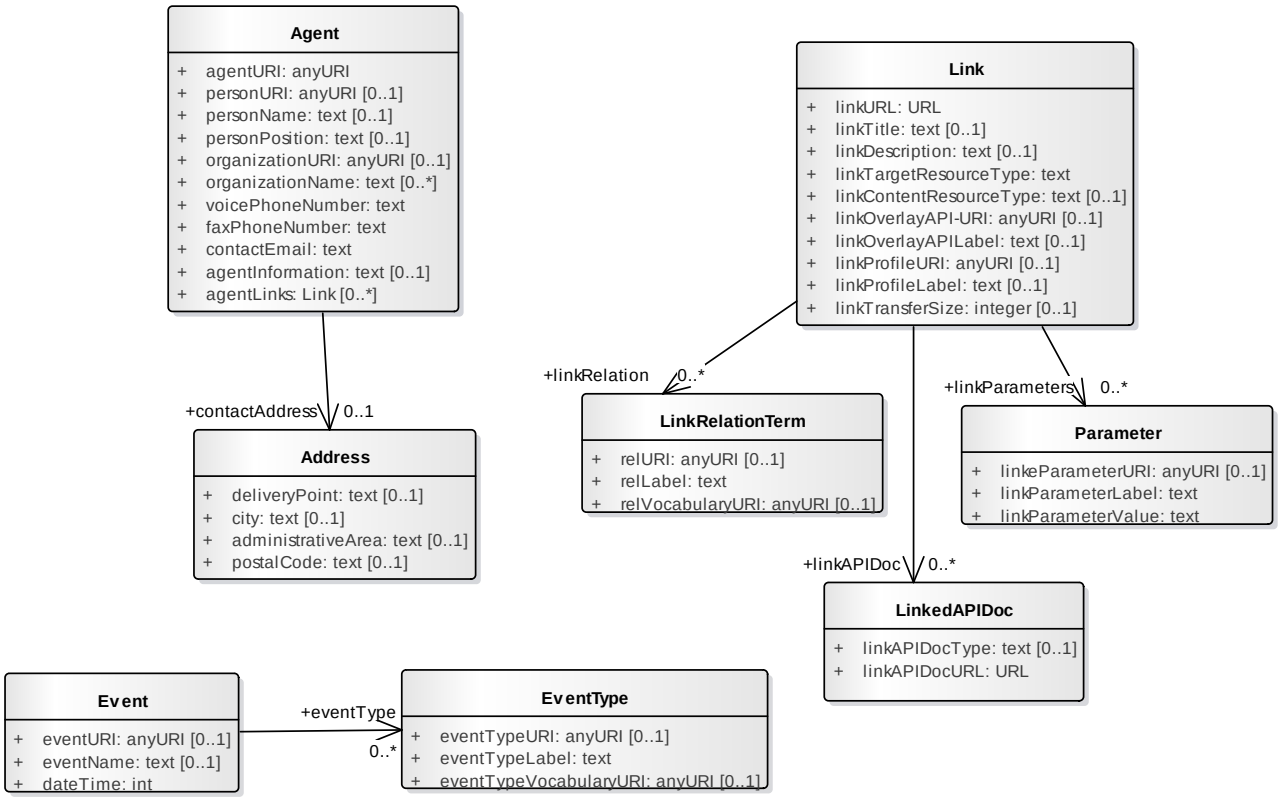

Figure 1: AgentEventLink models

1.2 Draft DataType Model diagram

Class diagram for DataType model

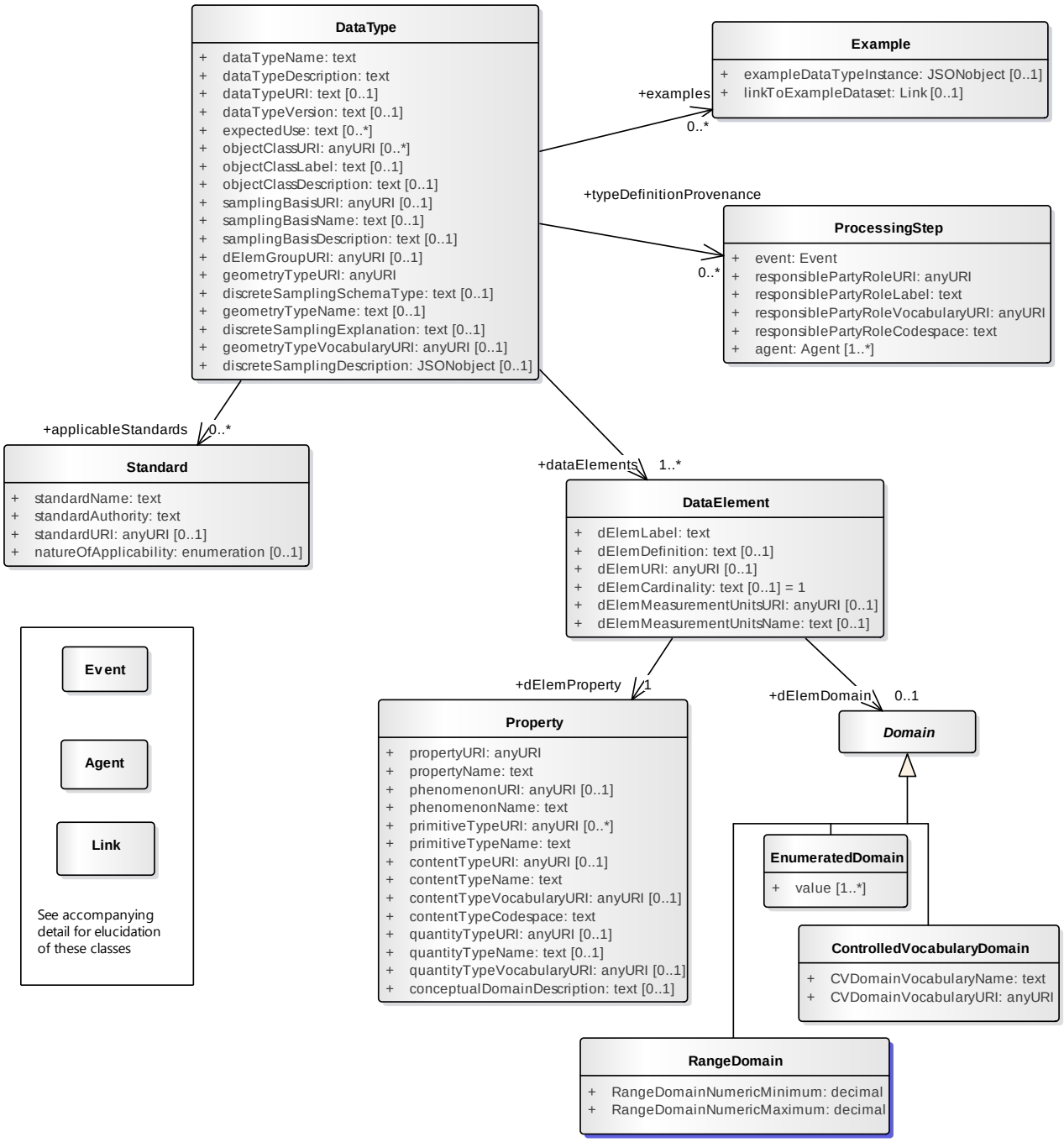

Figure 2: Draft DataType Model

1.3 Address

Class represents a postal address, for compatibility with ISO19115 CI_Address element. In practice at this time the postal address could be represented as a single text object in the deliveryPoint element, but this data structure allows disaggregated representation to parse into traditional address data structure.

ATTRIBUTES

deliveryPoint : text Public
Multiplicity: ([0..1], Allow duplicates: 0, Is ordered: False)

street address, PO box. Full postal address should be in this field if it is not parsed into separate fields.

city : text Public
Multiplicity: ([0..1], Allow duplicates: 0, Is ordered: False)

administrativeArea : text Public
Multiplicity: ([0..1], Allow duplicates: 0, Is ordered: False)

postalCode : text Public
Multiplicity: ([0..1], Allow duplicates: 0, Is ordered: False)

ASSOCIATIONS

Association (direction: Source -> Destination) An agent can have 0 or 1 address.

Source: Public (Class) Agent

Target: Public contactAddress (Class) Address
Cardinality: [0..1]

1.4 Agent

Class in package 'Draft DataType Model'

Agent as an identifiable object; could be just an organization, or an individual who may or may not be associated with an organization. If the Agent is a person, this should be the same as the PersonURI. Agent might be a person, an organization, a person in the context of an organization, or a role (position) relative to an organization.

ATTRIBUTES

agentURI : anyURI Public

Unique identifier for the agent. At least follow URI syntax (e.g. a prefix for the 'protocol'), even if they are local identifiers.

personURI : anyURI Public
Multiplicity: ([0..1], Allow duplicates: 0, Is ordered: False)

unique identifier for a person.

personName : text Public
Multiplicity: ([0..1], Allow duplicates: 0, Is ordered: False)

The name of an individualformat--Last Name,First name MI

personPosition : text Public
Multiplicity: ([0..1], Allow duplicates: 0, Is ordered: False)

identifies an individual who currently holds the named position in context of an organization

organizationURI : anyURI Public

ATTRIBUTES

Multiplicity: ([0..1], Allow duplicates: 0, Is ordered: False)

organizationName : text Public
Multiplicity: ([0..*], Allow duplicates: 0, Is ordered: False)

unique identifier for organization; use to link to the organization that the person is affiliated with, in the case that the AgentURI is for the person and they have an organization affiliation. In this case the organizationName is equivalent to the linkLabel property

voicePhoneNumber : text Public

Number for voice contact. Use registered tel URI scheme for encoding. See http://tools.ietf.org/html/rfc3966

faxPhoneNumber : text Public

Number to send facsimile images. Use registered tel URI scheme for encoding. See http://tools.ietf.org/html/rfc3966

contactEmail : text Public

agentInformation : text Public
Multiplicity: ([0..1], Allow duplicates: 0, Is ordered: False)

text information, providing other details useful for making contact, like hours or ordering instructions

agentLinks : Link Public
Multiplicity: ([0..*], Allow duplicates: 0, Is ordered: False)

ASSOCIATIONS

Association (direction: Source -> Destination)

Source: Public (Class) Agent

Target: Public contactAddress (Class) Address
Cardinality: [0..1]

1.5 ControlledVocabularyDomain

Class in package 'Draft DataType Model'

OUTGOING STRUCTURAL RELATIONSHIPS

Generalization from ControlledVocabularyDomain to Domain

ATTRIBUTES

CVDomainVocabularyName : text Public

name of the vocabulary that defines the values that may appear in valid attribute instances

CVDomainVocabularyURI : anyURI Public

Unique identifier for the vocabulary from which values for the attribute are assigned

1.6 DataElement

Class in package 'Draft DataType Model'

Specification of how the data type concept (entity of interest) is represented (implemented). See ISO11179 part 3, Figure 16. Have to deal with record-type structures, object structures, and array structures? This section describes the content of an individual record or object, or the content associated with each cell in a grid or element in an array. The approach is to define the representation as a collection of properties, each represented by a particular physical data type, domain and constraints.

ATTRIBUTES

dElemLabel : text Public

text string to identify this element/attribute/property in the context of this data type. May be different from the formal property name

dElemDefinition : text Public

Multiplicity: ([0..1], Allow duplicates: 0, Is ordered: False)

dElemURI : anyURI Public

Multiplicity: ([0..1], Allow duplicates: 0, Is ordered: False)

dElemCardinality : text Public = 1

Multiplicity: ([0..1], Allow duplicates: 0, Is ordered: False)

specify obligation,number restrictions on valid values for this element, use standard 1, 0..1, 0..n, 1..n notation. (do we need to account for nilability?)",

dElemMeasurementUnitsURI : anyURI Public

Multiplicity: ([0..1], Allow duplicates: 0, Is ordered: False)

dElemMeasurementUnitsName : text Public

Multiplicity: ([0..1], Allow duplicates: 0, Is ordered: False)

name of the unit of measure used to quantify the attribure

ASSOCIATIONS

Association (direction: DataElement -> dElemDomain) Cardinality: [0..1]
Data element has domain

Association (direction: DataElement -> dElemProperty) Cardinality: [1]
Data element has properties

Association (direction: DataType -> dataElements (Class) DataElement) Cardinality: [1..*]
dataType has a collection of dataElements

1.7 DataType

Class in package 'Draft DataType Model'

ATTRIBUTES

- dataTypeName : text Public

- dataTypeDescription : text Public

- dataTypeURI : text Public
  Multiplicity: ([0..1], Allow duplicates: 0, Is ordered: False)

- dataTypeVersion : text Public
  Multiplicity: ([0..1], Allow duplicates: 0, Is ordered: False)

- expectedUse : text Public
  Multiplicity: ([0..*], Allow duplicates: 0, Is ordered: False)

- objectClassURI : anyURI Public
  Multiplicity: ([0..*], Allow duplicates: 0, Is ordered: False)

  Identifier for registered object class concept; unique identifier for the domain entity that is the subject of the data. This is a array of identifiers, use for semantic mediation. Specification of the idea, abstraction, or thing that is represented by the data type; independent of the actual implementation/representation. This implementation takes the view that a dataType represents some ObjectClass (definition 3.3.22, ISO11179-1) or domain entity, and uses the ISO19156 observation and measurement concepts of feature (entity) of interest and sampling feature (basis).

- objectClassLabel : text Public
  Multiplicity: ([0..1], Allow duplicates: 0, Is ordered: False)

  name of the domain domain entity (feature) that is represented by this data type. Example geologic unit, aquifer, Earth surface, river, lake, weather front, ocean current. The feature of interest carries properties that are quantified by some observation process operating on each sampling feature instance

- objectClassDescription : text Public
  Multiplicity: ([0..1], Allow duplicates: 0, Is ordered: False)

- samplingBasisURI : anyURI Public
  Multiplicity: ([0..1], Allow duplicates: 0, Is ordered: False)

- samplingBasisName : text Public
  Multiplicity: ([0..1], Allow duplicates: 0, Is ordered: False)

  name of the entity (samplingFeature) that is the basis for assigning property values to the feature of interest. Examples include borehole interval, ground sampling cell (for a remote sensing image), outcrop station, physical sample, outcrop area, instrument, aggregation (of other data). The spatial representation section describes how the sampling features are geolocated

- samplingBasisDescription : text Public
  Multiplicity: ([0..1], Allow duplicates: 0, Is ordered: False)

- dElemGroupURI : anyURI Public
  Multiplicity: ([0..1], Allow duplicates: 0, Is ordered: False)

  document a group definition as a separate attribute, requires an assigned attributeURI for the group, then use that URI here to aggregate attributes in a group. The GroupURI may be externally defined, but the URI must dereference to provide an explanation of the group

ATTRIBUTES

geometryTypeURI : anyURI Public

discreteSamplingSchemaType : text Public
Multiplicity: ([0..1], Allow duplicates: 0, Is ordered: False)

Term or identifier that categorizes the schema used to describe the sampling structure for a gridded/array type data (discrete coverage), using a short string for machine processing. Typically the various dimensions map to some conceptual domain like space or time, sampled at some interval, See ISO19123, ISO19115-1 and 19115-2 MD_CoverageDescription and MD_GridSpatialRepresentation

geometryTypeName : text Public
Multiplicity: ([0..1], Allow duplicates: 0, Is ordered: False)

term that specifies the type of geometry representeded by this property, should be linked to a controlled vocabulary. Example (ISO19107 geometryType codelist): curve, line, point, polygon, solid, surface, grid. Should distinguish 2D and 3D point

discreteSamplingExplanation : text Public
Multiplicity: ([0..1], Allow duplicates: 0, Is ordered: False)

explanation of how the discrete coverage is represented and what kind of content is encoded here, for human reader. Actual discreteSamplingDescription is unstrained JSON blob included following this element.",

geometryTypeVocabularyURI : anyURI Public
Multiplicity: ([0..1], Allow duplicates: 0, Is ordered: False)

Unique identifier for the vocabulary within which the geometry type is identified; if the geometryTypeURI identifier type allows resolution of the vocabulary, this is redundant; for some schemes the TypeURI value may be a toke that is appended to the vocabulary URI to obtain the full TypeURI

discreteSamplingDescription : JSONobject Public
Multiplicity: ([0..1], Allow duplicates: 0, Is ordered: False)

JSON content that describes the discrete sampling geometry, according to the description type specified by discreteSamplingDescriptionType

ASSOCIATIONS

Association (direction: DataType -> applicableStandards (Class) Standard)

Association (direction: DataType -> typeDefinitionProvenance (Class) ProcessingStep)

Association (direction: DataType -> dataElements (Class) DataElement)

Association (direction: DataType -> examples (Class) Example)

1.8 Domain

Class in package 'Draft DataType Model'

Subtypes of Domain
Generalization from RangeDomain to Domain [Direction is 'Source -> Destination'.]
Generalization from ControlledVocabularyDomain to Domain [Direction is 'Source -> Destination'.]
Generalization from EnumeratedDomain to Domain [Direction is 'Source -> Destination'.]

ASSOCIATIONS
Association (direction: DataElement -> dElemDomain (Class) Domain) Cardinality: [0..1]

1.9 EnumeratedDomain

Class in package 'Draft DataType Model'

OUTGOING STRUCTURAL RELATIONSHIPS
Generalization from EnumeratedDomain to Domain [Direction is 'Source -> Destination'.]

ATTRIBUTES
value : Public. Enumeration is a list of values. Multiplicity: ([1..*], Allow duplicates: 0, Is ordered: False)

1.10 Event

Class in package 'Draft DataType Model'

Associates an event defined by an eventType and an optional event instance URI, with a date time string detailing when the event occurred. In simplest case can just provide dateTime if the event context is unambiguous in the importing object.

ATTRIBUTES
eventURI : anyURI Public Multiplicity: ([0..1], Allow duplicates: 0, Is ordered: False) identifier for the event instance if this object is about a specific event

ATTRIBUTES

eventName : text Public
Multiplicity: ([0..1], Allow duplicates: 0, Is ordered: False)

name to identify the event for people

dateTime : int Public

Use ISO 8601: 2011-10-11T14:30

ASSOCIATIONS

Association (direction: Event -> eventType (Class) EventType) Cardinality: [0..*]

1.11 EventType

Class in package 'Draft DataType Model'

categorization of event... E.g. creation, update, deprecation. Vocabulary somewhat dependent on context

ATTRIBUTES

eventTypeURI : anyURI Public
Multiplicity: ([0..1], Allow duplicates: 0, Is ordered: False)

identifier for referenced resource

eventTypeLabel : text Public

label to identify the date type in a user interface

eventTypeVocabularyURI : anyURI Public
Multiplicity: ([0..1], Allow duplicates: 0, Is ordered: False)

identifier for the containing vocabulary (thesaurus, ontology...). Analogous to codelist in ISO19115 or codespace in GML.

ASSOCIATIONS

Association (direction: Event -> Destination) eventType (Class) EventType
Cardinality: [0..*]

1.12 Example

Class in package 'Draft DataType Model'

ATTRIBUTES

exampleDataTypeInstance : JSONobject Public
Multiplicity: ([0..1], Allow duplicates: 0, Is ordered: False)

ATTRIBUTES

linkToExampleDataset : Link Public

Multiplicity: ([0..1], Allow duplicates: 0, Is ordered: False)

ASSOCIATIONS

Association (direction: DataType -> examples (Class) Example) Cardinality: [0..*]

1.13 Link

Class in package 'Draft DataType Model'

ATTRIBUTES

linkURL : URL Public

a web-derferencable identifier that locates the link target; typically an HTTP URI. URI syntax specifies that the identifier string includes a prefix that specifies the base protocol for the identifier

linkTitle : text Public

Multiplicity: ([0..1], Allow duplicates: 0, Is ordered: False)

linkDescription : text Public
Multiplicity: ([0..1], Allow duplicates: 0, Is ordered: False)

free text description of the target to help UI

linkTargetResourceType : text Public

typically use MIME type string from IANA registry http : //www.iana.org/assignments/media-types/application/index.html. This is the type of the file that will be accessed directly by the link URL; if this is a container file (e.g. zip archive), the innerResourceType property is used to specify the type of file with actual resource content.

linkContentResourceType : text Public
Multiplicity: ([0..1], Allow duplicates: 0, Is ordered: False)

File type for the actual resource content. Typically use MIME type string from IANA registry http : //www.iana.org/assignments/media-types/application/index.html

linkOverlayAPI-URI : anyURI Public
Multiplicity: ([0..1], Allow duplicates: 0, Is ordered: False)

Identifier for overly API. Reference that identifies the API for messages tunneled to a component on the target server. Optional, provide if such scheme or protocol is necessary to utilize the link. The URI should be defined by the service specification for the protocol or service type; version information should be included if applicable. E.g. OGC WMS, WS-services. This property is typically used for services that encode remote procedure calls using identifiers dereferenced using standard HTTP methods (GET, POST).

linkOverlayAPILabel : text Public
Multiplicity: ([0..1], Allow duplicates: 0, Is ordered: False)

Text to identify the overlay API in a UI. Reference that identifies the API for messages tunneled to a component on the target server.

ATTRIBUTES

linkProfileURI : anyURI Public
Multiplicity: ([0..1], Allow duplicates: 0, Is ordered: False)

linkProfileLabel : text Public
Multiplicity: ([0..1], Allow duplicates: 0, Is ordered: False)

Text to identify the profile in a UI. Identifier for profile of specifications identified by type, overlayAPI, and template attributes. Optional, provide if additional conventions are necessary for content contained in messages through this link. Note that the same output scheme might be encoded using different types. Profiles typically add usage conventions when the interchange scheme offers alternate approaches, restrict cardinality for elements in the interchange format, or specify usage of particular vocabularies.

linkTransferSize : integer Public
Multiplicity: ([0..1], Allow duplicates: 0, Is ordered: False)

advisory length of the linked content in octets

ASSOCIATIONS

Association (direction: Source -> Destination)

Source: Public (Class) Link

Target: Public linkAPIDoc (Class) LinkedAPIDoc
Cardinality: [0..*]

Association (direction: Source -> Destination)

Source: Public (Class) Link

Target: Public linkParameters (Class) Parameter
Cardinality: [0..*]

Association (direction: Source -> Destination)

Source: Public (Class) Link

Target: Public linkRelation (Class) LinkRelationTerm
Cardinality: [0..*]

1.14 LinkRelationTerm

Class in package 'Draft DataType Model'

ATTRIBUTES

relURI : anyURI Public
Multiplicity: ([0..1], Allow duplicates: 0, Is ordered: False)

identifier for the relation type.

relLabel : text Public

text to identify the reference in a UI

relVocabularyURI : anyURI Public
Multiplicity: ([0..1], Allow duplicates: 0, Is ordered: False)

identifier for vocabulary in which the relLabel is defined.

ASSOCIATIONS

Association (direction: Link -> linkRelation (Class) LinkRelationTerm) Cardinality: [0..*]

1.15 LinkedAPIDoc

Class in package 'Draft DataType Model'

URLs that will get descriptions of the link operation; particularly targeted for RESTful type links. API doc should describe the resource architecture of the endpoint and provide some example requests, maybe even a template. Each URL is scoped to an API document type, e.g. Swagger, Hydra, Siren, HAL...

ATTRIBUTES

linkAPIDocType : text Public
Multiplicity: ([0..1], Allow duplicates: 0, Is ordered: False)

text string that identifies the API doc type; ideally a URI defined in the API doc specification

linkAPIDocURL : URL Public

URL that will get the API doc describing operation of the link

ASSOCIATIONS

Association (direction: Link -> linkAPIDoc (Class) LinkedAPIDoc) Cardinality: [0..*]

1.16 Parameter

Class in package 'Draft DataType Model'

key-value pair specifies parameters name and value, or properties that need to be associated with the link, e.g. WFS feature typeNames, WMS layer names

ATTRIBUTES

linkeParameterURI : anyURI Public
Multiplicity: ([0..1], Allow duplicates: 0, Is ordered: False)

identifier for the parameter from a controlled vocabulary

linkParameterLabel : text Public

string to display, and identifier to link parameter to registry

linkParameterValue : text Public

ASSOCIATIONS

Association (direction: Link -> linkParameters (Class) Parameter) Cardinality: [0..*]

1.17 ProcessingStep

Class in package 'Draft DataType Model'. For recording provenance of the data type definition.

ATTRIBUTES
event : Event Public
responsiblePartyRoleURI : anyURI Public
responsiblePartyRoleLabel : text Public
responsiblePartyRoleVocabularyURI : anyURI Public
responsiblePartyRoleCodespace : text Public
agent : Agent Public Multiplicity: ([1..*], Allow duplicates: 0, Is ordered: False)

ASSOCIATIONS
Association (direction: DataType -> typeDefinitionProvenance (Class) ProcessingStep) Cardinality: [0..*]

1.18 Property

Class in package 'Draft DataType Model'

a conceptual property. Implementation specifics included in the data type definition that uses this property

ATTRIBUTES
propertyURI : anyURI Public unique identifier for this property
propertyName : text Public human readable identifier for the property
phenomenonURI : anyURI Public Multiplicity: ([0..1], Allow duplicates: 0, Is ordered: False) a registered identifier that uniquely specifies the physical phenomenon quantified by the property, for interoperability and linked data
phenomenonName : text Public name of the physical phenomenon quantified by this property, e.g. fluid flux, planar geospatial orientation, density, velocity.

ATTRIBUTES

primitiveTypeURI : anyURI Public
Multiplicity: ([0..*], Allow duplicates: 0, Is ordered: False)

allow multiple values to map to different authority vocabularies/ontologies

primitiveTypeName : text Public

should be controlled vocabulary, ideally labels associated with provided primitiveTypeURI

contentTypeURI : anyURI Public
Multiplicity: ([0..1], Allow duplicates: 0, Is ordered: False)

unique identifier for the ContentType

contentTypeName : text Public

Categorization of the kind of information specified by this attribute, examples (based on ISO19115-1): thematicClassification, physicalMeasurement, auxilliaryInformation, qualityInformation, calculatedValue, coordinate, group. Value of 'group' indicates that this property defines a group

contentTypeVocabularyURI : anyURI Public
Multiplicity: ([0..1], Allow duplicates: 0, Is ordered: False)

Unique identifier for the vocabulary within which the content type is identified; if the ContentTypeURI identifier type allows resolution of the vocabulary, this is redundant; for some schemes the TypeURI value may be a toke that is appended to the vocabulary URI to obtain the full TypeURI

contentTypeCodespace : text Public

Codespace identifier for the contentType, for compatibility with ISO19115

quantityTypeURI : anyURI Public
Multiplicity: ([0..1], Allow duplicates: 0, Is ordered: False)

Unique identifier, ideally from a registry, for the kind of quantifier used to specify values for the attribute. For interoperability. A registered vocabulary of standard quantity types needs to be identified. If quantityType is dataType, then this is the URI for the DataType that quantifies this property

quantityTypeName : text Public
Multiplicity: ([0..1], Allow duplicates: 0, Is ordered: False)

kind of quantifier used to specify values for the attribute. Example values: count, boolean, category (controlled or ad hoc), number magnitude, number ratio, number coordinate, DateTime, free text, geometry, dataType

quantityTypeVocabularyURI : anyURI Public
Multiplicity: ([0..1], Allow duplicates: 0, Is ordered: False)

Unique identifier for the vocabulary within which the quantity type is identified; if the quantityTypeURI identifier type allows resolution of the vocabulary, this is redundant; for some schemes the URI value may be a token that is appended to the vocabulary URI to obtain the full TypeURI

conceptualDomainDescription : text Public
Multiplicity: ([0..1], Allow duplicates: 0, Is ordered: False)

Each value domain is a member of the extension of a concept, called the conceptual domain. A conceptual domain is a set of value meanings. The intension of a conceptual domain is its value meanings. Many value domains may be in the extension of the same conceptual domain, but a value domain is associated with one conceptual domain. ISO11179-1 clause 6.

ASSOCIATIONS

Association (direction: DataElement -> dElemProperty (Class) Property) Cardinality: [1]

1.19 RangeDomain

Class in package 'Draft DataType Model'

OUTGOING STRUCTURAL RELATIONSHIPS

Generalization from RangeDomain to Domain

[Direction is 'Source -> Destination'.]

ATTRIBUTES

RangeDomainNumericMinimum : decimal Public

RangeDomainNumericMaximum : decimal Public

1.20 Standard

Class in package 'Draft DataType Model'

ATTRIBUTES

standardName : text Public

standardAuthority : text Public

standardURI : anyURI Public

Multiplicity: ([0..1], Allow duplicates: 0, Is ordered: False)

natureOfApplicability : enumeration Public
Multiplicity: ([0..1], Allow duplicates: 0, Is ordered: False)

"enum": ["extends", "constrains", "specifies", "depends", "conforms"]

ASSOCIATIONS

Association (direction: DataType -> applicableStandards (Class) Standard) Cardinality: [0..*]