Secure Ontologies for the Internet of Things:

Representing Risk and Security Concepts Using Basic Formal Ontology

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1.1 Icon semantics. 2

1

Introduction

The present report was produced as part of the Secure Ontologies for the Internet of Things (SOfIoTS) project,[1] which forms part of the UK PETRAS research program.[2] The report documents the effort to situate risk and security concepts within the overarching ontological framework of Basic Formal Ontology (BFO). In order to ensure compatibility with BFO, we draw on a number of existing ontologies. These include BFO,[3] the Common Core Ontologies (CCO),[4] and the Common Core Cyber Ontology (C3O).[5] Initial sections of the report document the various classes and relationships asserted in these ontologies. BFO is documented in Section 2; Sections 3– 10 document the CCO; and Section 11 documents the C3O. It should be noted that these ontologies are *not* documented in full. For reasons of brevity, we have limited the scope of the documentation to ontology elements that are of particular relevance to the SOfIoTS project.

The aim of the SOfIoTS project is to advance our understanding of the current state-of-the-art in respect of security provision in Internet of Things (IoT) ontologies. It also aims to extend the current state-of-the-art by specifying an ontological framework that can be integrated into the UK Digital Twin model. In respect of the latter aim, the present report documents classes and relationships that are intended to represent entities relevant to the domain of IoT security. These classes and relationships are organized into the following ontologies:

- **Value Ontology:** The value ontology is designed to represent value-related entities, such as assets, situation objectives, valued objects, and value-related events (see Section 12).
- **Risk and Security Ontology:** The risk and security ontology is designed to represent risk- and security-related entities, such as threat processes, threat paths, hazardous situations, and security mechanisms (see Section 13).
- **Internet of Things Ontology:** The IoT ontology is intended to represent IoT devices, digital twins, and IoT data flows (see Section 14).

The scope of these ontologies was informed by earlier work in the SOfIoTS project. In particular, we sought to provide support for the terms included in an earlier SOfIoTS

[1] See https://petras-iot.org/project/secure-ontologies-for-iot-systems-sofiots/.
[2] See https://petras-iot.org/.
[3] See https://github.com/BFO-ontology.
[4] See https://github.com/CommonCoreOntology/CommonCoreOntologies.
[5] See https://opensource.ieee.org/cyber-ontology-working-group.

ontology (see Jarwar et al., 2022). The contents of this ontology are documented in Appendix A.

We make no claims as to the completeness of the aforementioned ontologies. The ontological characterization given here is intended as the basis for further work in respect of the effort to apply BFO to the realm of IoT devices, Internet security, digital twins, and the representation of IoT-based data flows.

Throughout the present report, we rely on graphical icons to document ontology elements. These are presented in Table 1.1. As is suggested by the table, the present documentation is based on the Web Ontology Language (OWL).

Icon	Name	Description
	Primitive Class	Symbolizes an OWL primitive class.
	Defined Class	Symbolizes an OWL defined class.
	Universal Restriction	Symbolizes an OWL universal constraint.
	Existential Constraint	Symbolizes an OWL existential constraint.
	Intersection	Symbolizes the logical AND operator.
	Union	Symbolizes the logical OR operator.
	Complement	Symbolizes the logical NOT operator.
	Enumeration	Symbolizes an OWL enumerated class.
	Cardinality Restriction	Specifies the (exact value) cardinality of a restriction.
	Minimum Cardinality Restriction	Specifies the minimum cardinality of a restriction.
	Maximum Cardinality Restriction	Specifies the maximum cardinality of a restriction.
	Has Value Restriction	Specifies the value of a restriction.
	Datatype Property	Symbolizes an OWL datatype property.
	Object Property	Symbolizes an OWL object property.
	Annotation Property	Symbolizes an OWL annotation property.
	Property Chain Axiom	Symbolizes an OWL property chain axiom.
	Individual	Symbolizes an OWL individual.

Table 1.1: Icon semantics.

2

Basic Formal Ontology

BFO is a top-level ontology that provides a framework for building more specific ontologies (Arp, Smith, and Spear, 2015). It is designed to provide a common set of categories and relations that can be used to describe entities in any domain of interest.

BFO is intended to provide a common foundation for ontologies in various domains, allowing them to be integrated and compared more easily. It is being developed by a community of philosophers, logicians, and computer scientists, and is available as an open-source project. For more information about BFO, see https://github.com/BFO-ontology/BFO.

2.1 Named Classes

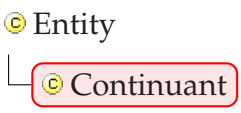
2.1.1 Continuant

A continuant is an entity that persists, endures, or continues to exist through time while maintaining its identity.

Annotations

- **Label:** continuant
- **Is Defined By:** http://purl.obolibrary.org/obo/bfo.owl
- **ID:** http://purl.obolibrary.org/obo/BFO_0000002

Hierarchy



Direct Super Types

- Entity

Direct Sub Types

- GenericallyDependentContinuant
- IndependentContinuant
- Resource
- SpecificallyDependentContinuant

Disjoint Classes

- Occurrent

Domain Of

- isAffectedBy
- isInputOf
- isOutputOf
- participatesIn

Range For

- affects
- hasInput
- hasOutput
- hasParticipant

Figures

- Figure 2.1
- Figure 2.7
- Figure 2.8
- Figure 3.2
- Figure 4.3
- Figure 4.6
- Figure 7.1
- Figure 12.4
- Figure 12.9

2.1.2 ContinuantFiatBoundary

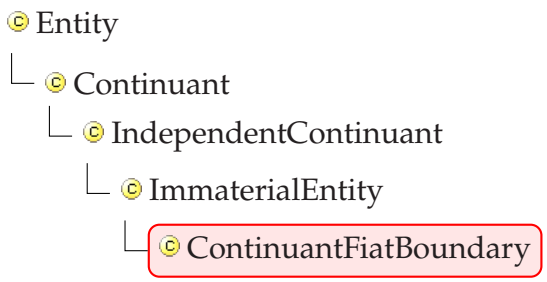
Definition
b is a continuant fiat boundary = Def. b is an immaterial entity that is of zero, one or two dimensions and does not include a spatial region as part.

Annotations

- **Label:** continuant fiat boundary
- **Is Defined By:** http://purl.obolibrary.org/obo/bfo.owl

- **ID:** http://purl.obolibrary.org/obo/BFO_0000140

Hierarchy



Direct Super Types

- ImmaterialEntity

Direct Sub Types

- OneDimensionalContinuantFiatBoundary
- TwoDimensionalContinuantFiatBoundary
- ZeroDimensionalContinuantFiatBoundary

Disjoint Classes

- SpatialRegion

Figures

- Figure 2.2
- Figure 2.3

2.1.3 Disposition

b is a disposition means: b is a realizable entity & b's bearer is some material entity & b is such that if it ceases to exist, then its bearer is physically changed, & b's realization occurs when and because this bearer is in some special physical circumstances, & this realization occurs in virtue of the bearer's physical make-up.

Annotations

- **Label:** disposition
- **Is Defined By:** http://purl.obolibrary.org/obo/bfo.owl
- **ID:** http://purl.obolibrary.org/obo/BFO_0000016

Hierarchy

- Entity
  - Continuant
    - SpecificallyDependentContinuant
      - RealizableEntity
        - Disposition

Direct Super Types

- RealizableEntity

Direct Sub Types

- Function
- Vulnerability

Disjoint Classes

- Role

Domain Of

- dispositionOfAggregate

Range For

- aggregateHasDisposition
- hasDisposition

Figures

- Figure 2.7
- Figure 2.8
- Figure 3.1
- Figure 4.2

2.1.4 Entity

An entity is anything that exists or has existed or will exist.

Annotations

- **Label:** entity
- **Is Defined By:** http://purl.obolibrary.org/obo/bfo.owl
- **ID:** http://purl.obolibrary.org/obo/BFO_0000001

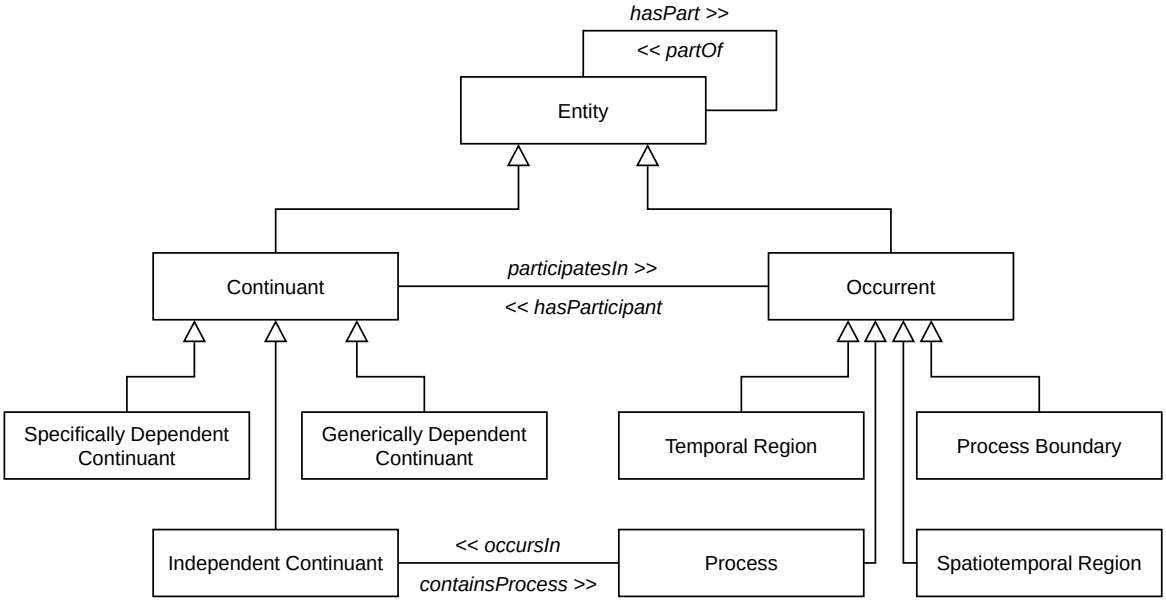


Figure 2.1: Top level terms of the Basic Formal Ontology.

Direct Sub Types

- Continuant
- Occurrent

Range For

- isAbout

Figures

- Figure 2.1
- Figure 4.3
- Figure 4.5
- Figure 4.6
- Figure 12.7

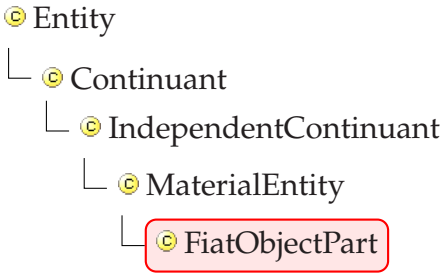
2.1.5 FiatObjectPart

b is a fiat object part = Def. b is a material entity which is such that for all times t, if b exists at t then there is some object c such that b proper continuant_part of c at t and c is demarcated from the remainder of c by a two-dimensional continuant fiat boundary.

Annotations

- **Label:** fiat object part
- **Is Defined By:** http://purl.obolibrary.org/obo/bfo.owl
- **ID:** http://purl.obolibrary.org/obo/BFO_0000024

Hierarchy



Direct Super Types

- MaterialEntity

Direct Sub Types

- BodilyComponent

Figures

- Figure 2.3
- Figure 2.6
- Figure 5.1

2.1.6 Function

A function is a disposition that exists in virtue of the bearer's physical make-up and this physical make-up is something the bearer possesses because it came into being, either through evolution (in the case of natural biological entities) or through intentional design (in the case of artifacts), in order to realize processes of a certain sort.

Annotations

- **Label:** function
- **Is Defined By:** http://purl.obolibrary.org/obo/bfo.owl
- **ID:** http://purl.obolibrary.org/obo/BFO_0000034

Hierarchy

- Entity
  - Continuant
    - SpecificallyDependentContinuant
      - RealizableEntity
        - Disposition
          - Function

Direct Super Types

- Disposition

Direct Sub Types

- ArtifactFunction

Domain Of

- functionOf

Range For

- hasFunction

Figures

- Figure 2.8
- Figure 3.1

2.1.7 GenericallyDependentContinuant

Definition
A generically dependent continuant is a continuant that depends on one or more other entities.

Annotations

- **Label:** generically dependent continuant
- **Is Defined By:** http://purl.obolibrary.org/obo/bfo.owl
- **ID:** http://purl.obolibrary.org/obo/BFO_0000031

Hierarchy

Entity
└ Continuant
  └ GenericallyDependentContinuant

Direct Super Types

- Continuant

Direct Sub Types

- InformationContentEntity

Disjoint Classes

- IndependentContinuant
- SpecificallyDependentContinuant

Domain Of

- genericallyDependsOn
- isConcretizedAs

Range For

- concretizes
- isCarrierOf

Figures

- Figure 2.1
- Figure 4.3
- Figure 4.6

2.1.8 History

A history is a process that is the sum of the totality of processes taking place in the spatiotemporal region occupied by a material entity or site, including processes on the surface of the entity or within the cavities to which it serves as host.

Annotations

- **Label:** history
- **Is Defined By:** http://purl.obolibrary.org/obo/bfo.owl
- **ID:** http://purl.obolibrary.org/obo/BFO_0000182

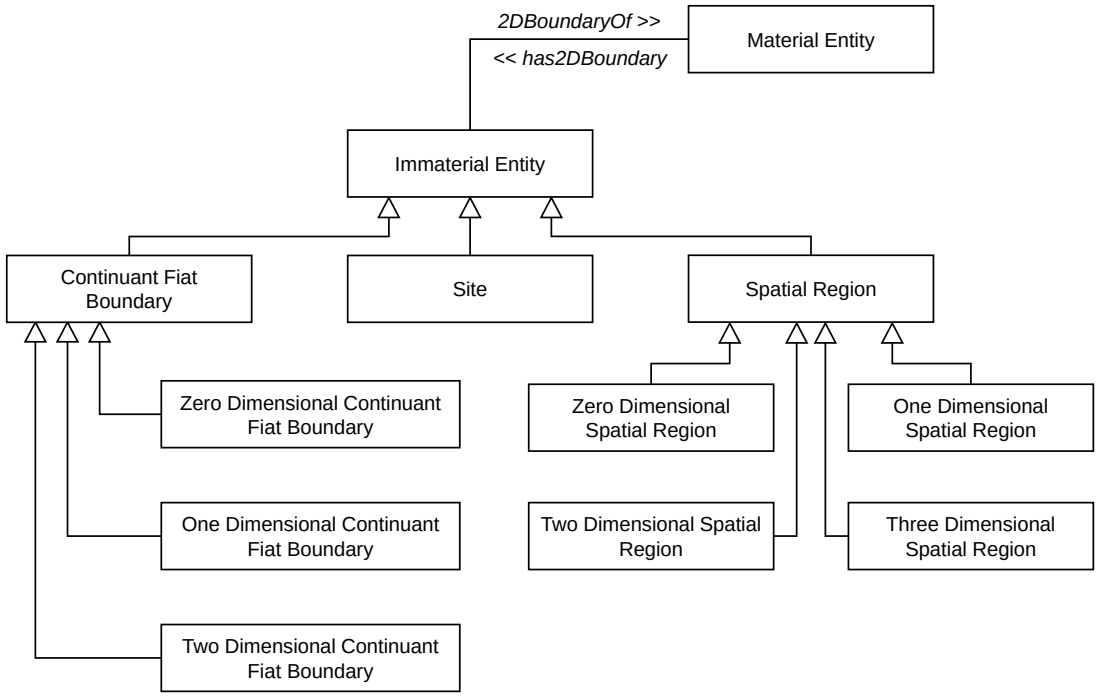


Figure 2.2: Immaterial entity hierarchy.

Hierarchy

- Entity
  - Occurrent
    - Process
      - History

Direct Super Types

- Process

Direct Sub Types

- ArtifactHistory
- ThreatPath

Disjoint Classes

- ProcessProfile

Figures

- Figure 2.4
- Figure 13.7

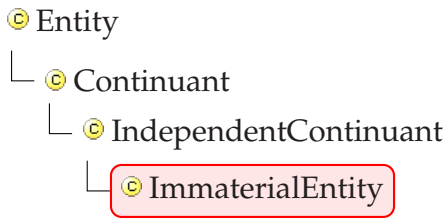
2.1.9 ImmaterialEntity

Immaterial entities are divided into two subgroups: boundaries and sites, which bound, or are demarcated in relation, to material entities, and which can thus change location, shape and size and as their material hosts move or change shape or size (for example: your nasal passage; the hold of a ship; the boundary of Wales (which moves with the rotation of the Earth).

Annotations

- **Label:** immaterial entity
- **Is Defined By:** http://purl.obolibrary.org/obo/bfo.owl
- **ID:** http://purl.obolibrary.org/obo/BFO_0000141

Hierarchy



Direct Super Types

- IndependentContinuant

Direct Sub Types

- ContinuantFiatBoundary
- Site
- SpatialRegion

Disjoint Classes

- MaterialEntity

Domain Of

- coincidesWith
- connectedWith
- disconnectedWith
- externallyConnectsWith
- hasNontangentialPart
- hasSpatialPart
- hasTangentialPart
- nontangentialPartOf

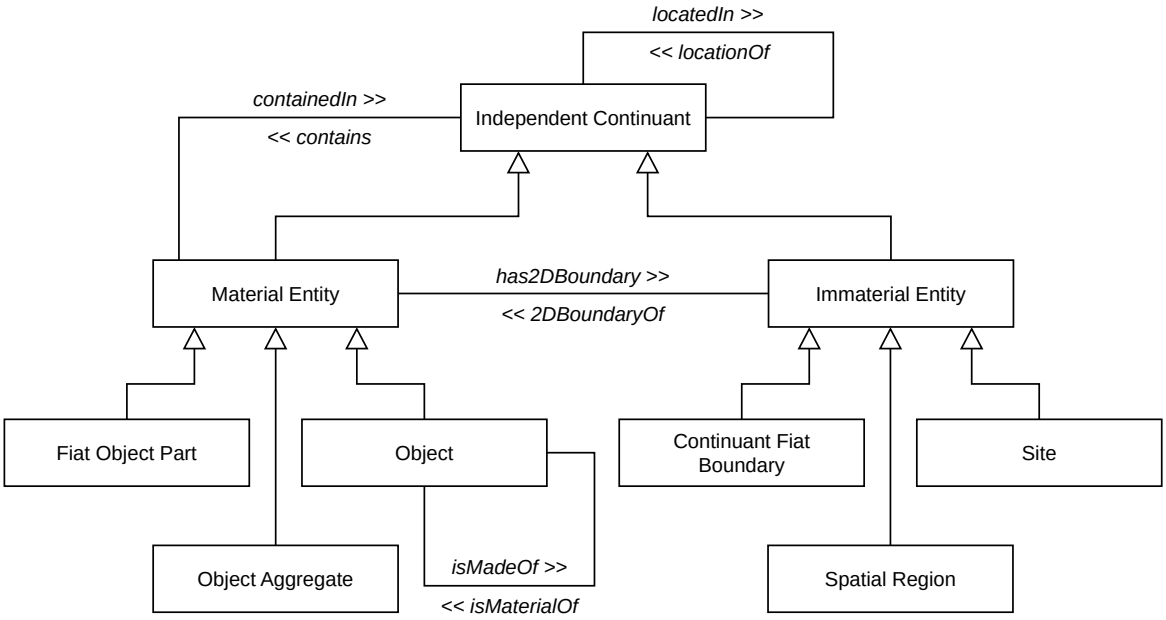


Figure 2.3: Independent continuant hierarchy.

- partiallyOverlapsWith
- spatialPartOf
- tangentialPartOf

Range For

- coincidesWith
- connectedWith
- disconnectedWith
- externallyConnectsWith
- has2DBoundary
- hasNontangentialPart
- hasSpatialPart
- hasTangentialPart
- nontangentialPartOf
- partiallyOverlapsWith
- spatialPartOf
- tangentialPartOf

Figures

- Figure 2.2
- Figure 2.3

2.1.10 IndependentContinuant

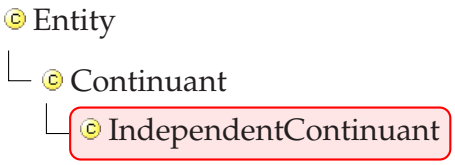
Definition

An independent continuant is a continuant that does not depend on any other entity.

Annotations

- **Label:** independent continuant
- **Is Defined By:** http://purl.obolibrary.org/obo/bfo.owl
- **ID:** http://purl.obolibrary.org/obo/BFO_0000004

Hierarchy



Direct Super Types

- Continuant

Direct Sub Types

- ImmaterialEntity
- MaterialEntity

Disjoint Classes

- GenericallyDependentContinuant
- SpecificallyDependentContinuant

Domain Of

- hasDisposition
- hasFunction
- hasRole
- isCarrierOf
- isPredecessorOf
- isSuccessorOf
- locatedIn

Range For

- containedIn
- genericallyDependsOn
- isPredecessorOf
- isSuccessorOf

- locatedIn
- occursIn

Figures

- Figure 2.1
- Figure 2.3
- Figure 2.7
- Figure 2.8
- Figure 3.1
- Figure 4.3
- Figure 5.3
- Figure 12.3
- Figure 12.4
- Figure 12.8
- Figure 12.9

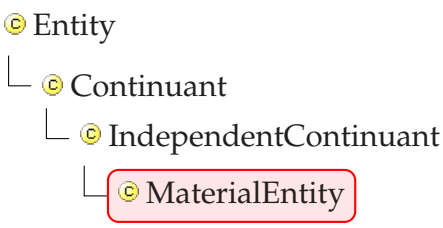
2.1.11 MaterialEntity

A material entity is an independent continuant that has some portion of matter as proper or improper continuant part.

Annotations

- **Label:** material entity
- **Is Defined By:** http://purl.obolibrary.org/obo/bfo.owl
- **ID:** http://purl.obolibrary.org/obo/BFO_0000040

Hierarchy



Direct Super Types

- IndependentContinuant

Direct Sub Types

- Agent
- EnvironmentalFeature
- FiatObjectPart
- Object

- ObjectAggregate
- SecurityMechanism
- Target

Disjoint Classes

- ImmaterialEntity

Domain Of

- accessoryIn
- accompliceIn
- containedIn
- has2DBoundary

Range For

- hasAccessory
- hasAccomplice
- hasMemberOfLocatedIn

Figures

- Figure 2.2
- Figure 2.3
- Figure 4.3
- Figure 5.1
- Figure 5.2
- Figure 5.3
- Figure 12.3
- Figure 12.4
- Figure 12.5
- Figure 12.8
- Figure 12.9
- Figure 13.3

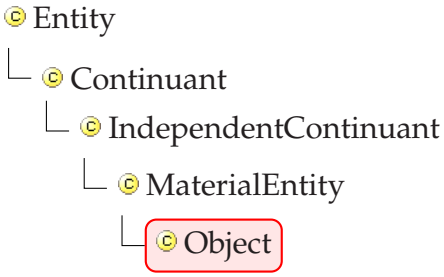
2.1.12 Object

b is an object means: b is a material entity which manifests causal unity of one or other of the types CUn listed above & is of a type (a material universal) instances of which are maximal relative to this criterion of causal unity.

Annotations

- **Label:** object
- **Is Defined By:** http://purl.obolibrary.org/obo/bfo.owl
- **ID:** http://purl.obolibrary.org/obo/BFO_0000030

Hierarchy



Direct Super Types

- MaterialEntity

Direct Sub Types

- Artifact
- InformationBearingEntity
- Organism
- ValuedObject

Domain Of

- isMadeOf
- isMaterialOf

Range For

- isMadeOf
- isMaterialOf

Figures

- Figure 2.3
- Figure 2.5
- Figure 4.3
- Figure 5.1
- Figure 12.2
- Figure 12.8
- Figure 12.10

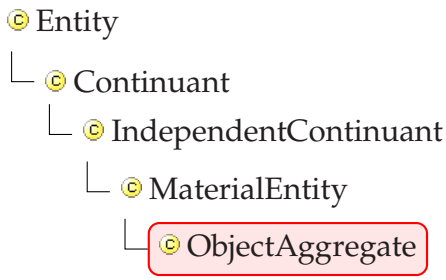
2.1.13 ObjectAggregate

b is an object aggregate means: b is a material entity consisting exactly of a plurality of objects as member_parts at all times at which b exists.

Annotations

- **Label:** object aggregate
- **Is Defined By:** http://purl.obolibrary.org/obo/bfo.owl
- **ID:** http://purl.obolibrary.org/obo/BFO_0000027

Hierarchy



Direct Super Types

- MaterialEntity

Direct Sub Types

- ComputerAggregate
- ComputerSystem
- CyberPlatform
- DigitalFileSystem
- FileSystemDirectory
- GroupOfAgents
- Situation

Domain Of

- aggregateBearerOf
- aggregateHasDisposition
- aggregateHasQuality
- aggregateHasRole
- hasMemberOfLocatedIn

Range For

- dispositionOfAggregate
- inheresInAggregate
- qualityOfAggregate
- roleOfAggregate

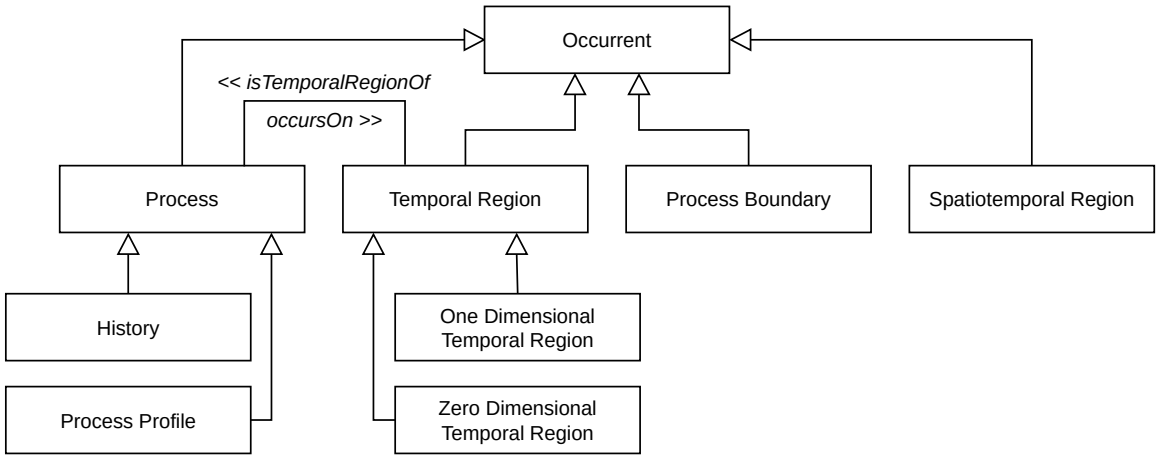


Figure 2.4: Occurrent hierarchy.

Figures

- Figure 2.3
- Figure 5.1
- Figure 5.3
- Figure 12.5
- Figure 12.9

2.1.14 Occurrent

An occurrent is an entity that unfolds itself in time or it is the instantaneous boundary of such an entity (for example a beginning or an ending) or it is a temporal or spatiotemporal region which such an entity occupies_temporal_region or occupies_spatiotemporal_region.

Annotations

- **Label:** occurrent
- **Is Defined By:** http://purl.obolibrary.org/obo/bfo.owl
- **ID:** http://purl.obolibrary.org/obo/BFO_0000003

Hierarchy

Entity
└ Occurrent

Direct Super Types

- Entity

Direct Sub Types

- Process
- ProcessBoundary
- SpatiotemporalRegion
- TemporalRegion

Disjoint Classes

- Continuant

Domain Of

- causedBy
- hasParticipant
- isCauseOf
- occursIn
- prevents

Range For

- causedBy
- isCauseOf
- participatesIn
- prevents
- triggers

Figures

- Figure 2.1
- Figure 2.4
- Figure 2.8
- Figure 7.1

2.1.15 OneDimensionalContinuantFiatBoundary

a one-dimensional continuant fiat boundary is a continuous fiat line whose location is defined in relation to some material entity.

Annotations

- **Label:** one-dimensional continuant fiat boundary
- **Is Defined By:** http://purl.obolibrary.org/obo/bfo.owl
- **ID:** http://purl.obolibrary.org/obo/BFO_0000142

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - ImmaterialEntity
        - ContinuantFiatBoundary
          - OneDimensionalContinuantFiatBoundary

Direct Super Types

- ContinuantFiatBoundary

Direct Sub Types

- GeospatialBoundary

Disjoint Classes

- TwoDimensionalContinuantFiatBoundary
- ZeroDimensionalContinuantFiatBoundary

Figures

- Figure 2.2

2.1.16 OneDimensionalSpatialRegion

A one-dimensional spatial region is a line or aggregate of lines stretching from one point in space to another.

Annotations

- **Label:** one-dimensional spatial region
- **Is Defined By:** http://purl.obolibrary.org/obo/bfo.owl
- **ID:** http://purl.obolibrary.org/obo/BFO_0000026

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - ImmaterialEntity
        - SpatialRegion
          - OneDimensionalSpatialRegion

Direct Super Types

- SpatialRegion

Disjoint Classes

- ThreeDimensionalSpatialRegion

Figures

- Figure 2.2

2.1.17 OneDimensionalTemporalRegion

A one-dimensional temporal region is a temporal region that is extended.

Annotations

- **Label:** one-dimensional temporal region
- **Is Defined By:** http://purl.obolibrary.org/obo/bfo.owl
- **ID:** http://purl.obolibrary.org/obo/BFO_0000038

Hierarchy

- Entity
  - Occurrent
    - TemporalRegion
      - OneDimensionalTemporalRegion

Direct Super Types

- TemporalRegion

Direct Sub Types

- Day

Disjoint Classes

- ZeroDimensionalTemporalRegion

Domain Of

- hasEndingInstant
- hasInsideInstant
- hasInsideInterval
- hasStartingInstant
- intervalContainedBy
- intervalContains
- intervalDisjoint
- intervalDuring
- intervalEquals
- intervalFinishedBy
- intervalFinishes
- intervalIsAfter
- intervalIsBefore
- intervalMeets
- intervalMetBy
- intervalOverlappedBy
- intervalOverlaps
- intervalStartedBy
- intervalStarts

Range For

- hasInsideInterval
- intervalContainedBy
- intervalContains
- intervalDisjoint
- intervalDuring
- intervalEquals
- intervalFinishedBy
- intervalFinishes
- intervalIsAfter
- intervalIsBefore
- intervalMeets
- intervalMetBy
- intervalOverlappedBy
- intervalOverlaps

- intervalStartedBy
- intervalStarts
- isEndingInstantOf
- isInsideInstantOf
- isStartingInstantOf

Figures

- Figure 2.4

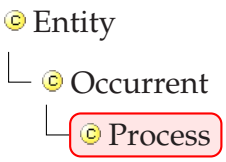
2.1.18 Process

Definition
p is a process = Def. p is an occurrent that has temporal proper parts and for some time t, p s-depends_on some material entity at t.

Annotations

- **Label:** process
- **Is Defined By:** http://purl.obolibrary.org/obo/bfo.owl
- **ID:** http://purl.obolibrary.org/obo/BFO_0000015

Hierarchy



Direct Super Types

- Occurrent

Direct Sub Types

- Act
- Cause
- Change
- Effect
- History
- InformationTransferProcess
- MechanicalProcess
- NaturalProcess
- PreventionProcess
- ProcessProfile
- RiskyProcess

- Stasis
- ThreatProcess
- ValuedProcess

Disjoint Classes

- TemporalRegion

Domain Of

- affects
- hasAccessory
- hasAccomplice
- hasInput
- hasOutput
- hasProcessPart
- inhibits
- isPartOfProcess
- isPermittedBy
- isProhibitedBy
- isRequiredBy
- occursAt
- occursOn
- produces
- realizes

Range For

- accessoryIn
- accompliceIn
- hasProcessPart
- inhibits
- isAffectedBy
- isInputOf
- isOutputOf
- isPartOfProcess
- isSiteOf
- isTemporalRegionOf
- permits
- prohibits
- realizedIn
- requires

Figures

- Figure 2.1

- Figure 2.4
- Figure 2.5
- Figure 2.8
- Figure 3.2
- Figure 5.2
- Figure 7.1
- Figure 12.6
- Figure 12.9
- Figure 13.1
- Figure 13.2
- Figure 13.4
- Figure 13.5
- Figure 13.6
- Figure 13.7
- Figure 13.8
- Figure 13.9

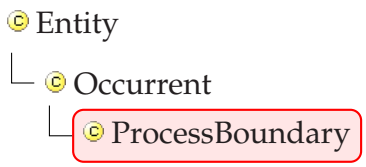
2.1.19 ProcessBoundary

Definition
p is a process boundary =Def. p is a temporal part of a process & p has no proper temporal parts.

Annotations

- **Label:** process boundary
- **Is Defined By:** http://purl.obolibrary.org/obo/bfo.owl
- **ID:** http://purl.obolibrary.org/obo/BFO_0000035

Hierarchy



Direct Super Types

- Occurrent

Direct Sub Types

- ProcessBeginning
- ProcessEnding

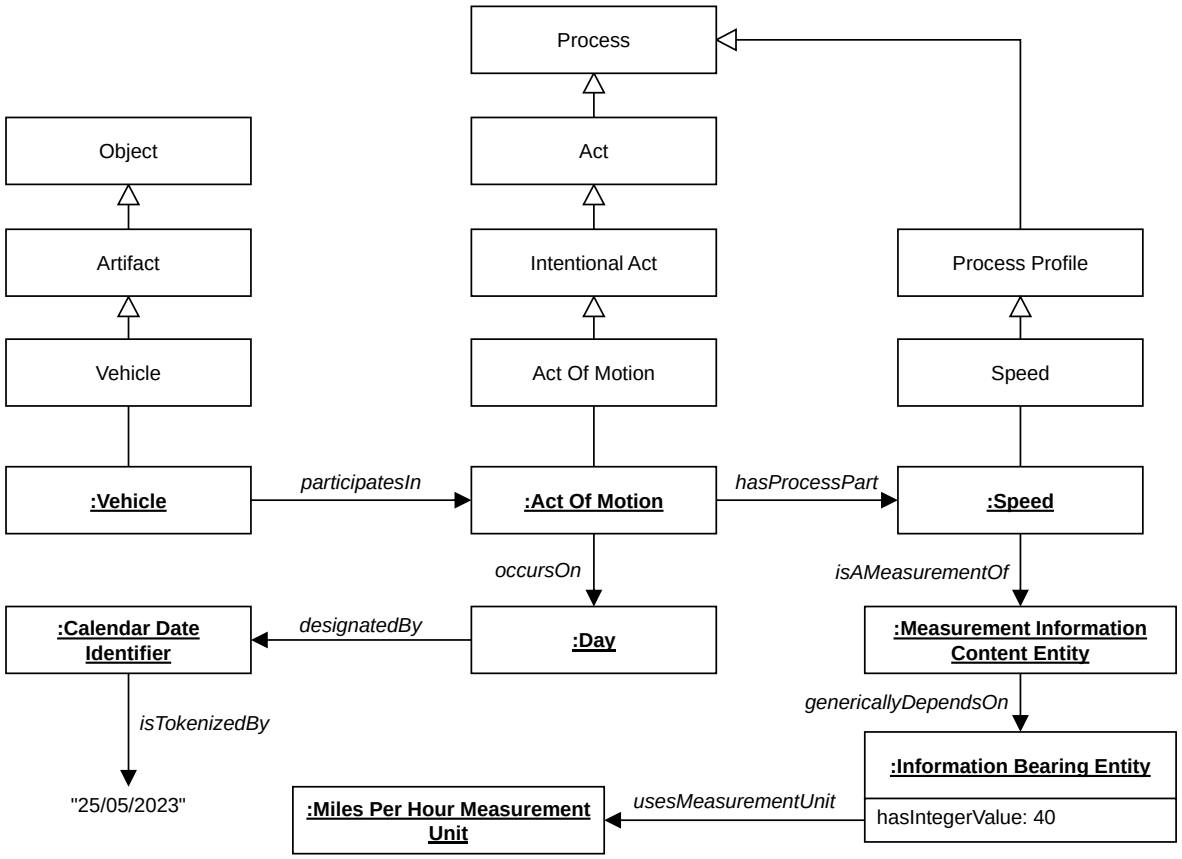


Figure 2.5: Using process profiles to represent the speed of a moving object.

Disjoint Classes

- TemporalRegion

Figures

- Figure 2.1
- Figure 2.4

2.1.20 ProcessProfile

b process_profile_of c holds when b proper_occurrent_part_of c& there is some proper_-occurrent_part d of c which has no parts in common with b & is mutually dependent on b& is such that b, c and d occupy the same temporal region.

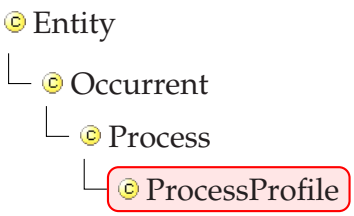
Definition
b is a process_profile =Def. there is some process c such that b process_profile_of c.

Annotations

- **Label:** process profile

- **Is Defined By:** http://purl.obolibrary.org/obo/bfo.owl
- **ID:** http://purl.obolibrary.org/obo/BFO_0000144

Hierarchy



Direct Super Types

- Process

Direct Sub Types

- ProcessRisk
- ProcessValue

Disjoint Classes

- History

Figures

- Figure 2.4
- Figure 2.5
- Figure 12.1

2.1.21 Quality

a quality is a specifically dependent continuant that, in contrast to roles and dispositions, does not require any further process in order to be realized.

Annotations

- **Label:** quality
- **Is Defined By:** http://purl.obolibrary.org/obo/bfo.owl
- **ID:** http://purl.obolibrary.org/obo/BFO_0000019

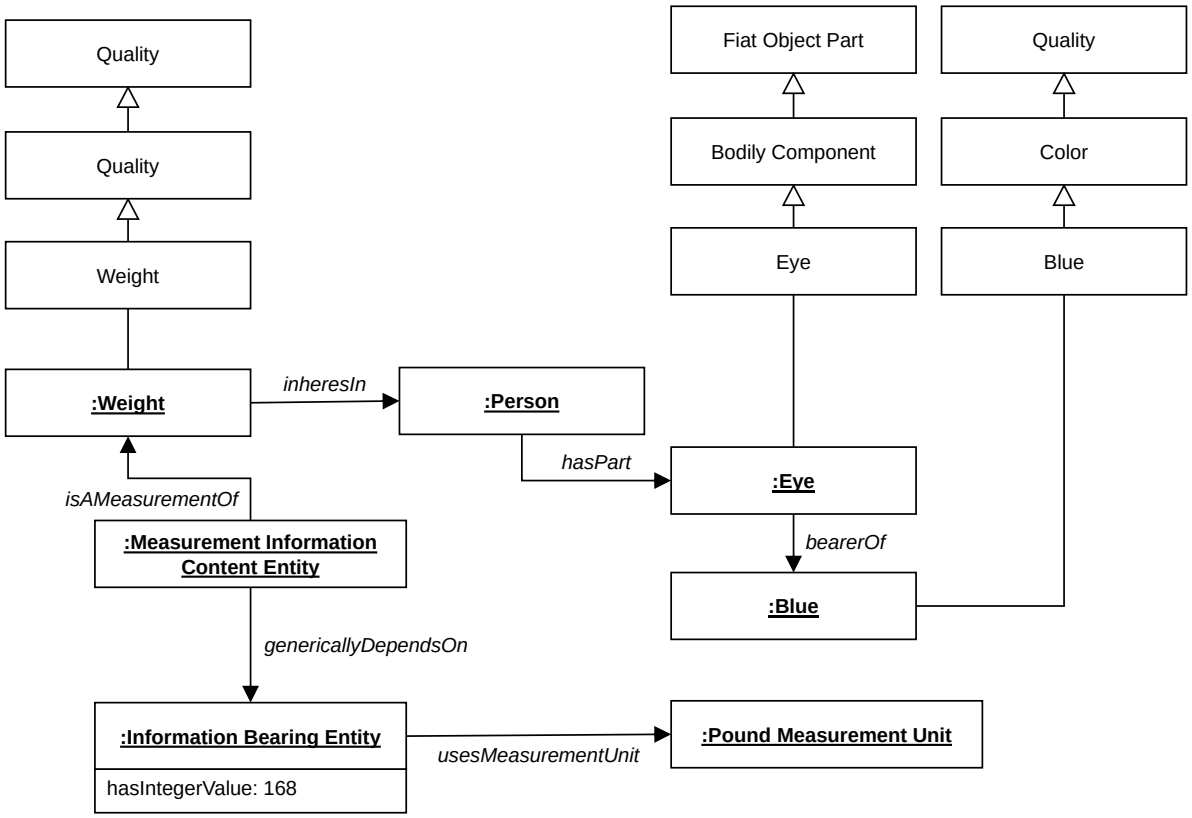


Figure 2.6: Representing the properties of a person.

Hierarchy

- Entity
  - Continuant
    - SpecificallyDependentContinuant
      - Quality

Direct Super Types

- SpecificallyDependentContinuant

Direct Sub Types

- Amount
- Hardness
- InformationQualityEntity
- RelationalQuality
- Representation
- Risk
- Value
- ValuedQuality

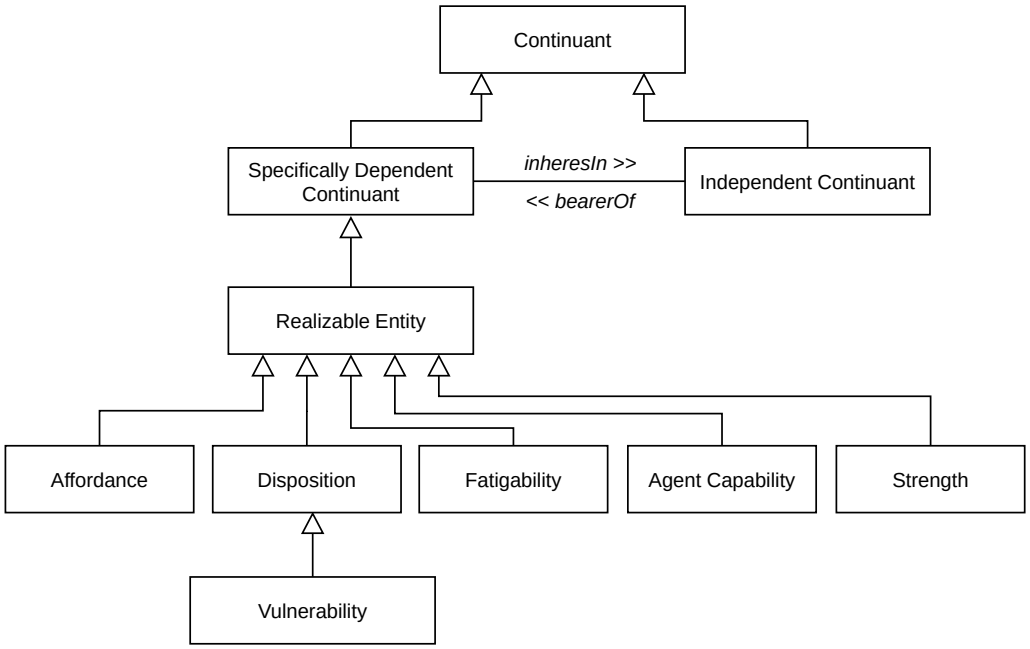


Figure 2.7: Realizable entity hierarchy.

Disjoint Classes

- RealizableEntity

Domain Of

- qualityOfAggregate

Range For

- aggregateHasQuality
- hasQuality

Figures

- Figure 2.6
- Figure 2.8
- Figure 3.1
- Figure 4.3
- Figure 12.1
- Figure 12.3
- Figure 12.4
- Figure 12.10

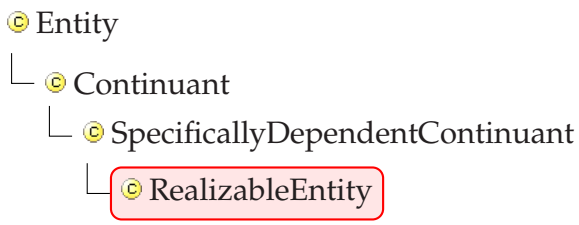
2.1.22 RealizableEntity

To say that b is a realizable entity is to say that b is a specifically dependent continuant that inheres in some independent continuant which is not a spatial region and is of a type instances of which are realized in processes of a correlated type.

Annotations

- **Label:** realizable entity
- **Is Defined By:** http://purl.obolibrary.org/obo/bfo.owl
- **ID:** http://purl.obolibrary.org/obo/BFO_0000017

Hierarchy



Direct Super Types

- SpecificallyDependentContinuant

Direct Sub Types

- Affordance
- Capability
- Disposition
- Fatigability
- Role
- Strength
- ValuedRealizableEntity

Disjoint Classes

- Quality

Domain Of

- realizedIn

Range For

- realizes

Figures

- Figure 2.7
- Figure 2.8
- Figure 3.1
- Figure 5.2
- Figure 5.3
- Figure 12.6
- Figure 12.10

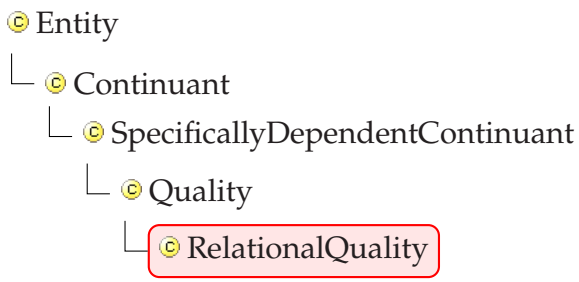
2.1.23 RelationalQuality

Definition
b is a relational quality = Def. for some independent continuants c, d and for some time t: b quality_of c at t & b quality_of d at t.

Annotations

- **Label:** relational quality
- **Is Defined By:** http://purl.obolibrary.org/obo/bfo.owl
- **ID:** http://purl.obolibrary.org/obo/BFO_0000145

Hierarchy



Direct Super Types

- Quality

Direct Sub Types

- ResourceAvailability

Figures

- Figure 2.8
- Figure 12.4

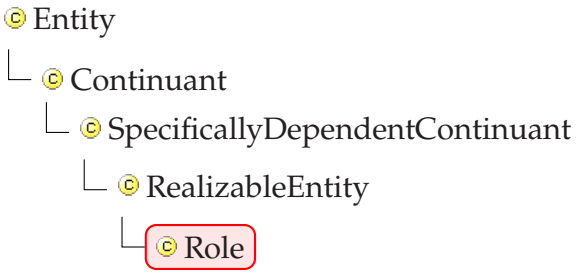
2.1.24 Role

b is a role means: b is a realizable entity & b exists because there is some single bearer that is in some special physical, social, or institutional set of circumstances in which this bearer does not have to be& b is not such that, if it ceases to exist, then the physical make-up of the bearer is thereby changed.

Annotations

- **Label:** role
- **Is Defined By:** http://purl.obolibrary.org/obo/bfo.owl
- **ID:** http://purl.obolibrary.org/obo/BFO_0000023

Hierarchy



Direct Super Types

- RealizableEntity

Direct Sub Types

- CitizenRole
- CommercialRole
- ComponentRole
- CyberSecurityRole
- InfrastructureRole
- InterpersonalRelationshipRole
- OccupationRole
- OrganizationMemberRole
- PartRole
- SystemRole

Disjoint Classes

- Disposition

Domain Of

- hasOrganizationalContext
- hasSubordinateRole
- isSubordinateRoleTo
- roleOfAggregate

Range For

- aggregateHasRole
- hasRole
- hasSubordinateRole
- isOrganizationalContextOf
- isSubordinateRoleTo

Figures

- Figure 2.8
- Figure 3.1
- Figure 5.2

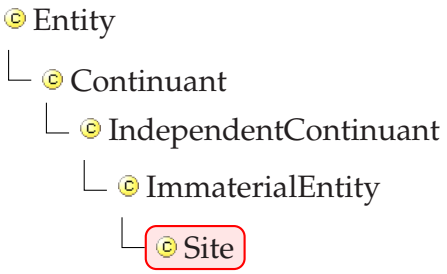
2.1.25 Site

b is a site means: b is a three-dimensional immaterial entity that is (partially or wholly) bounded by a material entity or it is a three-dimensional immaterial part thereof.

Annotations

- **Label:** site
- **Is Defined By:** http://purl.obolibrary.org/obo/bfo.owl
- **ID:** http://purl.obolibrary.org/obo/BFO_0000029

Hierarchy



Direct Super Types

- ImmaterialEntity

Direct Sub Types

- ArtifactLocation
- GeospatialRegion

Disjoint Classes

- SpatialRegion

Figures

- Figure 2.2
- Figure 2.3

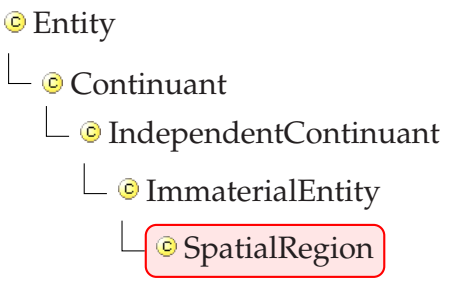
2.1.26 SpatialRegion

A spatial region is a continuant entity that is a continuant_part_of spaceR as defined relative to some frame R.

Annotations

- **Label:** spatial region
- **Is Defined By:** http://purl.obolibrary.org/obo/bfo.owl
- **ID:** http://purl.obolibrary.org/obo/BFO_0000006

Hierarchy



Direct Super Types

- ImmaterialEntity

Direct Sub Types

- OneDimensionalSpatialRegion
- ThreeDimensionalSpatialRegion
- TwoDimensionalSpatialRegion
- ZeroDimensionalSpatialRegion

Disjoint Classes

- ContinuantFiatBoundary
- Site

Figures

- Figure 2.2
- Figure 2.3

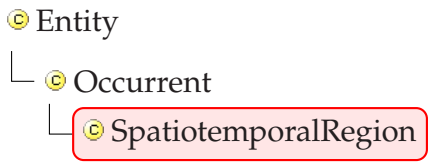
2.1.27 SpatiotemporalRegion

A spatiotemporal region is an occurrent entity that is part of spacetime.

Annotations

- **Label:** spatiotemporal region
- **Is Defined By:** http://purl.obolibrary.org/obo/bfo.owl
- **ID:** http://purl.obolibrary.org/obo/BFO_0000011

Hierarchy



Direct Super Types

- Occurrent

Disjoint Classes

- TemporalRegion

Figures

- Figure 2.1
- Figure 2.4

2.1.28 SpecificallyDependentContinuant

Definition
b is a specifically dependent continuant = Def. b is a continuant & there is some independent continuant c which is not a spatial region and which is such that b s-depends_on c at every time t during the course of b's existence.

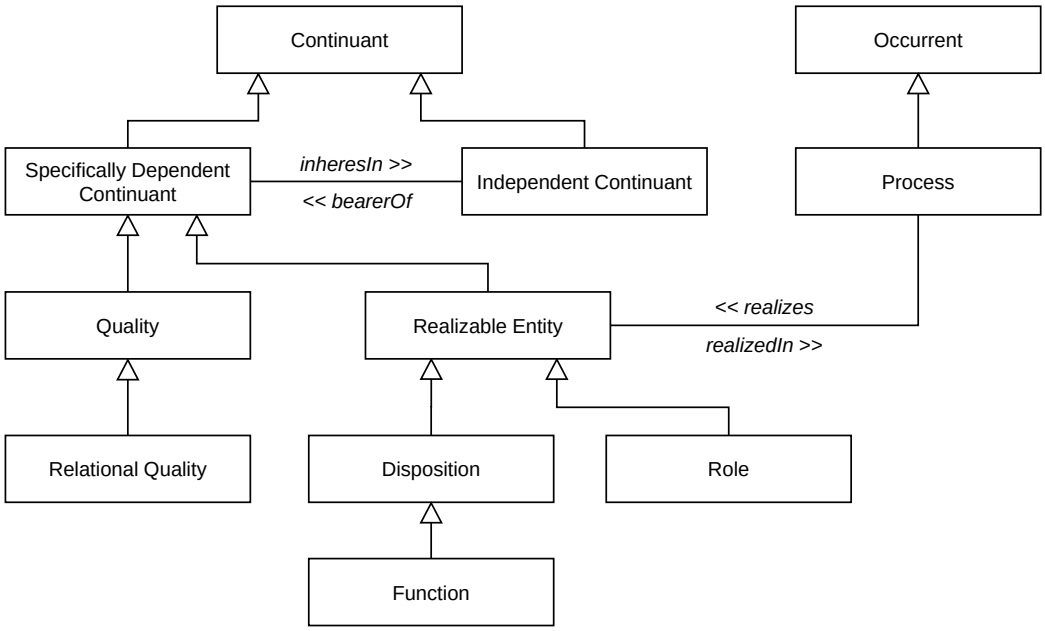


Figure 2.8: Specifically dependent continuant hierarchy.

Annotations

- **Label:** specifically dependent continuant
- **Is Defined By:** http://purl.obolibrary.org/obo/bfo.owl
- **ID:** http://purl.obolibrary.org/obo/BFO_0000020

Hierarchy

Entity
└ Continuant
  └ SpecificallyDependentContinuant

Direct Super Types

- Continuant

Direct Sub Types

- Quality
- RealizableEntity
- ValuedSpecificallyDependentContinuant

Disjoint Classes

- GenericallyDependentContinuant
- IndependentContinuant

Domain Of

- concretizes

Range For

- bearerOf
- isConcretizedAs

Figures

- Figure 2.1
- Figure 2.7
- Figure 2.8
- Figure 3.1
- Figure 4.3
- Figure 5.3
- Figure 12.4
- Figure 12.8
- Figure 12.10

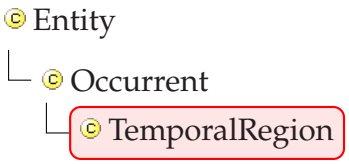
2.1.29 TemporalRegion

A temporal region is an occurrent entity that is part of time as defined relative to some reference frame.

Annotations

- **Label:** temporal region
- **Is Defined By:** http://purl.obolibrary.org/obo/bfo.owl
- **ID:** http://purl.obolibrary.org/obo/BFO_0000008

Hierarchy



Direct Super Types

- Occurrent

Direct Sub Types

- OneDimensionalTemporalRegion
- ZeroDimensionalTemporalRegion

Disjoint Classes

- Process
- ProcessBoundary
- SpatiotemporalRegion

Domain Of

- isTemporalRegionOf

Range For

- occursOn

Figures

- Figure 2.1
- Figure 2.4
- Figure 3.2

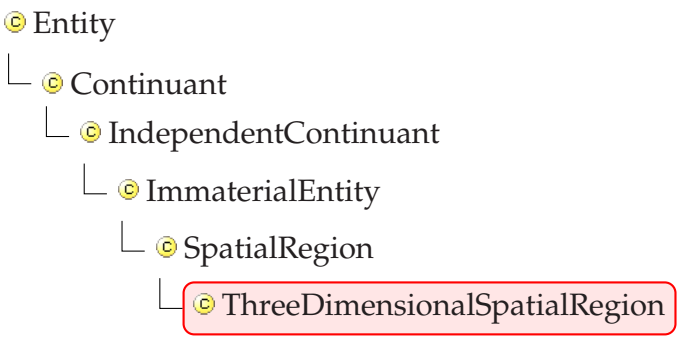
2.1.30 ThreeDimensionalSpatialRegion

A three-dimensional spatial region is a spatial region that is of three dimensions.

Annotations

- **Label:** three-dimensional spatial region
- **Is Defined By:** http://purl.obolibrary.org/obo/bfo.owl
- **ID:** http://purl.obolibrary.org/obo/BFO_0000028

Hierarchy



Direct Super Types

- SpatialRegion

Disjoint Classes

- OneDimensionalSpatialRegion
- TwoDimensionalSpatialRegion
- ZeroDimensionalSpatialRegion

Figures

- Figure 2.2

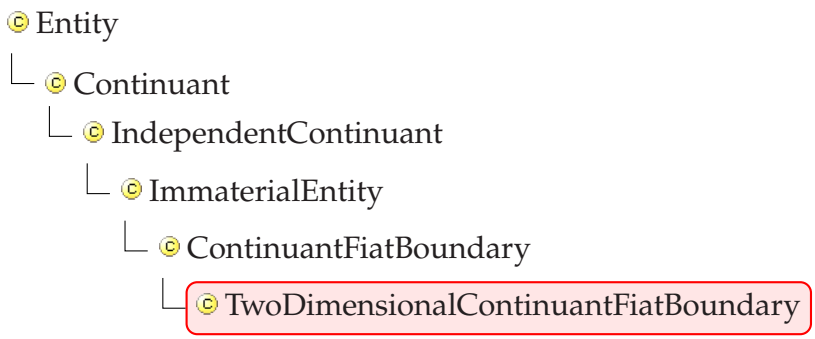
2.1.31 TwoDimensionalContinuantFiatBoundary

a two-dimensional continuant fiat boundary (surface) is a self-connected fiat surface whose location is defined in relation to some material entity.

Annotations

- **Label:** two-dimensional continuant fiat boundary
- **Is Defined By:** http://purl.obolibrary.org/obo/bfo.owl
- **ID:** http://purl.obolibrary.org/obo/BFO_0000146

Hierarchy



Direct Super Types

- ContinuantFiatBoundary

Disjoint Classes

- OneDimensionalContinuantFiatBoundary

Figures

- Figure 2.2

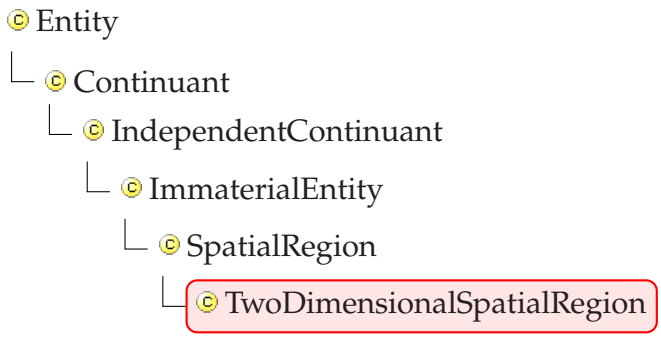
2.1.32 TwoDimensionalSpatialRegion

A two-dimensional spatial region is a spatial region that is of two dimensions.

Annotations

- **Label:** two-dimensional spatial region
- **Is Defined By:** http://purl.obolibrary.org/obo/bfo.owl
- **ID:** http://purl.obolibrary.org/obo/BFO_0000009

Hierarchy



Direct Super Types

- SpatialRegion

Disjoint Classes

- ThreeDimensionalSpatialRegion

Figures

- Figure 2.2

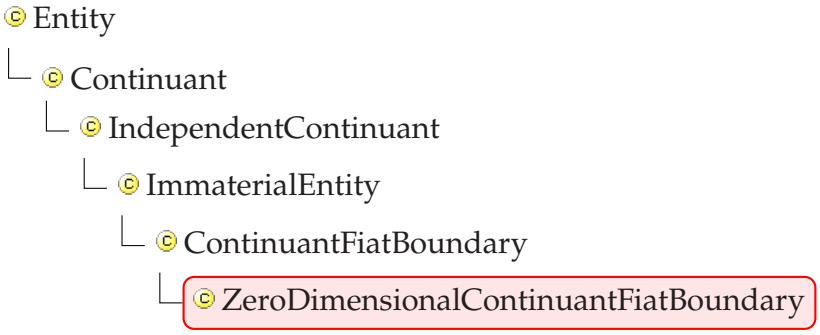
2.1.33 ZeroDimensionalContinuantFiatBoundary

a zero-dimensional continuant fiat boundary is a fiat point whose location is defined in relation to some material entity.

Annotations

- **Label:** zero-dimensional continuant fiat boundary
- **Is Defined By:** http://purl.obolibrary.org/obo/bfo.owl
- **ID:** http://purl.obolibrary.org/obo/BFO_0000147

Hierarchy



Direct Super Types

- ContinuantFiatBoundary

Direct Sub Types

- GeospatialPosition

Disjoint Classes

- OneDimensionalContinuantFiatBoundary

Figures

- Figure 2.2

2.1.34 ZeroDimensionalSpatialRegion

A zero-dimensional spatial region is a point in space.

Annotations

- **Label:** zero-dimensional spatial region
- **Is Defined By:** http://purl.obolibrary.org/obo/bfo.owl
- **ID:** http://purl.obolibrary.org/obo/BFO_0000018

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - ImmaterialEntity
        - SpatialRegion
          - ZeroDimensionalSpatialRegion

Direct Super Types

- SpatialRegion

Disjoint Classes

- ThreeDimensionalSpatialRegion

Figures

- Figure 2.2

2.1.35 ZeroDimensionalTemporalRegion

A zero-dimensional temporal region is a temporal region that is without extent.

Annotations

- **Label:** zero-dimensional temporal region
- **Is Defined By:** http://purl.obolibrary.org/obo/bfo.owl
- **ID:** http://purl.obolibrary.org/obo/BFO_0000148

Hierarchy

- Entity
  - Occurrent
    - TemporalRegion
      - ZeroDimensionalTemporalRegion

Direct Super Types

- TemporalRegion

Disjoint Classes

- OneDimensionalTemporalRegion

Domain Of

- instantIsAfter
- instantIsBefore
- isEndingInstantOf
- isInsideInstantOf
- isStartingInstantOf

Range For

- hasEndingInstant
- hasInsideInstant
- hasStartingInstant
- instantIsAfter
- instantIsBefore

Figures

- Figure 2.4

2.2 Properties

2.2.1 containsProcess

Annotations

- **Label:** contains process
- **Is Defined By:** http://purl.obolibrary.org/obo/bfo.owl
- **ID:** http://purl.obolibrary.org/obo/BFO_0000067

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** occursIn

Direct Sub Types

- isSiteOf

Figures

- Figure 2.1

2.2.2 hasPart

Annotations

- **Label:** has part
- **ID:** http://purl.obolibrary.org/obo/BFO_0000051

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Transitive:** True
- **Inverse Of:** partOf

Direct Sub Types

- hasFileAttachment
- hasMember
- hasProcessPart
- hasSpatialPart

Figures

- Figure 2.1
- Figure 2.6
- Figure 4.2

2.2.3 occursIn

Annotations

- **Label:** occurs in
- **Is Defined By:** http://purl.obolibrary.org/obo/bfo.owl
- **ID:** http://purl.obolibrary.org/obo/BFO_0000066

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** containsProcess

Direct Sub Types

- occursAt

SuperProperty Of (Chain)

- partOf o occursIn SubPropertyOf: occursIn
- occursIn o partOf SubPropertyOf: occursIn

Domain

- Occurrent

Range

- IndependentContinuant

Figures

- Figure 2.1

2.2.4 partOf

Annotations

- **Label:** part of
- **See Also:** http://ontologydesignpatterns.org/wiki/Community:Parts_and_Collections
- **See Also:** http://ontologydesignpatterns.org/wiki/Submissions:PartOf
- **ID:** http://purl.obolibrary.org/obo/BFO_0000050

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Transitive:** True
- **Inverse Of:** hasPart

Direct Sub Types

- fileAttachmentOf
- isPartOfProcess
- memberOf
- spatialPartOf

Figures

- Figure 2.1

2.2.5 realizedIn

[copied from inverse property 'realizes'] to say that b realizes c at t is to assert that there is some material entity d & b is a process which has participant d at t & c is a disposition or role of which d is bearer_of at t& the type instantiated by b is correlated with the type instantiated by c.

Annotations

- **Label:** realized in
- **Is Defined By:** http://purl.obolibrary.org/obo/bfo.owl
- **ID:** http://purl.obolibrary.org/obo/BFO_0000054

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** realizes

Domain

- RealizableEntity

Range

- Process

Figures

- Figure 2.8
- Figure 5.2
- Figure 12.8
- Figure 13.3
- Figure 13.6

2.2.6 realizes

to say that b realizes c at t is to assert that there is some material entity d & b is a process which has participant d at t & c is a disposition or role of which d is bearer_of at t& the type instantiated by b is correlated with the type instantiated by c.

SOfIoTs Note

This property is defined as part of the suite of Common Core Ontologies. An additional SubPropertyOf axiom was added to the property; i.e., 'has part' o 'realizes'. This axiom establishes that any realizable entity (e) that is realized in a process (p1) will be inferred to be realized in a process (p2) of which p1 is a process part.

Annotations

- **Label:** realizes
- **Is Defined By:** http://purl.obolibrary.org/obo/iao.owl
- **ID:** http://purl.obolibrary.org/obo/BFO_0000055

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** realizedIn

SuperProperty Of (Chain)

- hasPart o realizes SubPropertyOf: realizes

Domain

- Process

Range

- RealizableEntity

Figures

- Figure 2.8
- Figure 5.2
- Figure 12.6

3

Relations Ontology

The Relations Ontology is designed to represent many of the relations (i.e. object properties) that hold between entities at the level of the mid-level Common Core Ontologies.

3.1 Properties

3.1.1 2DBoundaryOf

Annotations

- **Label:** 2D boundary of
- **ID:** http://purl.obolibrary.org/obo/RO_0002000

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** has2DBoundary

Figures

- Figure 2.2
- Figure 2.3

3.1.2 accessoryIn

Annotations

- **Label:** accessory in
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ExtendedRelationOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/accessory_in

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** hasAccessory

Hierarchy

participatesIn
└ accessoryIn

Direct Super Types

- participatesIn

Domain

- MaterialEntity

Range

- Process

3.1.3 affects

Annotations

- **Label:** affects
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ExtendedRelationOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/affects

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** isAffectedBy

Hierarchy

hasParticipant
└ affects

Direct Super Types

- hasParticipant

Domain

- Process

Range

- Continuant

Figures

- Figure 4.2
- Figure 7.1

3.1.4 aggregateBearerOf

Annotations

- **Label:** aggregate bearer of
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ExtendedRelationOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/aggregate_bearer_of

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** inheresInAggregate

Direct Sub Types

- aggregateHasCapability
- aggregateHasDisposition
- aggregateHasQuality
- aggregateHasRole

Domain

- ObjectAggregate

Range

- (SpecificallyDependentContinuant GenericallyDependentContinuant)

3.1.5 aggregateHasDisposition

Annotations

- **Label:** aggregate has disposition
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ExtendedRelationOntology

- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/aggregate_has_disposition

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** dispositionOfAggregate

Hierarchy

aggregateBearerOf
  aggregateHasDisposition

Direct Super Types

- aggregateBearerOf

Domain

- ObjectAggregate

Range

- Disposition

3.1.6 aggregateHasQuality

Annotations

- **Label:** aggregate has quality
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ExtendedRelationOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/aggregate_has_quality

Facets

- **Property Type:** ObjectProperty
- **Functional:** False

Hierarchy

aggregateBearerOf
  aggregateHasQuality

Direct Super Types

- aggregateBearerOf

Domain

- ObjectAggregate

Range

- Quality

3.1.7 aggregateHasRole

Annotations

- **Label:** aggregate has role
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ExtendedRelationOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/aggregate_has_role

Facets

- **Property Type:** ObjectProperty
- **Functional:** False

Hierarchy

aggregateBearerOf
└ aggregateHasRole

Direct Super Types

- aggregateBearerOf

Domain

- ObjectAggregate

Range

- Role

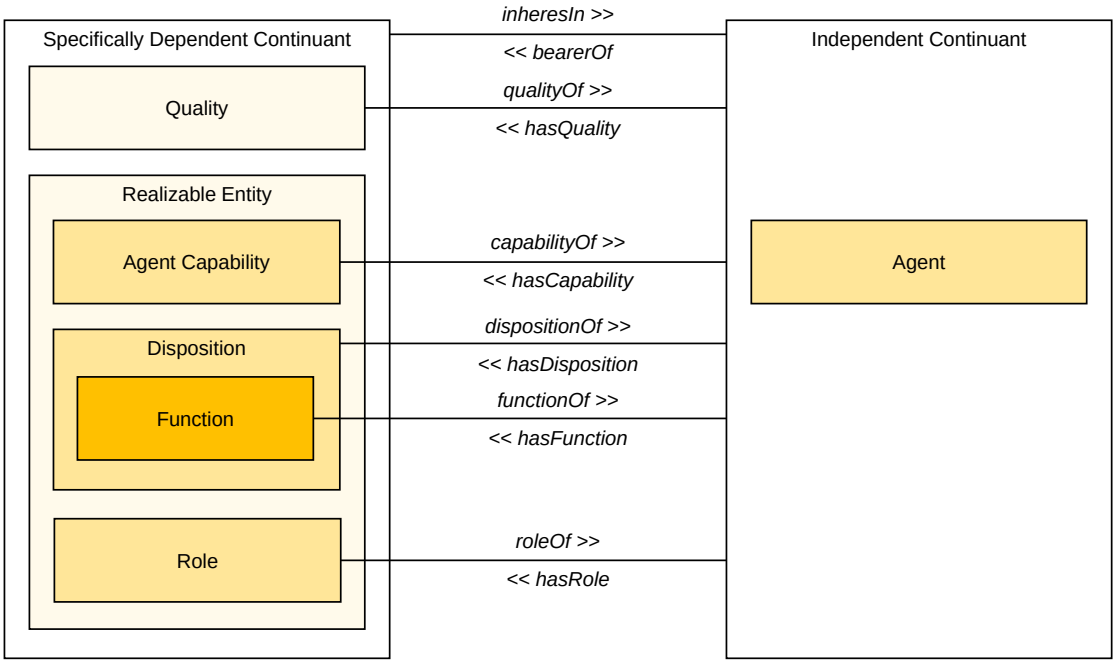


Figure 3.1: Dispositional and categorical properties: The mapping of specifically dependent continuants to independent continuants.

3.1.8 bearerOf

Annotations

- **Label:** bearer of
- **ID:** http://purl.obolibrary.org/obo/RO_0000053

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** inheresIn

Direct Sub Types

- hasCapability
- hasDisposition
- hasFunction
- hasQuality
- hasRole

Range

- SpecificallyDependentContinuant

Figures

- Figure 2.6
- Figure 2.7
- Figure 2.8
- Figure 3.1
- Figure 4.3
- Figure 5.3
- Figure 12.8
- Figure 12.10
- Figure 13.1
- Figure 13.3

3.1.9 causedBy

Annotations

- **Label:** caused by
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ExtendedRelationOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/caused_by

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** isCauseOf

Direct Sub Types

- inhibitedBy
- isDirectlyCausedBy
- processStartedBy

Domain

- Occurrent

Range

- Occurrent

Figures

- Figure 7.1
- Figure 13.4

3.1.10 concretizes

Annotations

- **Label:** concretizes
- **ID:** http://purl.obolibrary.org/obo/RO_0000059

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** isConcretizedAs

Domain

- SpecificallyDependentContinuant

Range

- GenericallyDependentContinuant

Figures

- Figure 4.3
- Figure 12.1
- Figure 12.3

3.1.11 containedIn

Annotations

- **Label:** contained in
- **ID:** http://purl.obolibrary.org/obo/RO_0001018

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** contains

SuperProperty Of (Chain)

- locatedIn o partOf SubPropertyOf: containedIn

Domain

- MaterialEntity

Range

- IndependentContinuant

Figures

- Figure 2.3

3.1.12 contains

Annotations

- **Label:** contains
- **ID:** http://purl.obolibrary.org/obo/RO_0001019

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** containedIn

Figures

- Figure 2.3

3.1.13 derivesFrom

Annotations

- **Label:** derives from
- **ID:** http://purl.obolibrary.org/obo/RO_0001000

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** derivesInto

3.1.14 derivesInto

Annotations

- **Label:** derives into
- **ID:** http://purl.obolibrary.org/obo/RO_0001001

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** derivesFrom

3.1.15 dispositionOf

Annotations

- **Label:** disposition of
- **ID:** http://purl.obolibrary.org/obo/RO_0000092

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** hasDisposition

Hierarchy

inheresIn
└ dispositionOf

Direct Super Types

- inheresIn

Figures

- Figure 3.1

3.1.16 dispositionOfAggregate

Annotations

- **Label:** disposition of aggregate
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ExtendedRelationOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/disposition_of_aggregate

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** aggregateHasDisposition

Hierarchy

inheresInAggregate
dispositionOfAggregate

Direct Super Types

- inheresInAggregate

Domain

- Disposition

Range

- ObjectAggregate

3.1.17 functionOf

Annotations

- **Label:** function of
- **ID:** http://purl.obolibrary.org/obo/RO_0000079

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** hasFunction

Hierarchy

inheresIn
functionOf

Direct Super Types

- inheresIn

Domain

- Function

Figures

- Figure 3.1

3.1.18 genericallyDependsOn

Annotations

- **Label:** generically depends on
- **ID:** http://purl.obolibrary.org/obo/RO_0010001

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** isCarrierOf

Direct Sub Types

- isMeasurementUnitOf

SuperProperty Of (Chain)

- inheresIn o isConcretizedAs SubPropertyOf: genericallyDependsOn

Domain

- GenericallyDependentContinuant

Range

- IndependentContinuant

Figures

- Figure 2.5
- Figure 2.6
- Figure 4.1
- Figure 4.3
- Figure 13.5

3.1.19 has2DBoundary

Annotations

- **Label:** has 2D boundary
- **ID:** http://purl.obolibrary.org/obo/RO_0002002

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** 2DBoundaryOf

Domain

- MaterialEntity

Range

- ImmaterialEntity

Figures

- Figure 2.2
- Figure 2.3

3.1.20 hasAccessory

Annotations

- **Label:** has accessory
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ExtendedRelationOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/has_accessory

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** accessoryIn

Hierarchy

hasParticipant
└ hasAccessory

Direct Super Types

- hasParticipant

Domain

- Process

Range

- MaterialEntity

3.1.21 hasDisposition

Annotations

- **Label:** has disposition
- **ID:** http://purl.obolibrary.org/obo/RO_0000091

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** dispositionOf

Hierarchy

bearerOf
hasDisposition

Direct Super Types

- bearerOf

Domain

- IndependentContinuant

Range

- Disposition

Figures

- Figure 3.1

3.1.22 hasFunction

Annotations

- **Label:** has function
- **ID:** http://purl.obolibrary.org/obo/RO_0000085

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** functionOf

Hierarchy

bearerOf
hasFunction

Direct Super Types

- bearerOf

Domain

- IndependentContinuant

Range

- Function

Figures

- Figure 3.1

3.1.23 hasInput

SOfIoTs Note

This property is defined as part of the suite of Common Core Ontologies. An additional SubPropertyOf axiom was added to the property; i.e., 'has part' o 'has output'. This axiom establishes that any input of a sub-process (p1) will be inferred to be an input of the process (p2) that has p1 as a process part.

Annotations

- **Label:** has input
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ExtendedRelationOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/has_input

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** isInputOf

Hierarchy

hasParticipant
└ hasInput

Direct Super Types

- hasParticipant

SuperProperty Of (Chain)

- hasPart o hasInput SubPropertyOf: hasInput

Domain

- Process

Range

- Continuant

Figures

- Figure 3.2

3.1.24 hasMember

Annotations

- **Label:** has member
- **ID:** http://purl.obolibrary.org/obo/RO_0002351

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Irreflexive:** True
- **Inverse Of:** memberOf

Hierarchy

hasPart
└ hasMember

Direct Super Types

- hasPart

Figures

- Figure 5.1
- Figure 5.3

3.1.25 hasMemberOfLocatedIn

Annotations

- **Label:** has member of located in
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ExtendedRelationOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/has_member_of_located_in

Facets

- **Property Type:** ObjectProperty
- **Functional:** False

Domain

- ObjectAggregate

Range

- MaterialEntity

3.1.26 hasObject

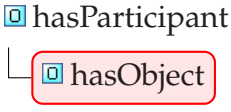
Annotations

- **Label:** has object
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ExtendedRelationOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/has_object

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** isObjectOf

Hierarchy



Direct Super Types

- hasParticipant

3.1.27 hasOutput

SOfIoTs Note

This property is defined as part of the suite of Common Core Ontologies. An additional SubPropertyOf axiom was added to the property; i.e., 'has part' o 'has output'. This axiom establishes that any output of a sub-process (p1) will be inferred to be an output of the process (p2) that has p1 as a process part.

Annotations

- **Label:** has output
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ExtendedRelationOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/has_output

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** isOutputOf

Hierarchy

hasParticipant
└ hasOutput

Direct Super Types

- hasParticipant

SuperProperty Of (Chain)

- hasPart o hasOutput SubPropertyOf: hasOutput

Domain

- Process

Range

- Continuant

Figures

- Figure 3.2

3.1.28 hasParticipant

SOfIoTs Note

This property forms part of the common core relations ontology. Additional axioms were added to support the reasoning-related requirements of the SOfIoTs work. These include the addition of a SubProperty Of chain that establishes realizable entities as participants in processes. In short, if a realizable entity (e) is realized in a process (p), then e is a participant in p. A second SubProperty Of chain was added to establish the bearers of specifically dependent continuants as participants in a process. If a subject (s) is the bearer of a specifically dependent continuant (c), and c participates in a process (p), then s is a participant in p.

Annotations

- **Label:** has participant
- **ID:** http://purl.obolibrary.org/obo/RO_0000057

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** participatesIn

Direct Sub Types

- affects
- hasAccessory
- hasAgent
- hasCausalFactor
- hasInput
- hasObject
- hasOutput
- hasRecipient
- hasSender

SuperProperty Of (Chain)

- hasPart o realizes o inheresIn SubPropertyOf: hasParticipant
- hasPart o hasParticipant SubPropertyOf: hasParticipant
- realizes SubPropertyOf: hasParticipant
- hasParticipant o inheresIn SubPropertyOf: hasParticipant

Domain

- Occurrent

Range

- Continuant

Figures

- Figure 2.1
- Figure 13.3
- Figure 13.4

3.1.29 hasProcessPart

Annotations

- **Label:** has process part
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ExtendedRelationOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/has_process_part

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** isPartOfProcess

Hierarchy

hasPart
└ hasProcessPart

Direct Super Types

- hasPart

Direct Sub Types

- hasThreatPathProcessPart

Domain

- Process

Range

- Process

Figures

- Figure 2.5

3.1.30 hasQuality

Annotations

- **Label:** has quality
- **ID:** http://purl.obolibrary.org/obo/RO_0000086

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** qualityOf

Hierarchy

bearerOf
└ hasQuality

Direct Super Types

- bearerOf

Range

- Quality

Figures

- Figure 3.1

3.1.31 hasRole

Annotations

- **Label:** has role
- **ID:** http://purl.obolibrary.org/obo/RO_0000087

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** roleOf

Hierarchy

bearerOf
└ hasRole

Direct Super Types

- bearerOf

Domain

- IndependentContinuant

Range

- Role

Figures

- Figure 3.1
- Figure 5.2

3.1.32 inheresIn

Annotations

- **Label:** inheres in
- **ID:** http://purl.obolibrary.org/obo/RO_0000052

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** bearerOf

Direct Sub Types

- capabilityOf
- dispositionOf
- functionOf
- qualityOf
- roleOf

Figures

- Figure 2.6
- Figure 2.7
- Figure 2.8
- Figure 3.1
- Figure 4.3
- Figure 5.3
- Figure 12.3
- Figure 12.4
- Figure 13.6

3.1.33 inheresInAggregate

Annotations

- **Label:** inheres in aggregate
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ExtendedRelationOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/inheres_in_aggregate

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** aggregateBearerOf

Direct Sub Types

- capabilityOfAggregate
- dispositionOfAggregate
- qualityOfAggregate
- roleOfAggregate

Domain

- (SpecificallyDependentContinuant GenericallyDependentContinuant)

Range

- ObjectAggregate

3.1.34 isAffectedBy

Annotations

- **Label:** is affected by
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ExtendedRelationOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/is_affected_by

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** affects

Hierarchy

participatesIn
isAffectedBy

Direct Super Types

- participatesIn

Domain

- Continuant

Range

- Process

Figures

- Figure 7.1

3.1.35 isCarrierOf

Annotations

- **Label:** is carrier of
- **ID:** http://purl.obolibrary.org/obo/RO_0010002

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** genericallyDependsOn

Direct Sub Types

- usesMeasurementUnit

SuperProperty Of (Chain)

- concretizes o bearerOf SubPropertyOf: isCarrierOf

Domain

- IndependentContinuant

Range

- GenericallyDependentContinuant

Figures

- Figure 4.3
- Figure 12.1

3.1.36 isCauseOf

SOfIoTs Note

This property was asserted to be transitive. This reflects a change from the way the is cause of property is characterized in the common core ontologies.

Annotations

- **Label:** is cause of
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ExtendedRelationOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/is_cause_of

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Transitive:** True
- **Inverse Of:** causedBy

Direct Sub Types

- inhibits
- isDirectCauseOf
- processStarts

Domain

- Occurrent

Range

- Occurrent

Figures

- Figure 7.1
- Figure 13.1
- Figure 13.2
- Figure 13.6
- Figure 13.7

3.1.37 isConcretizedAs

Annotations

- **Label:** is concretized as
- **ID:** http://purl.obolibrary.org/obo/RO_0000058

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** concretizes

Domain

- GenericallyDependentContinuant

Range

- SpecificallyDependentContinuant

Figures

- Figure 4.3

3.1.38 isInputOf

Annotations

- **Label:** is input of
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ExtendedRelationOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/is_input_of

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** hasInput

Hierarchy

participatesIn
└ isInputOf

Direct Super Types

- participatesIn

Domain

- Continuant

Range

- Process

Figures

- Figure 3.2

3.1.39 isMadeOf

Annotations

- **Label:** is made of
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ExtendedRelationOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/is_made_of

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** isMaterialOf

Domain

- Object

Range

- Object

Figures

- Figure 2.3

3.1.40 isMaterialOf

Annotations

- **Label:** is material of
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ExtendedRelationOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/is_material_of

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** isMadeOf

Domain

- Object

Range

- Object

Figures

- Figure 2.3

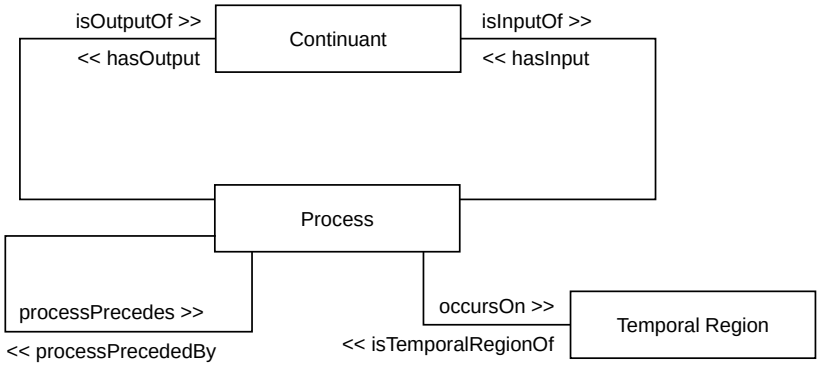


Figure 3.2: Process inputs and outputs. Processes are preceded by other processes. They occur on temporal regionsm, such as a particular day.

3.1.41 isObjectOf

Annotations

- **Label:** is object of
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ExtendedRelationOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/is_object_of

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** hasObject

Hierarchy

participatesIn
└ isObjectOf

Direct Super Types

- participatesIn

3.1.42 isOutputOf

Annotations

- **Label:** is output of
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ExtendedRelationOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/is_output_of

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** hasOutput

Hierarchy

participatesIn
└ isOutputOf

Direct Super Types

- participatesIn

Domain

- Continuant

Range

- Process

Figures

- Figure 3.2
- Figure 12.1

3.1.43 isPartOfProcess

Annotations

- **Label:** is part of process
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ExtendedRelationOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/is_part_of_process

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** hasProcessPart

Hierarchy

partOf
└ isPartOfProcess

Direct Super Types

- partOf

Direct Sub Types

- isPartOfThreatPath

Domain

- Process

Range

- Process

3.1.44 isPredecessorOf

More informally, c1 is a predecessor of c2 iff c1 has been followed or replaced by c2.

Annotations

- **Label:** is predecessor of
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ExtendedRelationOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/is_predecessor_of

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** isSuccessorOf

Domain

- IndependentContinuant

Range

- IndependentContinuant

3.1.45 isSiteOf

Annotations

- **Label:** is site of
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ExtendedRelationOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/is_site_of

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** occursAt

Hierarchy

containsProcess
└ isSiteOf

Direct Super Types

- containsProcess

Domain

- (SpatialRegion Site)

Range

- Process

3.1.46 isSuccessorOf

Annotations

- **Label:** is successor of
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ExtendedRelationOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/is_successor_of

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** isPredecessorOf

Domain

- IndependentContinuant

Range

- IndependentContinuant

3.1.47 isTemporalRegionOf

Annotations

- **Label:** is temporal region of
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ExtendedRelationOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/is_temporal_region_of

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** occursOn

Domain

- TemporalRegion

Range

- Process

Figures

- Figure 2.4
- Figure 3.2

3.1.48 isTokenizedBy

Annotations

- **Label:** is tokenized by
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ExtendedRelationOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/is_tokenized_by

Facets

- **Property Type:** AnnotationProperty

Figures

- Figure 2.5
- Figure 4.1

3.1.49 locatedIn

Annotations

- **Label:** located in
- **ID:** http://purl.obolibrary.org/obo/RO_0001025

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Transitive:** True
- **Inverse Of:** locationOf

SuperProperty Of (Chain)

- locatedIn o partOf SubPropertyOf: locatedIn

Domain

- IndependentContinuant

Range

- IndependentContinuant

Figures

- Figure 2.3

3.1.50 locationOf

Annotations

- **Label:** location of
- **ID:** http://purl.obolibrary.org/obo/RO_0001015

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Transitive:** True
- **Inverse Of:** locatedIn

Figures

- Figure 2.3

3.1.51 memberOf

Annotations

- **Label:** member of
- **ID:** http://purl.obolibrary.org/obo/RO_0002350

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** hasMember

Hierarchy

Direct Super Types

- partOf

Figures

- Figure 5.1
- Figure 5.3

3.1.52 occursAt

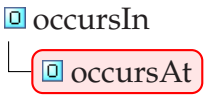
Annotations

- **Label:** occurs at
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ExtendedRelationOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/occurs_at

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** isSiteOf

Hierarchy



Direct Super Types

- occursIn

Domain

- Process

Range

- (SpatialRegion Site)

3.1.53 occursOn

Annotations

- **Label:** occurs on
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ExtendedRelationOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/occurs_on

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** isTemporalRegionOf

Domain

- Process

Range

- TemporalRegion

Figures

- Figure 2.4
- Figure 2.5
- Figure 3.2

3.1.54 participatesIn

Annotations

- **Label:** participates in
- **ID:** http://purl.obolibrary.org/obo/RO_0000056

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** hasParticipant

Direct Sub Types

- accessoryIn
- agentIn
- isAffectedBy
- isCausalFactorIn
- isInputOf
- isObjectOf
- isOutputOf
- receives
- sends

Domain

- Continuant

Range

- Occurrent

Figures

- Figure 2.1
- Figure 2.5
- Figure 5.2
- Figure 12.2
- Figure 12.8
- Figure 13.1

3.1.55 processStartedBy

A process x is started by another process y when y causes x while y is still occurring.

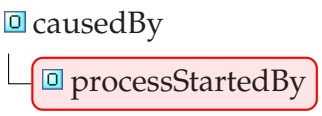
Annotations

- **Label:** process started by
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ExtendedRelationOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/process_started_by

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** processStarts

Hierarchy



Direct Super Types

- causedBy

3.1.56 processStarts

A process x starts another process y when x causes y while x is still occurring.

Annotations

- **Label:** process starts
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ExtendedRelationOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/process_starts

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** processStartedBy

Hierarchy

isCauseOf
processStarts

Direct Super Types

- isCauseOf

3.1.57 qualityOf

Annotations

- **Label:** quality of
- **ID:** http://purl.obolibrary.org/obo/RO_0000080

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** hasQuality

Hierarchy

inheresIn
qualityOf

Direct Super Types

- inheresIn

Figures

- Figure 3.1

3.1.58 qualityOfAggregate

Annotations

- **Label:** quality of aggregate
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ExtendedRelationOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/quality_of_aggregate

Facets

- **Property Type:** ObjectProperty
- **Functional:** False

Hierarchy

inheresInAggregate
qualityOfAggregate

Direct Super Types

- inheresInAggregate

Domain

- Quality

Range

- ObjectAggregate

3.1.59 roleOf

Annotations

- **Label:** role of
- **ID:** http://purl.obolibrary.org/obo/RO_0000081

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** hasRole

Hierarchy

inheresIn
roleOf

Direct Super Types

- inheresIn

Figures

- Figure 3.1
- Figure 5.2

3.1.60 roleOfAggregate

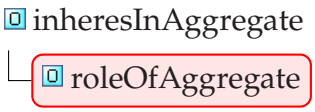
Annotations

- **Label:** role of aggregate
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ExtendedRelationOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/role_of_aggregate

Facets

- **Property Type:** ObjectProperty
- **Functional:** False

Hierarchy



Direct Super Types

- inheresInAggregate

Domain

- Role

Range

- ObjectAggregate

4

Information Entity Ontology

This ontology is designed to represent generic types of information as well as the relationships between information and other entities.

4.1 Named Classes

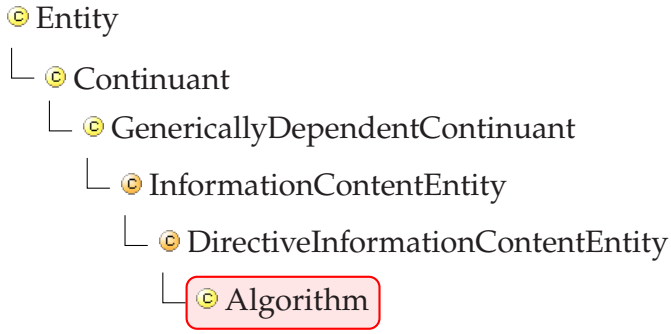
4.1.1 Algorithm

Definition
A Directive Information Content Entity that prescribes the inputs and output of mathematical functions as well as workflow of execution for achieving a predefined objective.

Annotations

- **Label:** Algorithm
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/InformationEntityOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/Algorithm

Hierarchy



Direct Super Types

- DirectiveInformationContentEntity

Direct Sub Types

- AggregationFunction
- EncodingScheme

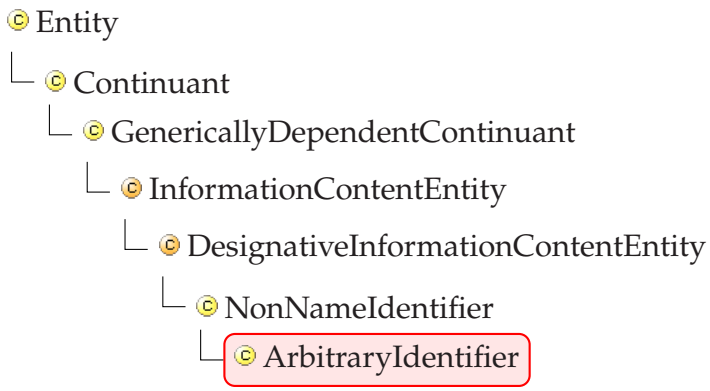
4.1.2 ArbitraryIdentifier

Definition
A Non-Name Identifier that consists of a string of characters that does not follow an encoding system.

Annotations

- **Label:** Arbitrary Identifier
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/InformationEntityOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/ArbitraryIdentifier

Hierarchy



Direct Super Types

- NonNameIdentifier

Disjoint Classes

- CodeIdentifier

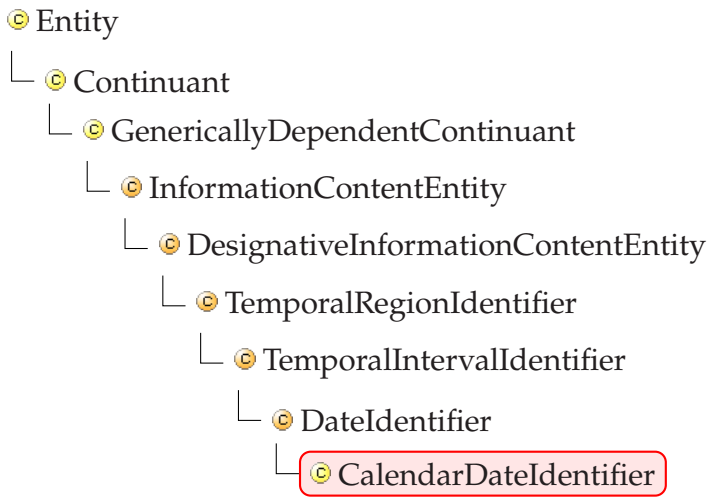
4.1.3 CalendarDateIdentifier

Definition
A Date Identifier that designates some Day by using a combination of Day, Week, Month, or Year Identifiers formatted according to an implementation of a Calendar System.

Annotations

- **Label:** Calendar Date Identifier
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/InformationEntityOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/CalendarDateIdentifier

Hierarchy



Direct Super Types

- DateIdentifier

Figures

- Figure 2.5

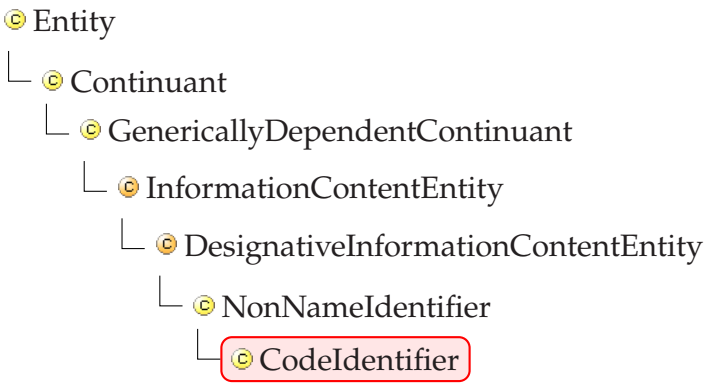
4.1.4 CodeIdentifier

Definition
A Non-Name Identifier that consists of a string of characters that was created and assigned according to an encoding system such that metadata can be derived from the identifier.

Annotations

- **Label:** Code Identifier
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/InformationEntityOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/CodeIdentifier

Hierarchy



Direct Super Types

- NonNameIdentifier

Direct Sub Types

- DomainName
- InternetProtocolAddress
- MediaAccessControlAddress
- Pathname
- UniformResourceIdentifier
- UserGroupIdentifier
- UserIdentifier

Disjoint Classes

- ArbitraryIdentifier

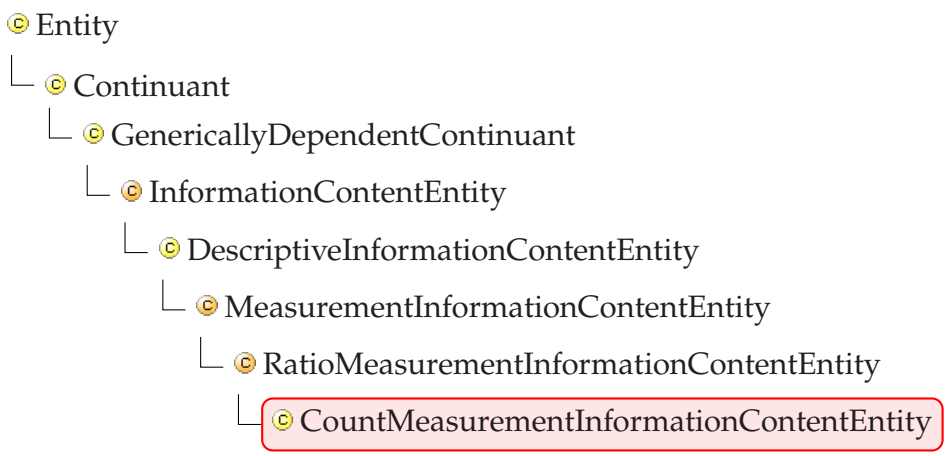
4.1.5 CountMeasurementInformationContentEntity

Definition
A Ratio Measurement Information Content Entity that is a measurement of the number of members of some aggregate.

Annotations

- **Label:** Count Measurement Information Content Entity
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/InformationEntityOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/CountMeasurementInformationContentEntity

Hierarchy



Direct Super Types

- RatioMeasurementInformationContentEntity

4.1.6 DataRangeIntervalEstimateInformationContentEntity

Definition
A Ratio Measurement Information Content Entity that is a measurement of a set of values and is equal to the absolute difference between the largest value and the smallest value in the set.

Annotations

- **Label:** Data Range Interval Estimate Information Content Entity
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/InformationEntityOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/DataRangeIntervalEstimateInformationContentEntity

Hierarchy

- Entity
  - Continuant
    - GenericallyDependentContinuant
      - InformationContentEntity
        - DescriptiveInformationContentEntity
          - MeasurementInformationContentEntity
            - EstimateInformationContentEntity
              - IntervalEstimateInformationContentEntity
                - DataRangeIntervalEstimateInformationContentEntity

Direct Super Types

- IntervalEstimateInformationContentEntity

4.1.7 DateIdentifier

Definition
A Temporal Interval Identifier that designates some Day.

Annotations

- **Label:** Date Identifier
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/InformationEntityOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/DateIdentifier

Hierarchy

- Entity
  - Continuant
    - GenericallyDependentContinuant
      - InformationContentEntity
        - DesignativeInformationContentEntity
          - TemporalRegionIdentifier
            - TemporalIntervalIdentifier
              - DateIdentifier

Direct Super Types

- TemporalIntervalIdentifier

Direct Sub Types

- CalendarDateIdentifier

Equivalent Classes

- designates Day

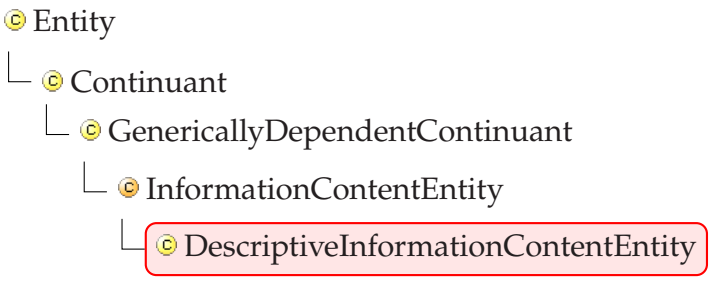
4.1.8 DescriptiveInformationContentEntity

Definition
An Information Content Entity that consists of a set of propositions that describe some Entity.

Annotations

- **Label:** Descriptive Information Content Entity
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/InformationEntityOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/DescriptiveInformationContentEntity

Hierarchy



Direct Super Types

- InformationContentEntity

Direct Sub Types

- MeasurementInformationContentEntity
- MeasurementUnit
- PredictiveInformationContentEntity
- RepresentationalInformationContentEntity

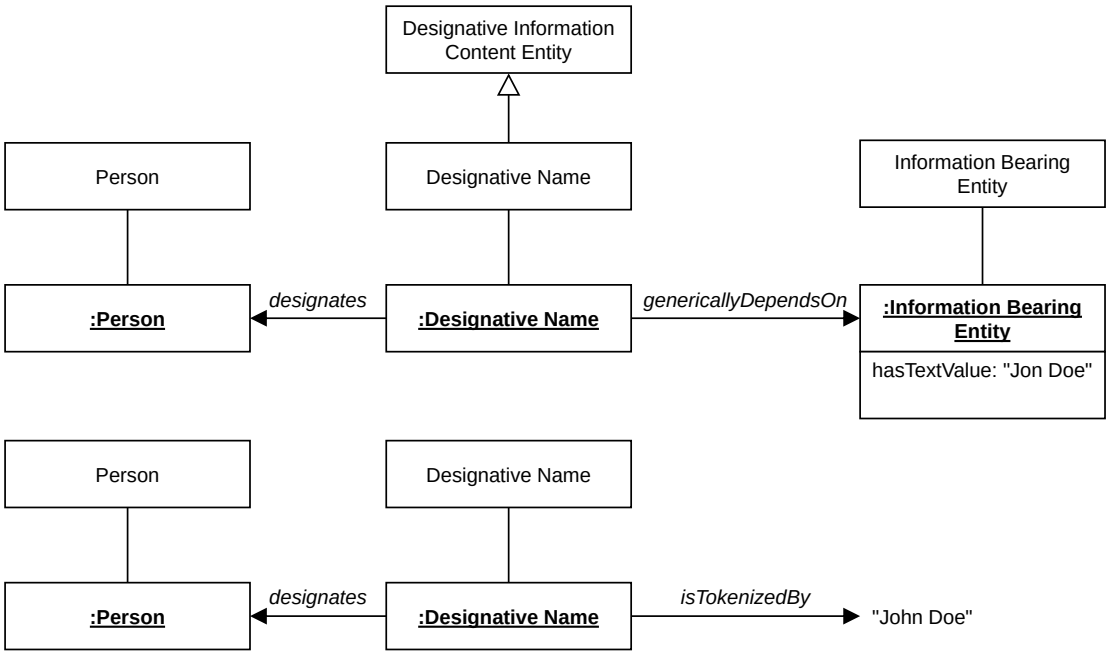


Figure 4.1: A person's name is represented using the designative name class, which is a subtype of the designative information content entity. The isTokenizedBy relation can be used as a shortcut means of specifying the literal values of information content.

Disjoint Classes

- DesignativeInformationContentEntity
- DirectiveInformationContentEntity

Domain Of

- describes

Range For

- describedBy

Figures

- Figure 4.4
- Figure 4.5
- Figure 4.6
- Figure 13.5

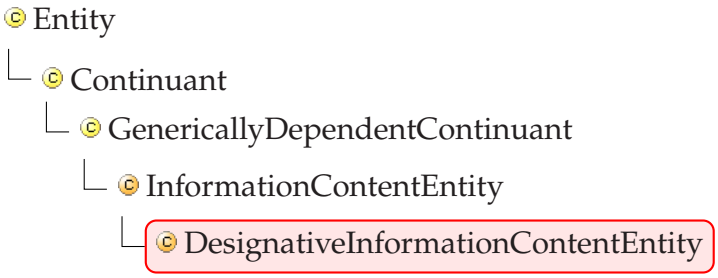
4.1.9 DesignativeInformationContentEntity

Definition
An Information Content Entity that consists of a set of symbols that denote some Entity.

Annotations

- **Label:** Designative Information Content Entity
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/InformationEntityOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/DesignativeInformationContentEntity

Hierarchy



Direct Super Types

- InformationContentEntity

Direct Sub Types

- ArtifactIdentifier
- ArtifactModelName
- DesignativeName
- NonNameIdentifier
- SpatialRegionIdentifier
- TemporalRegionIdentifier

Equivalent Classes

- designates Entity

Disjoint Classes

- DescriptiveInformationContentEntity
- DirectiveInformationContentEntity

Domain Of

- designates

Range For

- designatedBy

Figures

- Figure 4.1
- Figure 4.4
- Figure 4.6

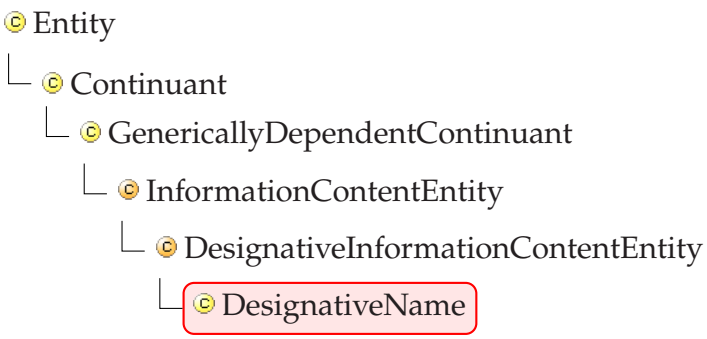
4.1.10 DesignativeName

Definition
A Designative Information Content Entity that consists of a string of characters that designates an entity within a specified cultural or social namespace and which is typically a word or phrase in a natural language that has an accepted cultural or social significance.

Annotations

- **Label:** Designative Name
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/InformationEntityOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/DesignativeName

Hierarchy



Direct Super Types

- DesignativeInformationContentEntity

Disjoint Classes

- NonNameIdentifier

Figures

- Figure 4.1

4.1.11 DeviationMeasurementInformationContentEntity

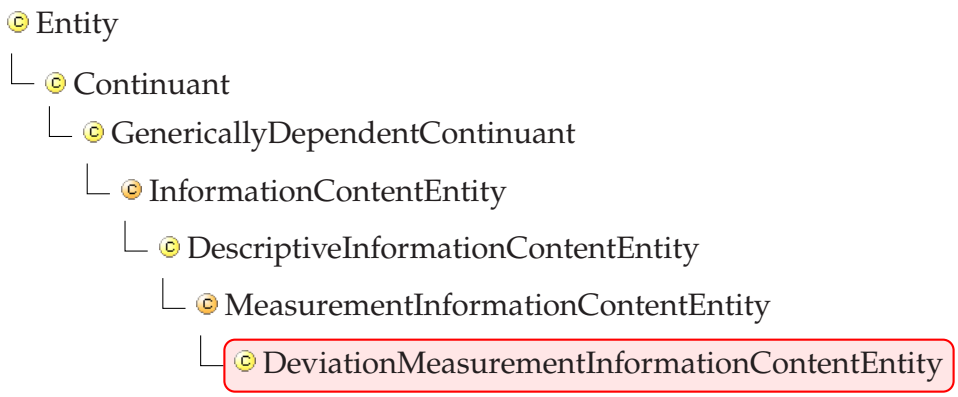
In order for a Deviation to exist, an entity must first be expected, represented, prescribed, or predicted as being a certain way. Then, at a future time, this value can be compared to its actual, reported, or measured value to determine the Deviation between these values.

Definition
A Measurement Information Content Entity that is a measurement of the extent to which an entity conforms to how it is expected or supposed to be.

Annotations

- **Label:** Deviation Measurement Information Content Entity
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/InformationEntityOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/DeviationMeasurementInformationContentEntity

Hierarchy



Direct Super Types

- MeasurementInformationContentEntity

4.1.12 DirectiveInformationContentEntity

Definition
An Information Content Entity that consists of a set of propositions or images (as in the case of a blueprint) that prescribe some Entity.

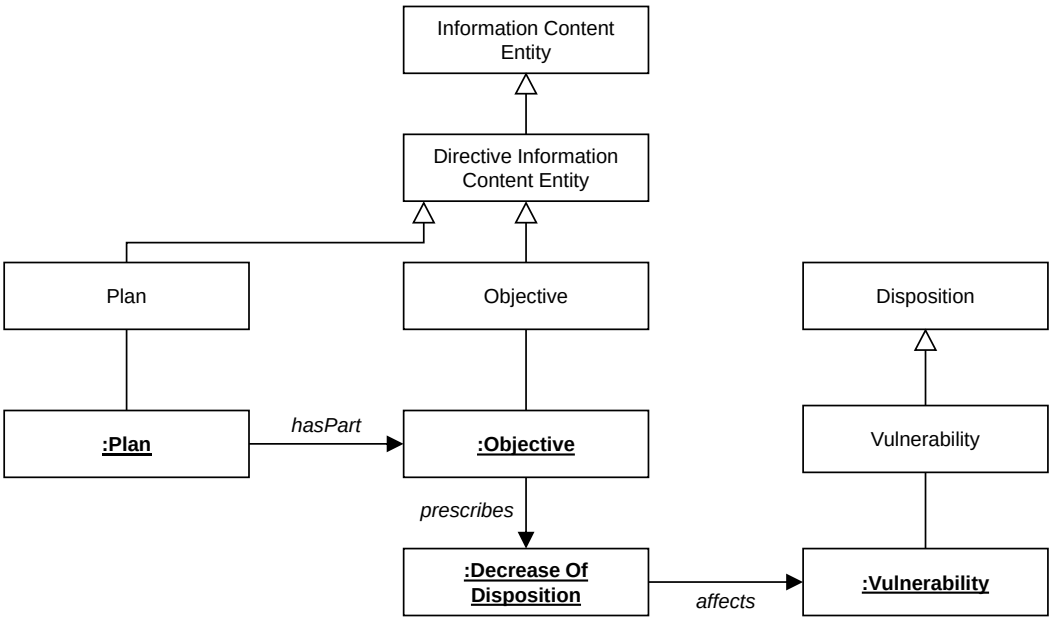


Figure 4.2: Direct information content entities can be used specify the objective of plans that are intended to (in this case) decrease vulnerabilities.

Annotations

- **Label:** Directive Information Content Entity
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/InformationEntityOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/DirectiveInformationContentEntity

Hierarchy

- Entity
  - Continuant
    - GenericallyDependentContinuant
      - InformationContentEntity
        - DirectiveInformationContentEntity

Direct Super Types

- InformationContentEntity

Direct Sub Types

- ActionRegulation
- Algorithm
- ArtifactDesignContentEntity

- ArtifactFunctionSpecification
- Constraint
- DesignationSpecification
- FileFormat
- FlowControlDirective
- InformationAggregateSpecification
- InformationTransferProtocol
- Objective
- PerformanceSpecification
- Plan
- QualitySpecification
- SITAGuidanceTemplate
- Watchlist

Equivalent Classes

- prescribes Entity

Disjoint Classes

- DescriptiveInformationContentEntity
- DesignativeInformationContentEntity

Domain Of

- prescribes

Range For

- prescribedBy

Figures

- Figure 4.2
- Figure 4.4
- Figure 4.6

4.1.13 DistanceMeasurementInformationContentEntity

Displacement (vector) is the shortest possible distance (scalar) between two points. Further thought is needed to adequately handle measurements of distance traveled along a path, e.g., a circuitous path or an arc (such as the surface of a planet), versus the simple case of a direct, straight line between two points. Distance is a measure between two reference points, which are located on or in, or in some manner part of, the two obejcts for which the length of the extent between is sought. For exmple, the center point of the indentation of a ball in the sand and the edge of the foul line, the forwardmost point on a car's bumper and

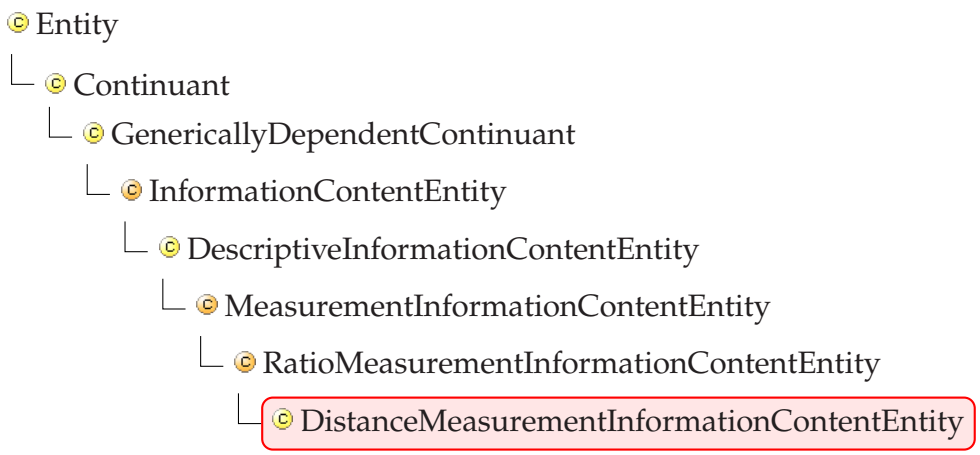
the closest point on the 2-dimensional plane that serves as the fiat boundary of a crosswalk, the center of an antenna array and closest point on ground.

Definition
A Ratio Measurement Information Content Entity that is a measurement of a One-Dimensional Extent inhering in some Site that is externally connected to two Independent Continuants.

Annotations

- **Label:** Distance Measurement Information Content Entity
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/InformationEntityOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/DistanceMeasurementInformationContentEntity

Hierarchy



Direct Super Types

- RatioMeasurementInformationContentEntity

4.1.14 EstimateInformationContentEntity

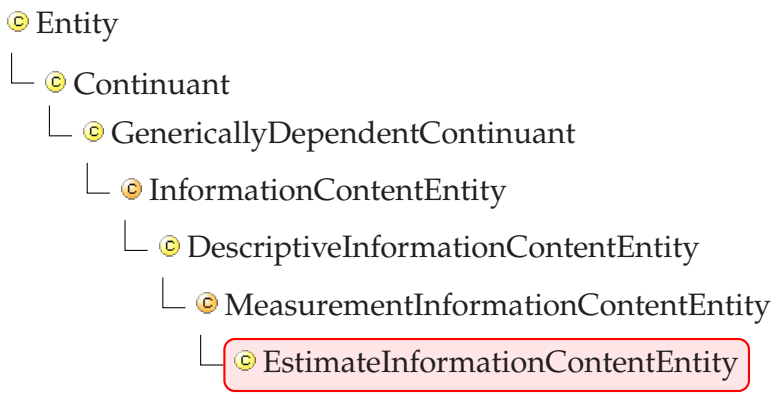
Definition
A Measurement Information Content Entity that is a measurement of an entity based on partial information about that entity or an appropriately similar entity.

Annotations

- **Label:** Estimate Information Content Entity

- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/InformationEntityOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/EstimateInformationContentEntity

Hierarchy



Direct Super Types

- MeasurementInformationContentEntity

Direct Sub Types

- IntervalEstimateInformationContentEntity
- PointEstimateInformationContentEntity

4.1.15 EventStatusNominalInformationContentEntity

Definition
A Nominal Measurement Information Content Entity that is a measurement of the current state of a process.

Annotations

- **Label:** Event Status Nominal Information Content Entity
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/InformationEntityOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/EventStatusNominalInformationContentEntity

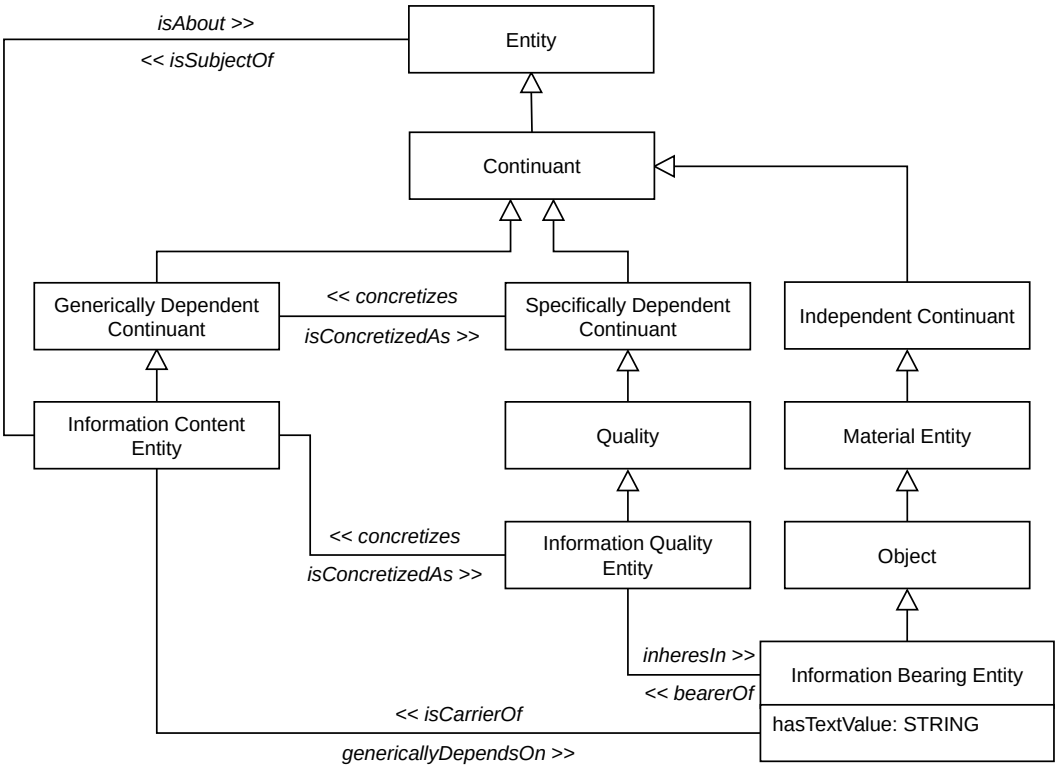


Figure 4.3: Information bearing entities are the vehicles or carriers of information content.

Hierarchy

- Entity
  - Continuant
    - GenericallyDependentContinuant
      - InformationContentEntity
        - DescriptiveInformationContentEntity
          - MeasurementInformationContentEntity
            - NominalMeasurementInformationContentEntity
              - EventStatusNominalInformationContentEntity

Direct Super Types

- NominalMeasurementInformationContentEntity

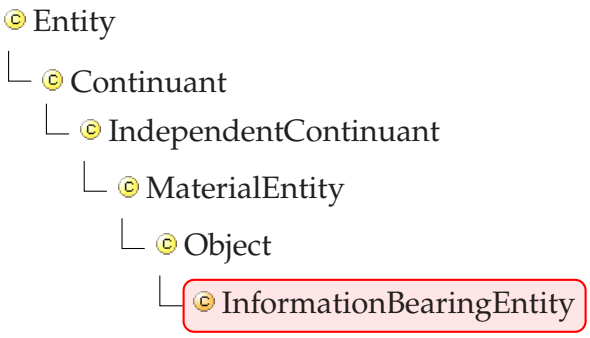
4.1.16 InformationBearingEntity

Definition
An Object upon which an Information Content Entity generically depends.

Annotations

- **Label:** Information Bearing Entity
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/InformationEntityOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/InformationBearingEntity

Hierarchy



Direct Super Types

- Object

Equivalent Classes

- isCarrierOf InformationContentEntity

Domain Of

- hasBooleanValue
- hasDateValue
- hasDatetimeValue
- hasDecimalValue
- hasDoubleValue
- hasIntegerValue
- hasTextValue
- hasURIValue
- isExcerptedFrom
- usesGeospatialCoordinateReferenceSystem
- usesLanguage
- usesMeasurementUnit
- usesReferenceSystem
- usesTimeZoneIdentifier

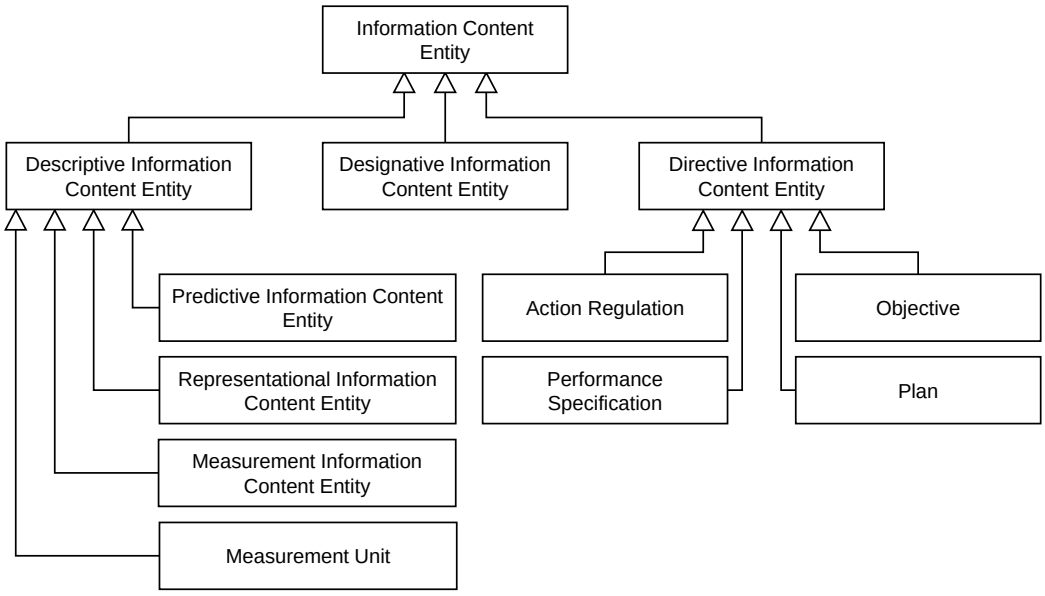


Figure 4.4: Information content entity hierarchy.

Range For

- isExcerptedFrom
- isGeospatialCoordinateReferenceSystemOf
- isMeasurementUnitOf
- isReferenceSystemOf
- languageUsedIn
- timeZoneIdentifierUsedBy

Figures

- Figure 2.5
- Figure 2.6
- Figure 4.1
- Figure 4.3
- Figure 4.5
- Figure 12.1
- Figure 13.5

4.1.17 InformationContentEntity

Information Content Entity is here intended to be a class of Entities whose instances are the informational content of Information Bearing Entities. For example, three instances of information bearers – such as a bar chart, color-coded map, and a written report – each of which lists the GDP of Countries for the year 2010 are each different carriers of the same information content. It is this content that is generically dependent upon its carrier. This treatment of Informational Content Entity (cf. the Information Artifact Ontology) leads to a principle of subtyping based upon the relationship that ICE's have with the Entity

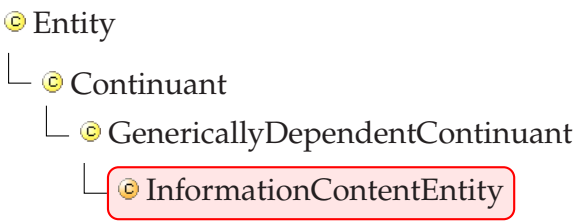
they are about rather than characteristics such as format, language, measurement scale, or media. The latter are treated here as being Qualities of bearers.

Definition
A Generically Dependent Continuant that generically depends on some Information Bearing Entity and stands in relation of aboutness to some Entity.

Annotations

- **Label:** Information Content Entity
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/InformationEntityOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/InformationContentEntity

Hierarchy



Direct Super Types

- GenericallyDependentContinuant

Direct Sub Types

- DescriptiveInformationContentEntity
- DesignativeInformationContentEntity
- DirectiveInformationContentEntity

Equivalent Classes

- isAbout Entity

Domain Of

- isAbout

Range For

- isSubjectOf

Figures

- Figure 4.2
- Figure 4.3
- Figure 4.4
- Figure 4.5
- Figure 4.6

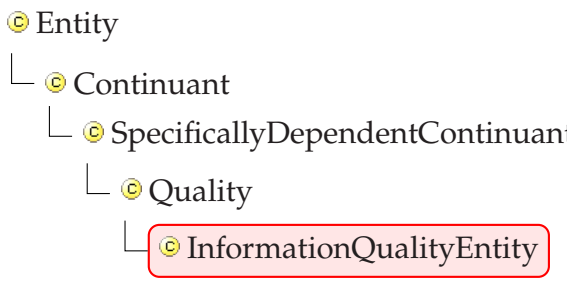
4.1.18 InformationQualityEntity

Definition
A Quality that concretizes some Information Content Entity.

Annotations

- **Label:** Information Quality Entity
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/InformationEntityOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/InformationQualityEntity

Hierarchy



Direct Super Types

- Quality
- inheresIn InformationBearingEntity

Figures

- Figure 4.3

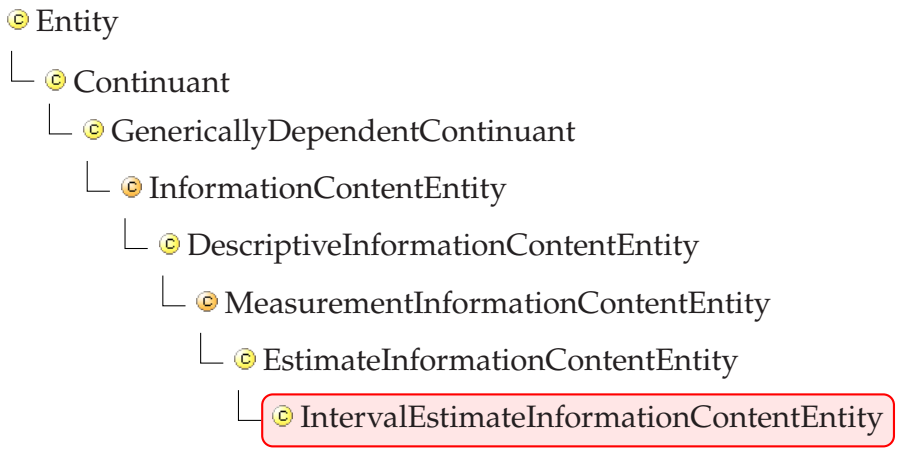
4.1.19 IntervalEstimateInformationContentEntity

Definition
An Estimate Information Content Entity that consists of an interval of possible (or probable) values for the measured entity.

Annotations

- **Label:** Interval Estimate Information Content Entity
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/InformationEntityOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/IntervalEstimateInformationContentEntity

Hierarchy



Direct Super Types

- EstimateInformationContentEntity

Direct Sub Types

- DataRangeIntervalEstimateInformationContentEntity

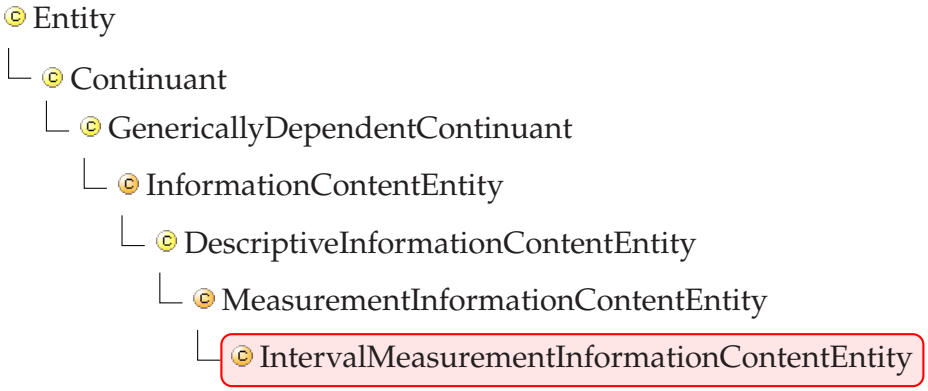
4.1.20 IntervalMeasurementInformationContentEntity

Definition
A Measurement Information Content Entity that places a Quality of an Entity onto some interval scale having no true zero value.

Annotations

- **Label:** Interval Measurement Information Content Entity
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/InformationEntityOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/IntervalMeasurementInformationContentEntity

Hierarchy



Direct Super Types

- MeasurementInformationContentEntity

Equivalent Classes

- isAIntervalMeasurementOf Entity

Disjoint Classes

- NominalMeasurementInformationContentEntity
- OrdinalMeasurementInformationContentEntity
- RatioMeasurementInformationContentEntity

Domain Of

- isAIntervalMeasurementOf

Range For

- isMeasuredByInterval

4.1.21 MeanPointEstimateInformationContentEntity

Definition
A Ratio Measurement Information Content Entity that is a measurement of a set of values and is equal to the sum of all the values in the set divided by the total number of values in the set.

Annotations

- **Label:** Mean Point Estimate Information Content Entity
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/InformationEntityOntology

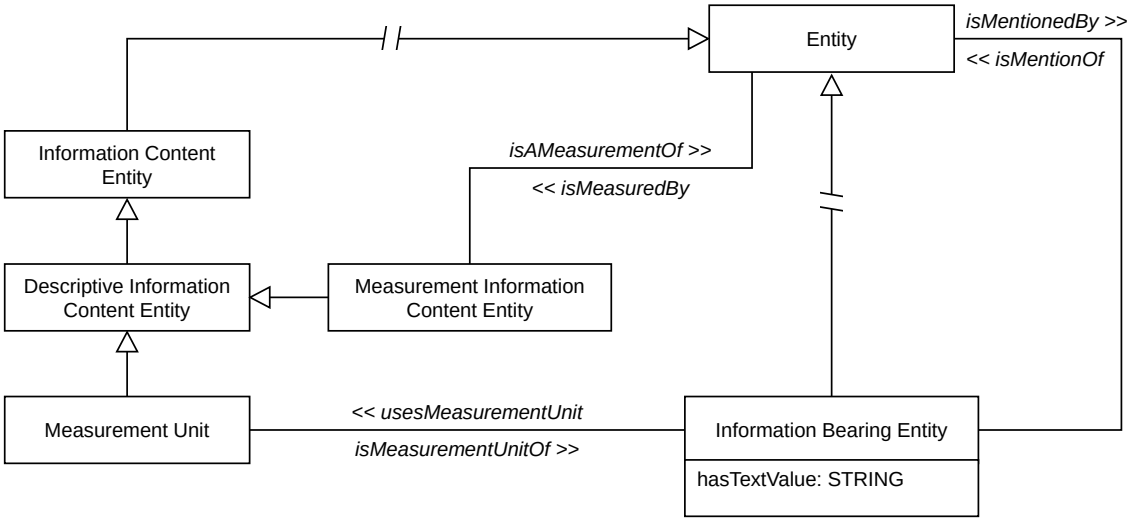


Figure 4.5: Measurement-related entities.

- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/MeanPointEstimateInformationContentEntity

Hierarchy

- Entity
  - Continuant
    - GenericallyDependentContinuant
      - InformationContentEntity
        - DescriptiveInformationContentEntity
          - MeasurementInformationContentEntity
            - EstimateInformationContentEntity
              - PointEstimateInformationContentEntity
                - MeanPointEstimateInformationContentEntity

Direct Super Types

- PointEstimateInformationContentEntity

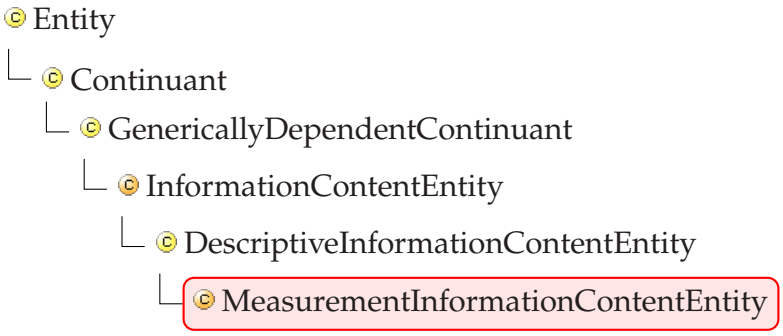
4.1.22 MeasurementInformationContentEntity

Definition
A Descriptive Information Content Entity that describes the extent, dimensions, quantity, or quality of an Entity relative to some standard.

Annotations

- **Label:** Measurement Information Content Entity
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/InformationEntityOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/MeasurementInformationContentEntity

Hierarchy



Direct Super Types

- DescriptiveInformationContentEntity

Direct Sub Types

- DeviationMeasurementInformationContentEntity
- EstimateInformationContentEntity
- IntervalMeasurementInformationContentEntity
- NominalMeasurementInformationContentEntity
- OrdinalMeasurementInformationContentEntity
- ProbabilityMeasurementInformationContentEntity
- RatioMeasurementInformationContentEntity
- ReliabilityMeasurementInformationContentEntity
- VeracityMeasurementInformationContentEntity

Equivalent Classes

- isAMeasurementOf Entity

Disjoint Classes

- RepresentationalInformationContentEntity

Domain Of

- isAMeasurementOf

Range For

- isMeasuredBy

Figures

- Figure 2.5
- Figure 2.6
- Figure 4.4
- Figure 4.5
- Figure 12.1
- Figure 13.5

4.1.23 MeasurementUnit

Definition
A Descriptive Information Content Entity that describes a definite magnitude of a physical quantity, defined and adopted by convention and/or by law, that is used as a standard for measurement of the same physical quantity.

Annotations

- **Label:** Measurement Unit
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/InformationEntityOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/MeasurementUnit

Hierarchy

- Entity
  - Continuant
    - GenericallyDependentContinuant
      - InformationContentEntity
        - DescriptiveInformationContentEntity
          - MeasurementUnit

Direct Super Types

- DescriptiveInformationContentEntity

Domain Of

- isMeasurementUnitOf

Range For

- usesMeasurementUnit

Figures

- Figure 4.4
- Figure 4.5

4.1.24 MedianPointEstimateInformationContentEntity

Definition
A Point Estimate of the 50th percentile of a measurement of some attribute of a population. that is a measurement of a set of values and is equal to the middle value (or, in a set containing an even number of values, the average of the two middle-most values) which separates the set into two equally populated upper and lower sets of values.

Annotations

- **Label:** Median Point Estimate Information Content Entity
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/InformationEntityOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/MedianPointEstimateInformationContentEntity

Hierarchy

- Entity
  - Continuant
    - GenericallyDependentContinuant
      - InformationContentEntity
        - DescriptiveInformationContentEntity
          - MeasurementInformationContentEntity
            - EstimateInformationContentEntity
              - PointEstimateInformationContentEntity
                - MedianPointEstimateInformationContentEntity

Direct Super Types

- PointEstimateInformationContentEntity

4.1.25 ModePointEstimateInformationContentEntity

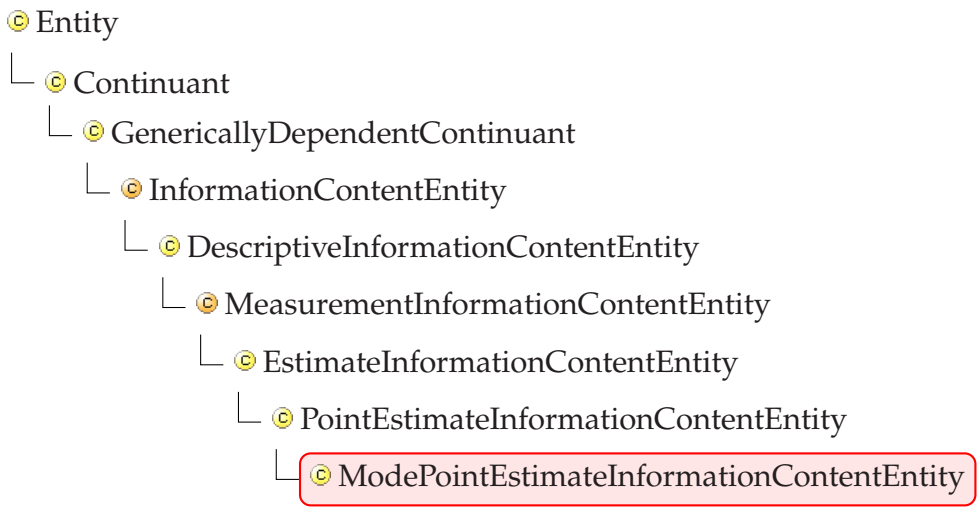
Definition

A Nominal Measurement Information Content Entity that is a measurement of a set of values and is equal to the value(s) that occurs the most often in the set.

Annotations

- **Label:** Mode Point Estimate Information Content Entity
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/InformationEntityOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/ModePointEstimateInformationContentEntity

Hierarchy



Direct Super Types

- PointEstimateInformationContentEntity

4.1.26 NominalMeasurementInformationContentEntity

Definition

A Measurement Information Content Entity that consists of a symbol that classifies Entities according to some shared, possibly arbitrary, characteristic.

Annotations

- **Label:** Nominal Measurement Information Content Entity
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/InformationEntityOntology

- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/NominalMeasurementInformationContentEntity

Hierarchy

- Entity
  - Continuant
    - GenericallyDependentContinuant
      - InformationContentEntity
        - DescriptiveInformationContentEntity
          - MeasurementInformationContentEntity
            - NominalMeasurementInformationContentEntity

Direct Super Types

- MeasurementInformationContentEntity

Direct Sub Types

- CyberThreatNominalMeasurement
- EventStatusNominalInformationContentEntity
- OpenSystemsInterconnectionCategory
- STIXComponentCategory
- UrgentNominalMeasurement

Equivalent Classes

- isANominalMeasurementOf Entity

Disjoint Classes

- IntervalMeasurementInformationContentEntity
- OrdinalMeasurementInformationContentEntity
- RatioMeasurementInformationContentEntity

Domain Of

- isANominalMeasurementOf

Range For

- isMeasuredByNominal

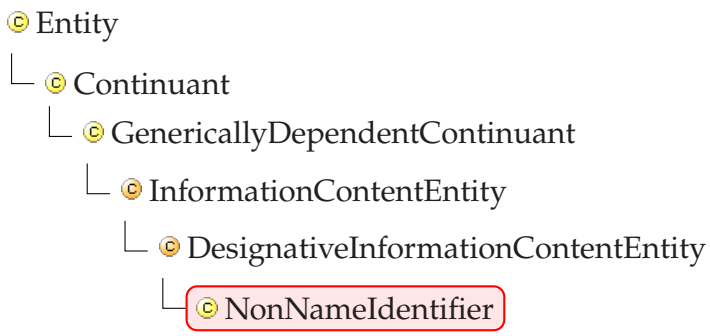
4.1.27 NonNameIdentifier

Definition
A Designative Information Content Entity that consists of a string of characters that designates an entity within a specified namespace or context, is not a Designative Name, may be automatically or randomly generated, and typically has no preexisting cultural or social significance.

Annotations

- **Label:** Non-Name Identifier
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/InformationEntityOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/NonNameIdentifier

Hierarchy



Direct Super Types

- DesignativeInformationContentEntity

Direct Sub Types

- ArbitraryIdentifier
- CodeIdentifier

Disjoint Classes

- DesignativeName

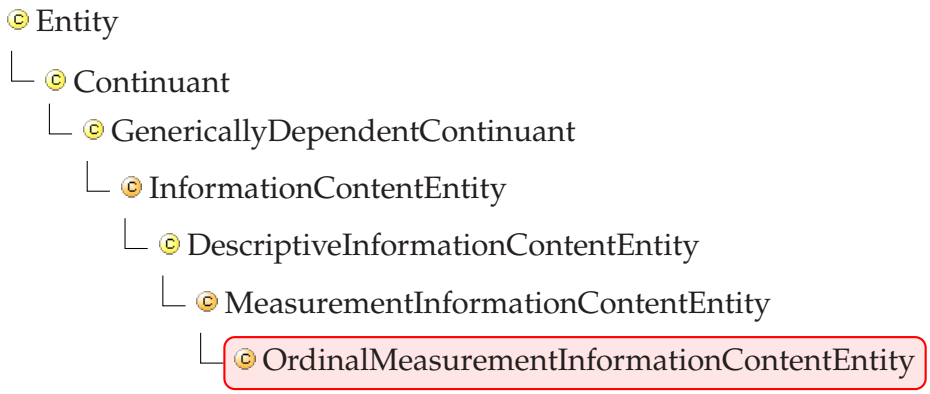
4.1.28 OrdinalMeasurementInformationContentEntity

Definition
A Measurement Information Content Entity that consists of a symbol that places an Entity into some rank order.

Annotations

- **Label:** Ordinal Measurement Information Content Entity
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/InformationEntityOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/OrdinalMeasurementInformationContentEntity

Hierarchy



Direct Super Types

- MeasurementInformationContentEntity

Equivalent Classes

- isAOrdinalMeasurementOf Entity

Disjoint Classes

- IntervalMeasurementInformationContentEntity
- NominalMeasurementInformationContentEntity
- RatioMeasurementInformationContentEntity

Domain Of

- isAOrdinalMeasurementOf

Range For

- isMeasuredByOrdinal

4.1.29 PerformanceSpecification

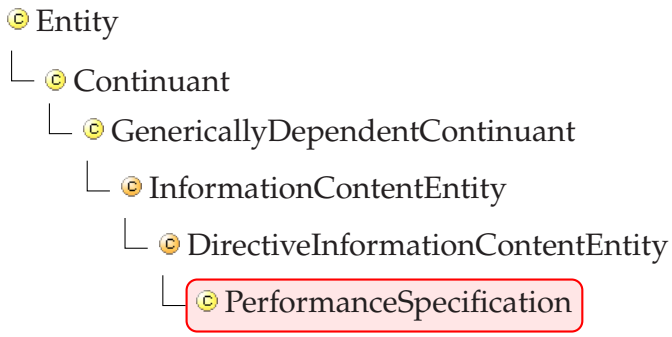
Definition
A Directive Information Content Entity that prescibes some aspect of the behavior of a

participant in a Process given one or more operating conditions.

Annotations

- **Label:** Performance Specification
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/InformationEntityOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/PerformanceSpecification

Hierarchy



Direct Super Types

- DirectiveInformationContentEntity
- describesCondition Entity

Figures

- Figure 4.4

4.1.30 PointEstimateInformationContentEntity

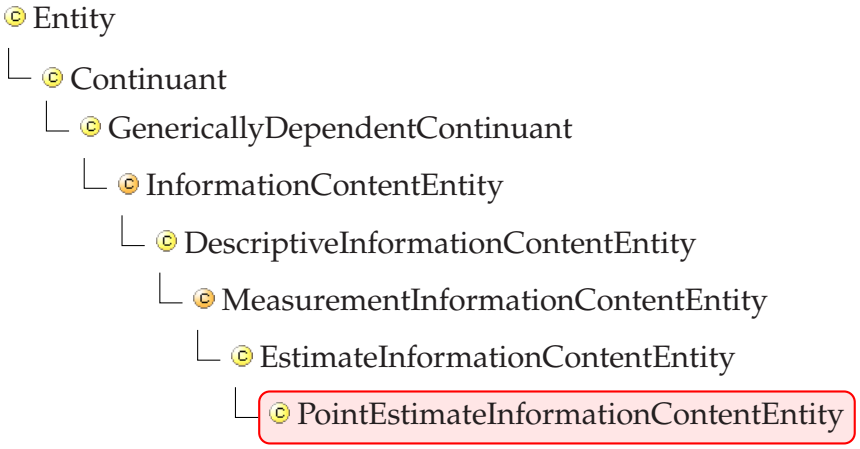
Definition

An Estimate Information Content Entity that consists of a single value for the measured entity.

Annotations

- **Label:** Point Estimate Information Content Entity
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/InformationEntityOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/PointEstimateInformationContentEntity

Hierarchy



Direct Super Types

- EstimateInformationContentEntity

Direct Sub Types

- MeanPointEstimateInformationContentEntity
- MedianPointEstimateInformationContentEntity
- ModePointEstimateInformationContentEntity

4.1.31 PredictiveInformationContentEntity

Definition
A Descriptive Information Content Entity that describes an uncertain future event.

Annotations

- **Label:** Predictive Information Content Entity
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/InformationEntityOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/PredictiveInformationContentEntity

Hierarchy

- Entity
  - Continuant
    - GenericallyDependentContinuant
      - InformationContentEntity
        - DescriptiveInformationContentEntity
          - PredictiveInformationContentEntity

Direct Super Types

- DescriptiveInformationContentEntity

Figures

- Figure 4.4

4.1.32 ProbabilityMeasurementInformationContentEntity

Definition

A Measurement Information Content Entity that is a measurement of the likelihood that a Process or Process Aggregate occurs.

Annotations

- **Label:** Probability Measurement Information Content Entity
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/InformationEntityOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/ProbabilityMeasurementInformationContentEntity

Hierarchy

- Entity
  - Continuant
    - GenericallyDependentContinuant
      - InformationContentEntity
        - DescriptiveInformationContentEntity
          - MeasurementInformationContentEntity
            - ProbabilityMeasurementInformationContentEntity

Direct Super Types

- MeasurementInformationContentEntity

Direct Sub Types

- ProcessLikelihood

Figures

- Figure 13.5

4.1.33 ProportionalRatioMeasurementInformationContentEntity

Definition
A Ratio Measurement Information Content Entity that is a measurement of a portion of a whole (described by the numerator) compared against that whole (described by the denominator) where the whole is a nominally described set of like entities.

Annotations

- **Label:** Proportional Ratio Measurement Information Content Entity
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/InformationEntityOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/ProportionalRatioMeasurementInformationContentEntity

Hierarchy

- Entity
  - Continuant
    - GenericallyDependentContinuant
      - InformationContentEntity
        - DescriptiveInformationContentEntity
          - MeasurementInformationContentEntity
            - RatioMeasurementInformationContentEntity
              - ProportionalRatioMeasurementInformationContentEntity

Direct Super Types

- RatioMeasurementInformationContentEntity

4.1.34 RatioMeasurementInformationContentEntity

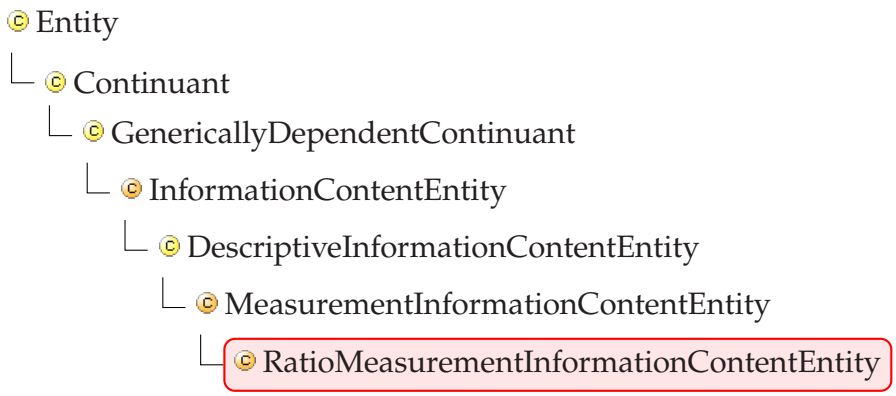
Definition

A Measurement Information Content Entity that consists of a symbol that places a Quality of an Entity onto an interval scale having a true zero value.

Annotations

- **Label:** Ratio Measurement Information Content Entity
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/InformationEntityOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/RatioMeasurementInformationContentEntity

Hierarchy



Direct Super Types

- MeasurementInformationContentEntity

Direct Sub Types

- ChecksumMeasurement
- ComputingBandwidthMeasurement
- CountMeasurementInformationContentEntity
- DataOffsetDesignator
- DistanceMeasurementInformationContentEntity
- ProportionalRatioMeasurementInformationContentEntity
- SignalBandwidthMeasurement

Equivalent Classes

- isARatioMeasurementOf Entity

Disjoint Classes

- IntervalMeasurementInformationContentEntity
- NominalMeasurementInformationContentEntity
- OrdinalMeasurementInformationContentEntity

Domain Of

- isARatioMeasurementOf

Range For

- isMeasuredByRatio

4.1.35 ReliabilityMeasurementInformationContentEntity

Reliability concerns both a measure of past performance and the expectation that future performance will conform to the range of past performances.

Definition
A Measurement Information Content Entity that is a measurement of the extent to which an entity can consistently produce an outcome.

Annotations

- **Label:** Reliability Measurement Information Content Entity
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/InformationEntityOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/ReliabilityMeasurementInformationContentEntity

Hierarchy

Entity
└ Continuant
└ GenericallyDependentContinuant
└ InformationContentEntity
└ DescriptiveInformationContentEntity
└ MeasurementInformationContentEntity
└ ReliabilityMeasurementInformationContentEntity

Direct Super Types

- MeasurementInformationContentEntity

4.1.36 RepresentationalInformationContentEntity

Definition
A Descriptive Information Content Entity that consists of a set of propositions or the content of an image that represents some Entity.

Annotations

- **Label:** Representational Information Content Entity
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/InformationEntityOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/RepresentationalInformationContentEntity

Hierarchy

- Entity
  - Continuant
    - GenericallyDependentContinuant
      - InformationContentEntity
        - DescriptiveInformationContentEntity
          - RepresentationalInformationContentEntity

Direct Super Types

- DescriptiveInformationContentEntity

Equivalent Classes

- represents Entity

Disjoint Classes

- MeasurementInformationContentEntity

Domain Of

- represents

Range For

- representedBy

Figures

- Figure 4.4
- Figure 13.5

4.1.37 SpatialRegionIdentifier

Definition
A Designative Information Content Entity that designates some Spatial Region.

Annotations

- **Label:** Spatial Region Identifier
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/InformationEntityOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/SpatialRegionIdentifier

Hierarchy

Entity
└ Continuant
  └ GenericallyDependentContinuant
    └ InformationContentEntity
      └ DesignativeInformationContentEntity
        └ SpatialRegionIdentifier

Direct Super Types

- DesignativeInformationContentEntity

Equivalent Classes

- designates SpatialRegion

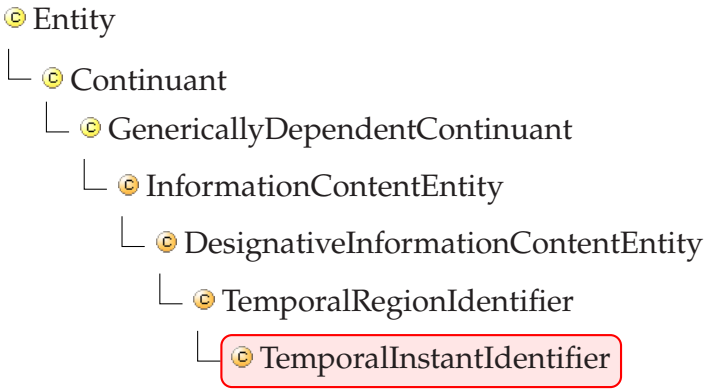
4.1.38 TemporalInstantIdentifier

Definition
A Temporal Region Identifier that designates some Zero-Dimensional Temporal Region.

Annotations

- **Label:** Temporal Instant Identifier
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/InformationEntityOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/TemporalInstantIdentifier

Hierarchy



Direct Super Types

- TemporalRegionIdentifier

Direct Sub Types

- TimeOfDayIdentifier

Equivalent Classes

- designates ZeroDimensionalTemporalRegion

4.1.39 TemporalIntervalIdentifier

Definition
A Temporal Region Identifier that designates some One-Dimensional Temporal Region.

Annotations

- **Label:** Temporal Interval Identifier
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/InformationEntityOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/TemporalIntervalIdentifier

Hierarchy

- Entity
  - Continuant
    - GenericallyDependentContinuant
      - InformationContentEntity
        - DesignativeInformationContentEntity
          - TemporalRegionIdentifier
            - TemporalIntervalIdentifier

Direct Super Types

- TemporalRegionIdentifier

Direct Sub Types

- DateIdentifier

Equivalent Classes

- designates OneDimensionalTemporalRegion

4.1.40 TemporalRegionIdentifier

Definition
A Designative Information Content Entity that designates some Temporal Region.

Annotations

- **Label:** Temporal Region Identifier
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/InformationEntityOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/TemporalRegionIdentifier

Hierarchy

- Entity
  - Continuant
    - GenericallyDependentContinuant
      - InformationContentEntity
        - DesignativeInformationContentEntity
          - TemporalRegionIdentifier

Direct Super Types

- DesignativeInformationContentEntity

Direct Sub Types

- TemporalInstantIdentifier
- TemporalIntervalIdentifier

Equivalent Classes

- designates TemporalRegion

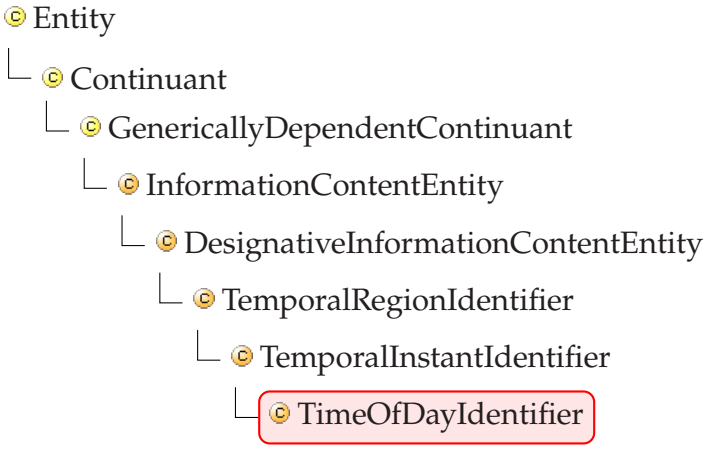
4.1.41 TimeOfDayIdentifier

Definition
A Temporal Instant Identifier that designates some Time of Day.

Annotations

- **Label:** Time of Day Identifier
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/InformationEntityOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/TimeOfDayIdentifier

Hierarchy



Direct Super Types

- TemporalInstantIdentifier

Equivalent Classes

- designates TimeOfDay

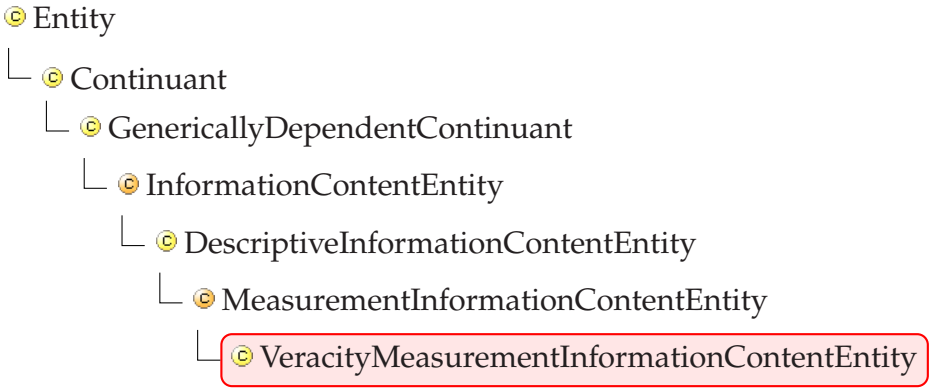
4.1.42 VeracityMeasurementInformationContentEntity

Definition
A Measurement Information Content Entity that is a measurement of the extent to which a description conforms to the reality it describes.

Annotations

- **Label:** Veracity Measurement Information Content Entity
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/InformationEntityOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/VeracityMeasurementInformationContentEntity

Hierarchy



Direct Super Types

- MeasurementInformationContentEntity

4.2 Properties

4.2.1 conditionDescribedBy

Annotations

- **Label:** condition described by
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/InformationEntityOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/condition_described_by

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** describesCondition

SuperProperty Of (Chain)

- describedBy o partOf SubPropertyOf: conditionDescribedBy

4.2.2 describedBy

Annotations

- **Label:** described by
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/InformationEntityOntology

- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/described_by

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** describes

Hierarchy

isSubjectOf
└ describedBy

Direct Super Types

- isSubjectOf

Direct Sub Types

- isMeasuredBy
- representedBy

Range

- DescriptiveInformationContentEntity

4.2.3 describes

Annotations

- **Label:** describes
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/InformationEntityOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/describes

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** describedBy

Hierarchy

isAbout
└ describes

Direct Super Types

- isAbout

Direct Sub Types

- isAMeasurementOf
- represents

Domain

- DescriptiveInformationContentEntity

Figures

- Figure 4.6

4.2.4 describesCondition

Annotations

- **Label:** describes condition
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/InformationEntityOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/describes_condition

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** conditionDescribedBy

SuperProperty Of (Chain)

- hasPart o describes SubPropertyOf: describesCondition

4.2.5 designatedBy

Annotations

- **Label:** designated by
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/InformationEntityOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/designated_by

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Functional:** True
- **Inverse Of:** designates

Hierarchy

isSubjectOf
  designatedBy

Direct Super Types

- isSubjectOf

Range

- DesignativeInformationContentEntity

Figures

- Figure 2.5

4.2.6 designates

Annotations

- **Label:** designates
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/InformationEntityOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/designates

Facets

- **Property Type:** ObjectProperty
- **Functional:** True
- **Inverse Of:** designatedBy

Hierarchy

isAbout
  designates

Direct Super Types

- isAbout

Domain

- DesignativeInformationContentEntity

Figures

- Figure 4.1
- Figure 4.6

4.2.7 hasBooleanValue

Annotations

- **Label:** has boolean value
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/InformationEntityOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/has_boolean_value

Facets

- **Property Type:** DatatypeProperty
- **Functional:** False

Domain

- InformationBearingEntity

Range

- http://www.w3.org/2001/XMLSchema#boolean

4.2.8 hasDateValue

Annotations

- **Label:** has date value
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/InformationEntityOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/has_date_value

Facets

- **Property Type:** DatatypeProperty
- **Functional:** False

Domain

- InformationBearingEntity

4.2.9 hasDatetimeValue

Annotations

- **Label:** has datetime value
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/InformationEntityOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/has_datetime_value

Facets

- **Property Type:** DatatypeProperty
- **Functional:** False

Domain

- InformationBearingEntity

Range

- http://www.w3.org/2001/XMLSchema#dateTime

4.2.10 hasDecimalValue

Annotations

- **Label:** has decimal value
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/InformationEntityOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/has_decimal_value

Facets

- **Property Type:** DatatypeProperty
- **Functional:** False

Domain

- InformationBearingEntity

Range

- http://www.w3.org/2001/XMLSchema#decimal

4.2.11 hasDoubleValue

Annotations

- **Label:** has double value
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/InformationEntityOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/has_double_value

Facets

- **Property Type:** DatatypeProperty
- **Functional:** False

Domain

- InformationBearingEntity

Range

- http://www.w3.org/2001/XMLSchema#double

4.2.12 hasIntegerValue

Annotations

- **Label:** has integer value
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/InformationEntityOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/has_integer_value

Facets

- **Property Type:** DatatypeProperty
- **Functional:** False

Domain

- InformationBearingEntity

Range

- http://www.w3.org/2001/XMLSchema#integer

Figures

- Figure 2.5
- Figure 2.6

4.2.13 hasTextValue

Annotations

- **Label:** has text value
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/InformationEntityOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/has_text_value

Facets

- **Property Type:** DatatypeProperty
- **Functional:** False

Domain

- InformationBearingEntity

Range

- http://www.w3.org/2001/XMLSchema#string

Figures

- Figure 4.1
- Figure 4.3
- Figure 4.5

4.2.14 hasURIValue

Annotations

- **Label:** has URI value
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/InformationEntityOntology

- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/has_URI_value

Facets

- **Property Type:** DatatypeProperty
- **Functional:** False

Domain

- InformationBearingEntity

Range

- http://www.w3.org/2001/XMLSchema#anyURI

4.2.15 isAIntervalMeasurementOf

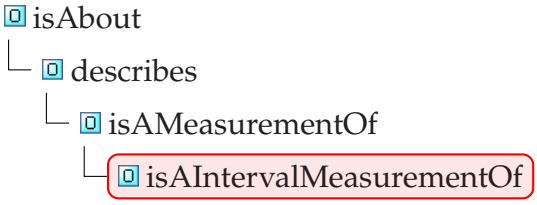
Annotations

- **Label:** is a interval measurement of
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/InformationEntityOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/is_a_interval_measurement_of

Facets

- **Property Type:** ObjectProperty
- **Functional:** True
- **Inverse Of:** isMeasuredByInterval

Hierarchy



Direct Super Types

- isAMeasurementOf

Domain

- IntervalMeasurementInformationContentEntity

4.2.16 isAMeasurementOf

Annotations

- **Label:** is a measurement of
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/InformationEntityOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/is_a_measurement_of

Facets

- **Property Type:** ObjectProperty
- **Functional:** True
- **Inverse Of:** isMeasuredBy

Hierarchy

isAbout
└ describes
  └ isAMeasurementOf

Direct Super Types

- describes

Direct Sub Types

- isAIntervalMeasurementOf
- isANominalMeasurementOf
- isAOrdinalMeasurementOf
- isARatioMeasurementOf

Domain

- MeasurementInformationContentEntity

Figures

- Figure 2.5
- Figure 2.6
- Figure 4.5
- Figure 4.6
- Figure 12.1
- Figure 13.5

4.2.17 isANominalMeasurementOf

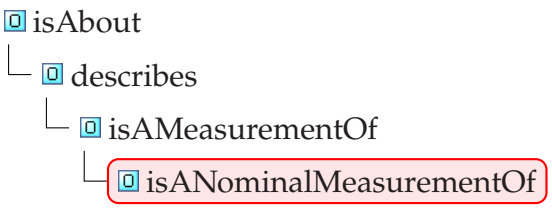
Annotations

- **Label:** is a nominal measurement of
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/InformationEntityOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/is_a_nominal_measurement_of

Facets

- **Property Type:** ObjectProperty
- **Functional:** True
- **Inverse Of:** isMeasuredByNominal

Hierarchy



Direct Super Types

- isAMeasurementOf

Domain

- NominalMeasurementInformationContentEntity

4.2.18 isAOrdinalMeasurementOf

Annotations

- **Label:** is a ordinal measurement of
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/InformationEntityOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/is_a_ordinal_measurement_of

Facets

- **Property Type:** ObjectProperty
- **Functional:** True
- **Inverse Of:** isMeasuredByOrdinal

Hierarchy

isAbout
└ describes
  └ isAMeasurementOf
    └ isAOrdinalMeasurementOf

Direct Super Types

- isAMeasurementOf

Domain

- OrdinalMeasurementInformationContentEntity

4.2.19 isARatioMeasurementOf

Annotations

- **Label:** is a ratio measurement of
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/InformationEntityOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/is_a_ratio_measurement_of

Facets

- **Property Type:** ObjectProperty
- **Functional:** True
- **Inverse Of:** isMeasuredByRatio

Hierarchy

isAbout
└ describes
  └ isAMeasurementOf
    └ isARatioMeasurementOf

Direct Super Types

- isAMeasurementOf

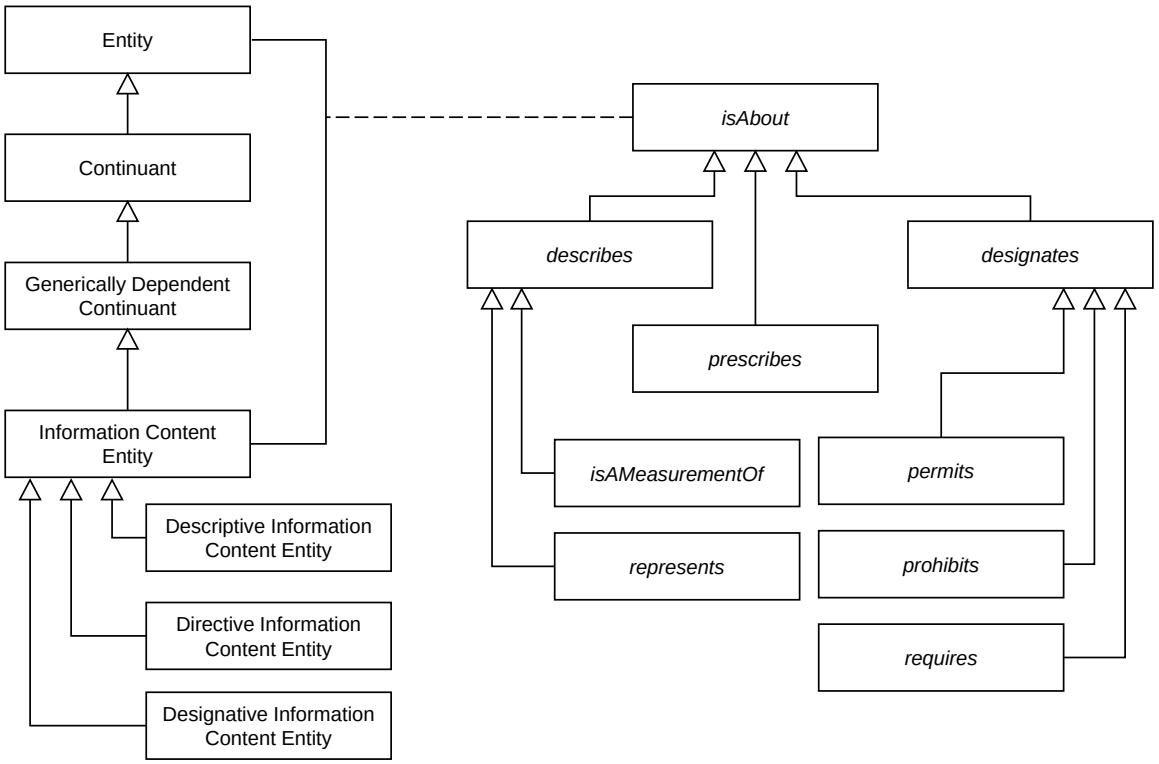


Figure 4.6: Aboutness hierarchy. The information entity ontology contains multiple aboutness relations.

Domain

- RatioMeasurementInformationContentEntity

4.2.20 isAbout

Annotations

- **Label:** is about
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/InformationEntityOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/is_about

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** isSubjectOf

Direct Sub Types

- describes
- designates
- prescribes

Domain

- InformationContentEntity

Range

- Entity

Figures

- Figure 4.3
- Figure 4.6

4.2.21 isMeasuredBy

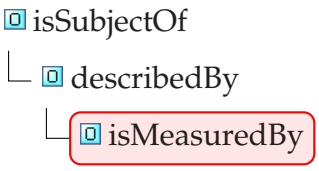
Annotations

- **Label:** is measured by
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/InformationEntityOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/is_measured_by

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Functional:** True
- **Inverse Of:** isAMeasurementOf

Hierarchy



Direct Super Types

- describedBy

Direct Sub Types

- isMeasuredByInterval
- isMeasuredByNominal
- isMeasuredByOrdinal
- isMeasuredByRatio

Range

- MeasurementInformationContentEntity

Figures

- Figure 4.5

4.2.22 isMeasuredByInterval

Annotations

- **Label:** is measured by interval
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/InformationEntityOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/is_measured_by_interval

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Functional:** True
- **Inverse Of:** isAIntervalMeasurementOf

Hierarchy

isSubjectOf
└ describedBy
  └ isMeasuredBy
    └ isMeasuredByInterval

Direct Super Types

- isMeasuredBy

Range

- IntervalMeasurementInformationContentEntity

4.2.23 isMeasuredByNominal

Annotations

- **Label:** is measured by nominal

- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/InformationEntityOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/is_measured_by_nominal

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Functional:** True
- **Inverse Of:** isANominalMeasurementOf

Hierarchy

isSubjectOf
└ describedBy
  └ isMeasuredBy
    └ isMeasuredByNominal

Direct Super Types

- isMeasuredBy

Range

- NominalMeasurementInformationContentEntity

4.2.24 isMeasuredByOrdinal

Annotations

- **Label:** is measured by ordinal
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/InformationEntityOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/is_measured_by_ordinal

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Functional:** True
- **Inverse Of:** isAOrdinalMeasurementOf

Hierarchy

- isSubjectOf
  - describedBy
    - isMeasuredBy
      - isMeasuredByOrdinal

Direct Super Types

- isMeasuredBy

Range

- OrdinalMeasurementInformationContentEntity

4.2.25 isMeasuredByRatio

Annotations

- **Label:** is measured by ratio
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/InformationEntityOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/is_measured_by_ratio

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Functional:** True
- **Inverse Of:** isARatioMeasurementOf

Hierarchy

- isSubjectOf
  - describedBy
    - isMeasuredBy
      - isMeasuredByRatio

Direct Super Types

- isMeasuredBy

Range

- RatioMeasurementInformationContentEntity

4.2.26 isMeasurementUnitOf

Annotations

- **Label:** is measurement unit of
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/InformationEntityOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/is_measurement_unit_of

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** usesMeasurementUnit

Hierarchy

genericallyDependsOn
└ isMeasurementUnitOf

Direct Super Types

- genericallyDependsOn

Domain

- MeasurementUnit

Range

- InformationBearingEntity

Figures

- Figure 4.5

4.2.27 isMentionOf

Annotations

- **Label:** is mention of

- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/InformationEntityOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/is_mention_of

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** isMentionedBy

Figures

- Figure 4.5

4.2.28 isMentionedBy

Annotations

- **Label:** is mentioned by
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/InformationEntityOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/is_mentioned_by

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** isMentionOf

Figures

- Figure 4.5

4.2.29 isSubjectOf

Annotations

- **Label:** is subject of
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/InformationEntityOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/is_subject_of

Facets

- **Property Type:** ObjectProperty
- **Functional:** False

- **Inverse Of:** isAbout

Direct Sub Types

- describedBy
- designatedBy
- prescribedBy

Range

- InformationContentEntity

Figures

- Figure 4.3

4.2.30 prescribedBy

Annotations

- **Label:** prescribed by
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/InformationEntityOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/prescribed_by

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** prescribes

Hierarchy

isSubjectOf
└ prescribedBy

Direct Super Types

- isSubjectOf

Direct Sub Types

- isPermittedBy
- isProhibitedBy
- isRequiredBy
- usesFormat

Range

- DirectiveInformationContentEntity

4.2.31 prescribes

Annotations

- **Label:** prescribes
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/InformationEntityOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/prescribes

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** prescribedBy

Hierarchy

isAbout
└ prescribes

Direct Super Types

- isAbout

Direct Sub Types

- formatUsedIn
- permits
- prohibits
- requires

Domain

- DirectiveInformationContentEntity

Figures

- Figure 4.2
- Figure 4.6
- Figure 12.3
- Figure 13.2

4.2.32 representedBy

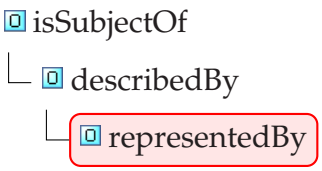
Annotations

- **Label:** represented by
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/InformationEntityOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/represented_by

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Functional:** True
- **Inverse Of:** represents

Hierarchy



Direct Super Types

- describedBy

Range

- RepresentationalInformationContentEntity

4.2.33 represents

The relationship that is being defined here is that between the content of a photographic image and its object, between the content of a video and its objects and events, between the content of an audio recording and the sounds or events generating those sounds, or between the content of a written transcript and the verbal event that it transcribes.

Annotations

- **Label:** represents
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/InformationEntityOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/represents

Facets

- **Property Type:** ObjectProperty
- **Functional:** True
- **Inverse Of:** representedBy

Hierarchy

isAbout
└ describes
  └ represents

Direct Super Types

- describes

Domain

- RepresentationalInformationContentEntity

Figures

- Figure 4.6
- Figure 13.5

4.2.34 usesMeasurementUnit

Annotations

- **Label:** uses measurement unit
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/InformationEntityOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/uses_measurement_unit

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** isMeasurementUnitOf

Hierarchy

isCarrierOf
└ usesMeasurementUnit

Direct Super Types

- isCarrierOf

Domain

- InformationBearingEntity

Range

- MeasurementUnit

Figures

- Figure 2.5
- Figure 2.6
- Figure 4.5

5

Agent Ontology

This ontology is designed to represent agents, especially persons and organizations, and their roles.

5.1 Named Classes

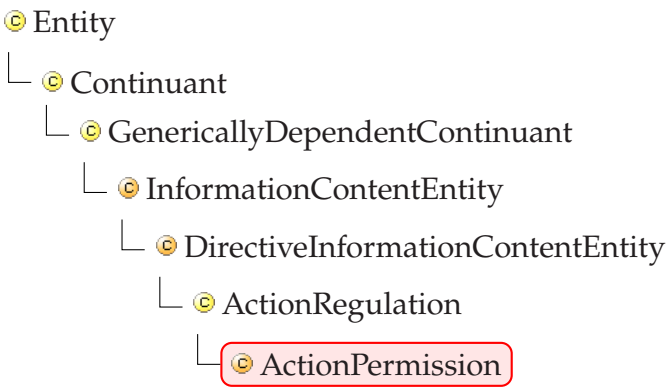
5.1.1 ActionPermission

Definition
An Action Regulation that permits some Act.

Annotations

- **Label:** Action Permission
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/AgentOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/ActionPermission

Hierarchy



Direct Super Types

- ActionRegulation

Direct Sub Types

- FilePermission

Equivalent Classes

- (ActionRegulation ⊓ ∃ permits Process)

5.1.2 ActionProhibition

Definition
An Action Regulation that prohibits some Act.

Annotations

- **Label:** Action Prohibition
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/AgentOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/ActionProhibition

Hierarchy

- Entity
  - Continuant
    - GenericallyDependentContinuant
      - InformationContentEntity
        - DirectiveInformationContentEntity
          - ActionRegulation
            - **ActionProhibition**

Direct Super Types

- ActionRegulation

Equivalent Classes

- (ActionRegulation ⊓ ∃ prohibits Process)

5.1.3 ActionRegulation

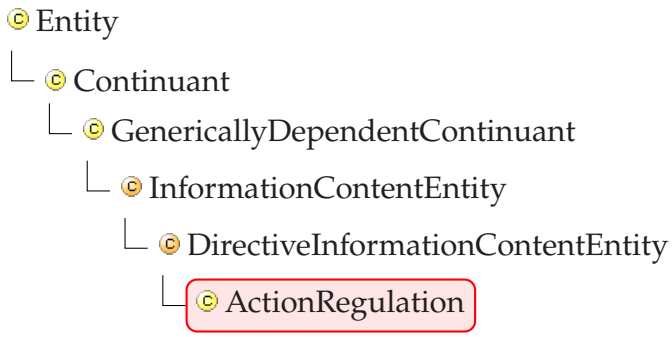
Definition
A Directive Information Content Entity that prescribes an Act as required, prohibited,

or permitted, and is the output of an Act which realizes some Authority Role.

Annotations

- **Label:** Action Regulation
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/AgentOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/ActionRegulation

Hierarchy



Direct Super Types

- DirectiveInformationContentEntity

Direct Sub Types

- ActionPermission
- ActionProhibition
- ActionRequirement

Domain Of

- permits
- prohibits
- requires

Range For

- isPermittedBy
- isProhibitedBy
- isRequiredBy

Figures

- Figure 4.4

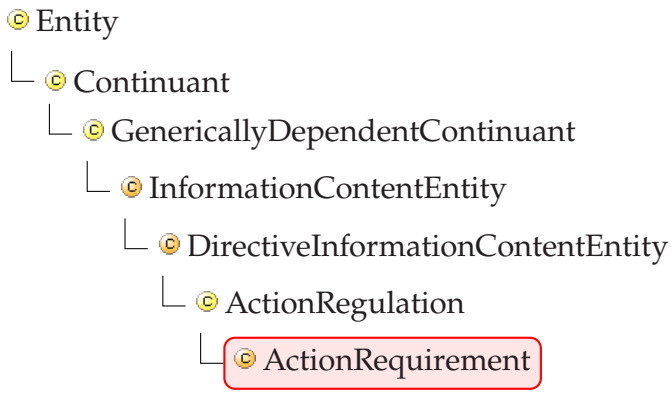
5.1.4 ActionRequirement

Definition
An Action Regulation that requires some Act.

Annotations

- **Label:** Action Requirement
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/AgentOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/ActionRequirement

Hierarchy



Direct Super Types

- ActionRegulation

Equivalent Classes

- (ActionRegulation ∩ ∃ requires Process)

5.1.5 Affordance

Definition
A Realizable Entity of an Independent Continuant that creates an opportunity for an Agent to realize some Capability or Disposition in some Act.

Annotations

- **Label:** Affordance
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/AgentOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/Affordance

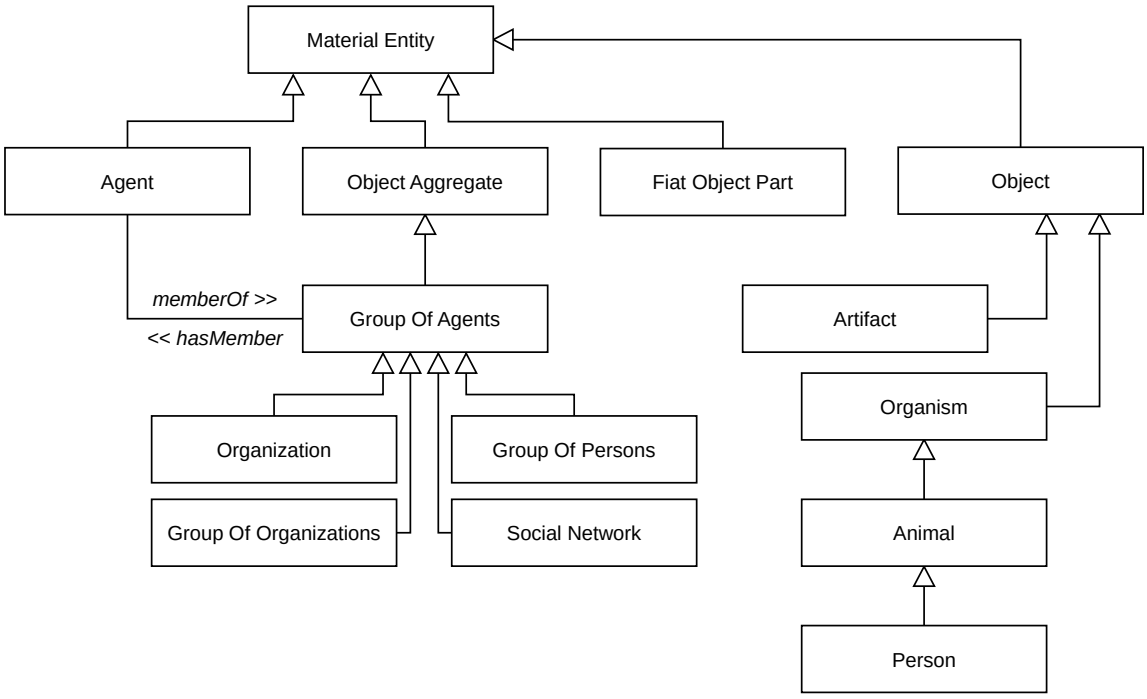


Figure 5.1: Agent hierarchy.

Hierarchy

- Entity
  - Continuant
    - SpecificallyDependentContinuant
      - RealizableEntity
        - Affordance

Direct Super Types

- RealizableEntity

Figures

- Figure 2.7

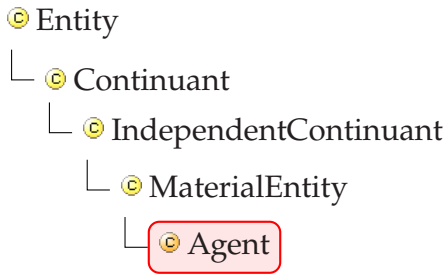
5.1.6 Agent

Definition
A Material Entity that is capable of performing Intentional Acts.

Annotations

- **Label:** Agent
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/AgentOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/Agent

Hierarchy



Direct Super Types

- MaterialEntity

Direct Sub Types

- CyberAttackerRole
- RiskAssessor
- SecurityDesigner
- ThreatAgent
- ValueAssessor
- ValueSubject

Equivalent Classes

- ((Animal ⊔ Organization) ⊓ ∃ agentIn Process)

Domain Of

- hasCapability
- receives
- sends
- values

Range For

- capabilityOf
- hasRecipient
- hasSender
- isObjectiveFor

- isValuableFor

Figures

- Figure 3.1
- Figure 5.1
- Figure 5.2
- Figure 5.3
- Figure 12.3
- Figure 12.4
- Figure 12.7
- Figure 12.8
- Figure 12.9
- Figure 13.1
- Figure 13.3
- Figure 13.6

5.1.7 AgentCapability

SOfIoTs Note

In the Common Core Ontologies, the agent capability class is asserted as a direct subclass of realizable entity. In the present ontology, agent capability is asserted to be a subclass of the capability class.

Definition

A Realizable Entity that inheres in an Agent to the extent of that Agent's capacity to realize it in Intentional Acts of a certain type.

Annotations

- **Label:** Agent Capability
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/AgentOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/AgentCapability

Hierarchy

- Entity
  - Continuant
    - SpecificallyDependentContinuant
      - RealizableEntity
        - Capability
          - AgentCapability

Direct Super Types

- Capability

Direct Sub Types

- OrganizationCapability
- Skill

Domain Of

- capabilityOf
- capabilityOfAggregate

Range For

- aggregateHasCapability
- hasCapability

Figures

- Figure 2.7
- Figure 3.1
- Figure 5.3

5.1.8 Animal

Definition
An Organism that is multicellular, eukaryotic, heterotrophic, and capable of motility for part of its life.

Annotations

- **Label:** Animal
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/AgentOntology

- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/Animal

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - MaterialEntity
        - Object
          - Organism
            - Animal

Direct Super Types

- Organism

Direct Sub Types

- Person

Figures

- Figure 5.1

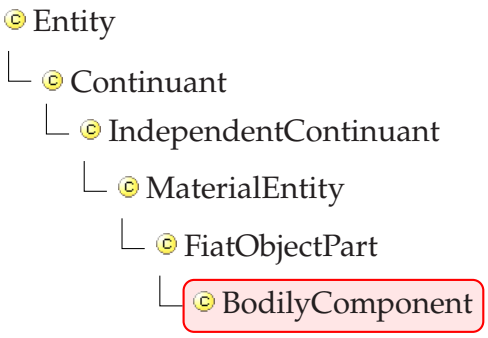
5.1.9 BodilyComponent

Definition
A Fiat Object Part located within or on the surface of an Agent.

Annotations

- **Label:** Bodily Component
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/AgentOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/BodilyComponent

Hierarchy



Direct Super Types

- FiatObjectPart

Direct Sub Types

- Eye

Figures

- Figure 2.6

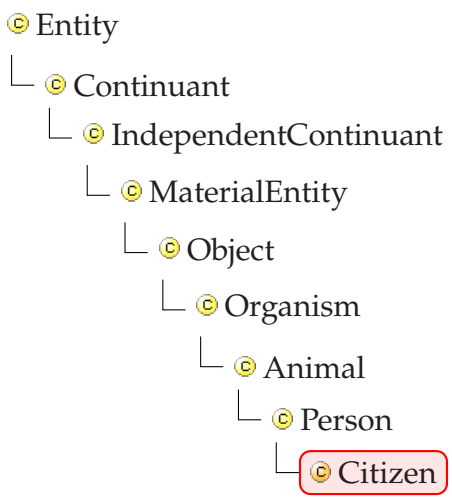
5.1.10 Citizen

Definition
A Person who is the bearer of some Citizen Role.

Annotations

- **Label:** Citizen
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/AgentOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/Citizen

Hierarchy



Direct Super Types

- Person

Equivalent Classes

- hasRole CitizenRole

5.1.11 CitizenRole

Definition
A Role that inheres in a Person who is legally recognized as a member of a particular state, with associated rights and obligations.

Annotations

- **Label:** Citizen Role
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/AgentOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/CitizenRole

Hierarchy

- Entity
  - Continuant
    - SpecificallyDependentContinuant
      - RealizableEntity
        - Role
          - CitizenRole

Direct Super Types

- Role

5.1.12 CommercialOrganization

Definition
An Organization that is the bearer of a Commercial Role and whose primary objective is to make a profit from the provision of goods or services.

Annotations

- **Label:** Commercial Organization
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/AgentOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/CommercialOrganization

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - MaterialEntity
        - ObjectAggregate
          - GroupOfAgents
            - Organization
              - CommercialOrganization

Direct Super Types

- Organization

Equivalent Classes

- (Organization ⊓ ∃ hasRole CommercialRole)

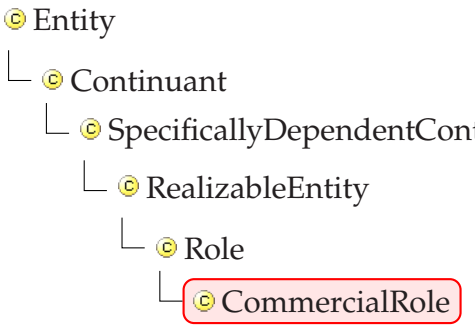
5.1.13 CommercialRole

Definition
A Role that inheres in an Organization by virtue of its establishment as a for-profit business.

Annotations

- **Label:** Commercial Role
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/AgentOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/CommercialRole

Hierarchy



Direct Super Types

- Role

5.1.14 Enemy

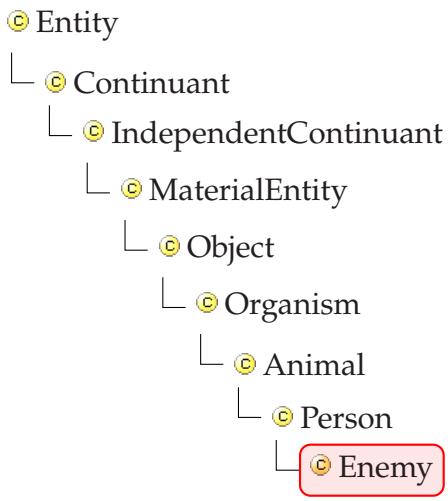
Definition
A Person who is the bearer of some Enemy Role.

Annotations

- **Label:** Enemy

- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/AgentOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/Enemy

Hierarchy



Direct Super Types

- Person

Equivalent Classes

- hasRole EnemyRole

5.1.15 Eye

Definition
A Bodily Component that consists of an organ that canonically affords the Agent it is part of with the ability to receive visual stimuli necessary for sight.

Annotations

- **Label:** Eye
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/AgentOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/Eye

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - MaterialEntity
        - FiatObjectPart
          - BodilyComponent
            - Eye

Direct Super Types

- BodilyComponent

Figures

- Figure 2.6

5.1.16 GroupOfAgents

Definition
An Object Aggregate that has only Agents as parts.

Annotations

- **Label:** Group of Agents
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/AgentOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/GroupOfAgents

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - MaterialEntity
        - ObjectAggregate
          - GroupOfAgents

Direct Super Types

- ObjectAggregate
- (hasMember Agent ∩ ∀ hasMember Agent)

Direct Sub Types

- GroupOfOrganizations
- GroupOfPersons
- Organization
- SocialNetwork

Domain Of

- aggregateHasCapability

Range For

- capabilityOfAggregate

Figures

- Figure 5.1
- Figure 5.3

5.1.17 GroupOfOrganizations

Definition
A Group of Agents that has only Organizations as parts.

Annotations

- **Label:** Group of Organizations
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/AgentOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/GroupOfOrganizations

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - MaterialEntity
        - ObjectAggregate
          - GroupOfAgents
            - GroupOfOrganizations

Direct Super Types

- GroupOfAgents
- hasPart Organization
- hasPart Organization

Figures

- Figure 5.1
- Figure 5.3

5.1.18 GroupOfPersons

Definition
A Group of Agents that has only Persons as parts.

Annotations

- **Label:** Group of Persons
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/AgentOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/GroupOfPersons

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - MaterialEntity
        - ObjectAggregate
          - GroupOfAgents
            - GroupOfPersons

Direct Super Types

- GroupOfAgents
- hasPart Person
- hasPart Person

Figures

- Figure 5.1
- Figure 5.3

5.1.19 InterpersonalRelationshipRole

Definition
A Role that inheres in a Person in virtue of the obligations, expectations, or social norms that govern that Person's Intentional Acts within the context of a relationship with another Person.

Annotations

- **Label:** Interpersonal Relationship Role
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/AgentOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/InterpersonalRelationshipRole

Hierarchy

- Entity
  - Continuant
    - SpecificallyDependentContinuant
      - RealizableEntity
        - Role
          - **InterpersonalRelationshipRole**

Direct Super Types

- Role

5.1.20 Objective

Definition
A Directive Information Content Entity that prescribes some projected state that some Agent intends to achieve.

Annotations

- **Label:** Objective
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/AgentOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/Objective

Hierarchy

- Entity
  - Continuant
    - GenericallyDependentContinuant
      - InformationContentEntity
        - DirectiveInformationContentEntity
          - **Objective**

Direct Super Types

- DirectiveInformationContentEntity

Direct Sub Types

- CyberObjectiveSpecification
- SituationObjective

Domain Of

- isObjectiveFor

Figures

- Figure 4.2
- Figure 4.4
- Figure 12.3
- Figure 12.9

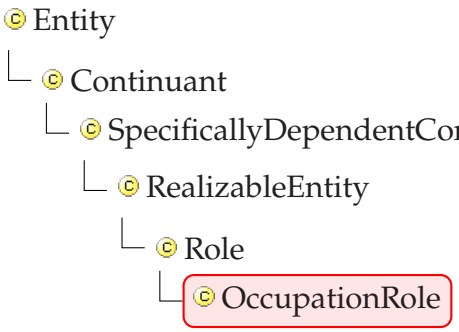
5.1.21 OccupationRole

Definition
A Role that inheres in an Agent in virtue of the responsibilities that Agent is expected to fulfill within the context of some Act of Employment.

Annotations

- **Label:** Occupation Role
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/AgentOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/OccupationRole

Hierarchy



Direct Super Types

- Role

5.1.22 Organism

Definition
An Object that is an Animal or Plant.

Annotations

- **Label:** Organism
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/AgentOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/Organism

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - MaterialEntity
        - Object
          - Organism

Direct Super Types

- Object

Direct Sub Types

- Animal

Disjoint Classes

- Artifact

Figures

- Figure 5.1

5.1.23 Organization

Definition
A Group of Agents which can be the bearer of roles, has members, and has a set of organization rules.

Annotations

- **Label:** Organization
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/AgentOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/Organization

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - MaterialEntity
        - ObjectAggregate
          - GroupOfAgents
            - Organization

Direct Super Types

- GroupOfAgents

Direct Sub Types

- CommercialOrganization
- DomainNameRegistrar
- ServiceProvider

Domain Of

- hasSubsidiary
- isDelimitedBy
- isOrganizationalContextOf
- isSubsidiaryOf

Range For

- delimits
- hasOrganizationalContext
- hasSubsidiary
- isSubsidiaryOf

Figures

- Figure 5.1
- Figure 5.3

5.1.24 OrganizationCapability

Definition
An Agent Capability that inheres in an Organization to the extent of that Organization's capacity to realize it in Intentional Acts of a certain type.

Annotations

- **Label:** Organization Capability
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/AgentOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/OrganizationCapability

Hierarchy

- Entity
  - Continuant
    - SpecificallyDependentContinuant
      - RealizableEntity
        - Capability
          - AgentCapability
            - OrganizationCapability

Direct Super Types

- AgentCapability

Equivalent Classes

- capabilityOf Organization

Figures

- Figure 5.3

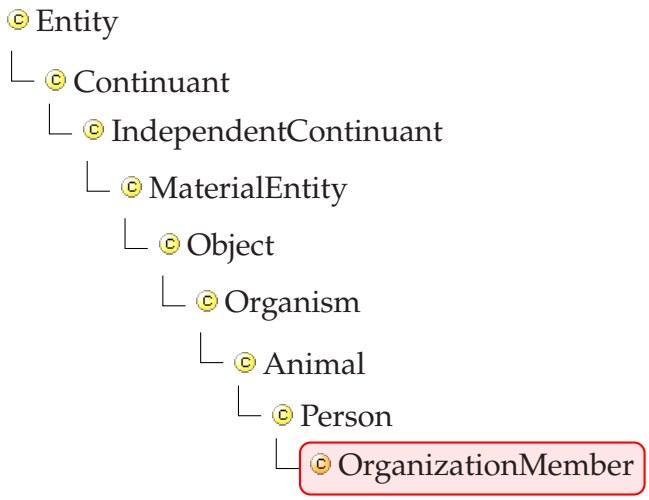
5.1.25 OrganizationMember

Definition
A Person who is affiliated with some Organization by being a member of that Organization.

Annotations

- **Label:** Organization Member
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/AgentOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/OrganizationMember

Hierarchy



Direct Super Types

- Person
- isAffiliatedWith Organization

Equivalent Classes

- hasRole OrganizationMemberRole

5.1.26 OrganizationMemberRole

Definition
A Role that inheres in an Agent in virtue of the responsibilities that Agent is expected to fulfill as a member of some Organization.

Annotations

- **Label:** Organization Member Role
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/AgentOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/OrganizationMemberRole

Hierarchy

- Entity
  - Continuant
    - SpecificallyDependentContinuant
      - RealizableEntity
        - Role
          - OrganizationMemberRole

Direct Super Types

- Role

5.1.27 Person

Definition
An Animal that is a member of the species Homo sapiens.

Annotations

- **Label:** Person
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/AgentOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/Person

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - MaterialEntity
        - Object
          - Organism
            - Animal
              - Person

Direct Super Types

- Animal

Direct Sub Types

- Citizen
- Enemy
- OrganizationMember
- UnalliedPerson

Domain Of

- hasFamilialRelationshipTo
- isParentOf
- isSupervisedBy
- supervises

Range For

- hasFamilialRelationshipTo
- isParentOf
- isSupervisedBy
- supervises

Figures

- Figure 2.6
- Figure 4.1
- Figure 5.1

5.1.28 Plan

Definition
A Directive Information Content Entity that prescribes some set of intended Intentional Acts through which some Agent expects to achieve some Objective.

Annotations

- **Label:** Plan
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/AgentOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/PlanSpecification

Hierarchy

- Entity
  - Continuant
    - GenericallyDependentContinuant
      - InformationContentEntity
        - DirectiveInformationContentEntity
          - Plan

Direct Super Types

- DirectiveInformationContentEntity
- hasPart Objective

Direct Sub Types

- CyberSecurityProtectionPlan
- SoftwareArchitecture

Figures

- Figure 4.2
- Figure 4.4

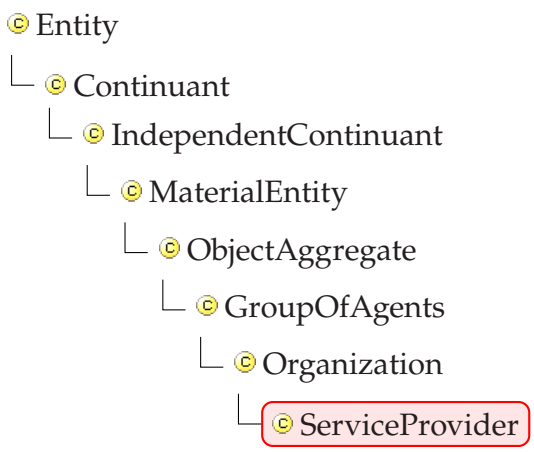
5.1.29 ServiceProvider

Definition
An Organization whose purpose is to provide a service to other Agents.

Annotations

- **Label:** Service Provider
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/AgentOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/ServiceProvider

Hierarchy



Direct Super Types

- Organization

Direct Sub Types

- InternetServiceProvider

5.1.30 Skill

Definition
An Agent Capability that inheres in a Person to the extent of that Person's capacity to realize it in Intentional Acts of a certain type.

Annotations

- **Label:** Skill
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/AgentOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/Skill

Hierarchy

- Entity
  - Continuant
    - SpecificallyDependentContinuant
      - RealizableEntity
        - Capability
          - AgentCapability
            - Skill

Direct Super Types

- AgentCapability

Equivalent Classes

- capabilityOf Person

Figures

- Figure 5.3

5.1.31 SocialNetwork

Definition

A Group of Agents that are connected in dyadic relations by similar personal or career interests, activities, backgrounds, or real-life connections.

Annotations

- **Label:** Social Network
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/AgentOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/SocialNetwork

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - MaterialEntity
        - ObjectAggregate
          - GroupOfAgents
            - SocialNetwork

Direct Super Types

- GroupOfAgents

Figures

- Figure 5.1
- Figure 5.3

5.1.32 UnalliedPerson

Definition
A Person who is the bearer of some Neutral Role.

Annotations

- **Label:** Neutral
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/AgentOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/UnalliedPerson

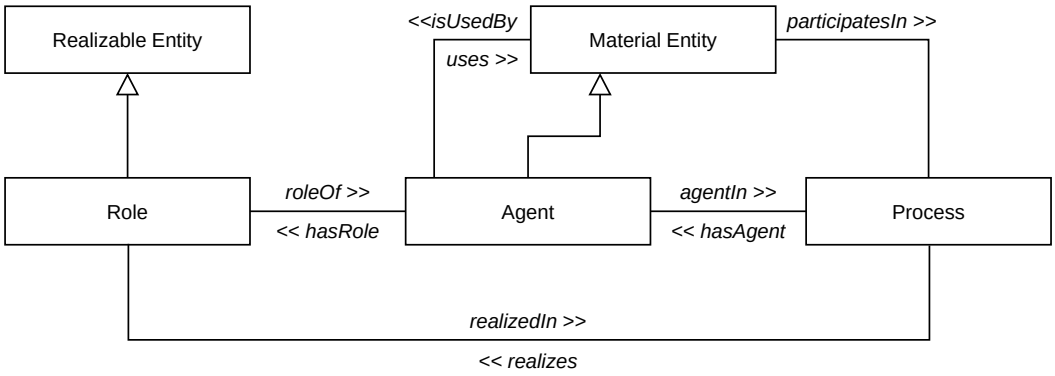


Figure 5.2: The realization of agent roles and participation in processes.

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - MaterialEntity
        - Object
          - Organism
            - Animal
              - Person
                - UnalliedPerson

Direct Super Types

- Person

Equivalent Classes

- hasRole NeutralRole

5.2 Properties

5.2.1 agentIn

Annotations

- **Label:** agent in
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/AgentOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/agent_in

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** hasAgent

Hierarchy

participatesIn
└ agentIn

Direct Super Types

- participatesIn

Figures

- Figure 5.2
- Figure 12.2
- Figure 12.7
- Figure 13.2
- Figure 13.6

5.2.2 aggregateHasCapability

Annotations

- **Label:** aggregate has capability
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/AgentOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/aggregate_has_capability

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** capabilityOfAggregate

Hierarchy

aggregateBearerOf
└ aggregateHasCapability

Direct Super Types

- aggregateBearerOf

Domain

- GroupOfAgents

Range

- AgentCapability

5.2.3 capabilityOf

Annotations

- **Label:** capability of
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/AgentOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/capability_of

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** hasCapability

Hierarchy

inheresIn
└ capabilityOf

Direct Super Types

- inheresIn

Domain

- AgentCapability

Range

- Agent

Figures

- Figure 3.1
- Figure 5.3

5.2.4 capabilityOfAggregate

Annotations

- **Label:** capability of aggregate
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/AgentOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/capability_of_aggregate

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** aggregateHasCapability

Hierarchy

inheresInAggregate
└ capabilityOfAggregate

Direct Super Types

- inheresInAggregate

Domain

- AgentCapability

Range

- GroupOfAgents

5.2.5 delimits

Annotations

- **Label:** delimits
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/AgentOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/delimits

Facets

- **Property Type:** ObjectProperty
- **Functional:** True
- **Inverse Functional:** True

- **Inverse Of:** isDelimitedBy

Domain

- GeopoliticalEntity

Range

- Organization

5.2.6 hasAgent

Annotations

- **Label:** has agent
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/AgentOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/has_agent

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** agentIn

Hierarchy

hasParticipant
└ hasAgent

Direct Super Types

- hasParticipant

Figures

- Figure 5.2

5.2.7 hasCapability

Annotations

- **Label:** has capability
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/AgentOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/has_capability

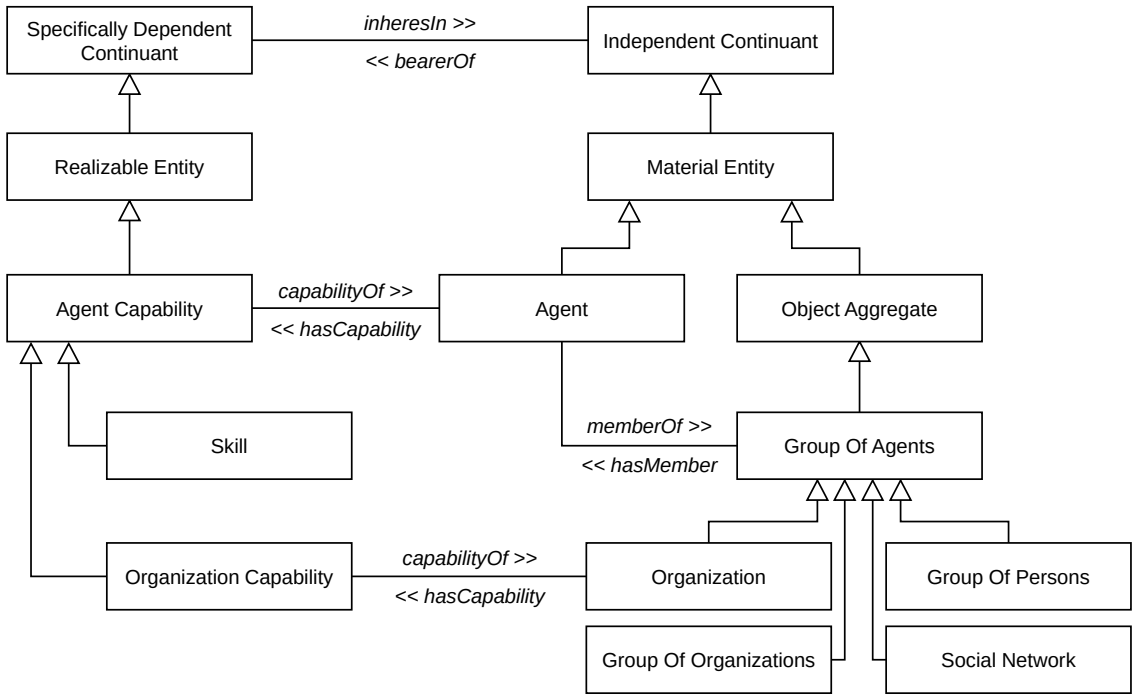


Figure 5.3: Agent capabilities.

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** capabilityOf

Hierarchy

bearerOf
hasCapability

Direct Super Types

- bearerOf

Domain

- Agent

Range

- AgentCapability

Figures

- Figure 3.1

- Figure 5.3

5.2.8 hasOrganizationalContext

Annotations

- **Label:** has organizational context
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/AgentOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/has_organizational_context

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** isOrganizationalContextOf

Domain

- Role

Range

- Organization

5.2.9 hasRecipient

Annotations

- **Label:** has recipient
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/AgentOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/has_recipient

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** receives

Hierarchy

hasParticipant
└ hasRecipient

Direct Super Types

- hasParticipant

Range

- Agent

5.2.10 hasSender

Annotations

- **Label:** has sender
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/AgentOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/has_sender

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** sends

Hierarchy

hasParticipant
└ hasSender

Direct Super Types

- hasParticipant

Range

- Agent

5.2.11 isDelimitedBy

Annotations

- **Label:** is delimited by
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/AgentOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/is_delimited_by

Facets

- **Property Type:** ObjectProperty
- **Functional:** True
- **Inverse Functional:** True
- **Inverse Of:** delimits

Domain

- Organization

Range

- GeopoliticalEntity

5.2.12 isOrganizationalContextOf

Annotations

- **Label:** is organizational context of
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/AgentOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/is_organizational_context_of

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** hasOrganizationalContext

Domain

- Organization

Range

- Role

5.2.13 isPermittedBy

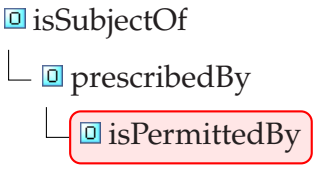
Annotations

- **Label:** is permitted by
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/AgentOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/is_permitted_by

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Asymmetric:** True
- **Irreflexive:** True
- **Inverse Of:** permits

Hierarchy



Direct Super Types

- prescribedBy

Domain

- Process

Range

- ActionRegulation

5.2.14 isProhibitedBy

Annotations

- **Label:** is prohibited by
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/AgentOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/is_prohibited_by

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Asymmetric:** True
- **Irreflexive:** True
- **Inverse Of:** prohibits

Hierarchy

isSubjectOf
└ prescribedBy
  └ isProhibitedBy

Direct Super Types

- prescribedBy

Domain

- Process

Range

- ActionRegulation

5.2.15 isRequiredBy

Annotations

- **Label:** is required by
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/AgentOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/is_required_by

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Asymmetric:** True
- **Irreflexive:** True
- **Inverse Of:** requires

Hierarchy

isSubjectOf
└ prescribedBy
  └ isRequiredBy

Direct Super Types

- prescribedBy

Domain

- Process

Range

- ActionRegulation

5.2.16 isUsedBy

Annotations

- **Label:** is used by
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/AgentOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/is_used_by

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** uses

Figures

- Figure 5.2

5.2.17 permits

Annotations

- **Label:** permits
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/AgentOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/permits

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Asymmetric:** True
- **Irreflexive:** True
- **Inverse Of:** isPermittedBy

Hierarchy

isAbout
└ prescribes
  └ permits

Direct Super Types

- prescribes

Domain

- ActionRegulation

Range

- Process

Figures

- Figure 4.6

5.2.18 prohibits

Annotations

- **Label:** prohibits
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/AgentOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/prohibits

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Asymmetric:** True
- **Irreflexive:** True
- **Inverse Of:** isProhibitedBy

Hierarchy

isAbout
└ prescribes
  └ prohibits

Direct Super Types

- prescribes

Domain

- ActionRegulation

Range

- Process

Figures

- Figure 4.6

5.2.19 receives

Annotations

- **Label:** receives
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/AgentOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/receives

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** hasRecipient

Hierarchy

participatesIn
└ receives

Direct Super Types

- participatesIn

Domain

- Agent

5.2.20 requires

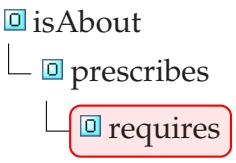
Annotations

- **Label:** requires
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/AgentOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/requires

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Asymmetric:** True
- **Irreflexive:** True
- **Inverse Of:** isRequiredBy

Hierarchy



Direct Super Types

- prescribes

Domain

- ActionRegulation

Range

- Process

Figures

- Figure 4.6

5.2.21 sends

Annotations

- **Label:** sends
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/AgentOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/sends

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** hasSender

Hierarchy

participatesIn
└ sends

Direct Super Types

- participatesIn

Domain

- Agent

5.2.22 uses

Annotations

- **Label:** uses
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/AgentOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/uses

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** isUsedBy

Figures

- Figure 5.2
- Figure 12.2
- Figure 12.4

6

Geospatial Ontology

This ontology is designed to represent sites, spatial regions, and other entities, especially those that are located near the surface of Earth, as well as the relations that hold between them.

6.1 Named Classes

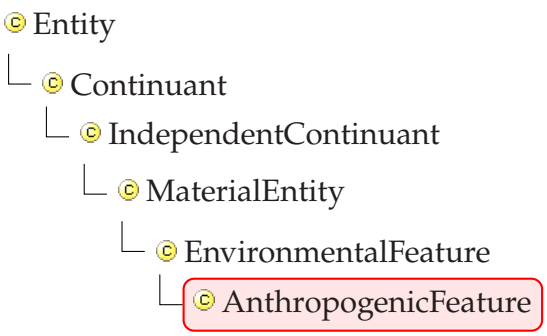
6.1.1 AnthropogenicFeature

Definition
An Environmental Feature that is related to or is the result of the influence of human beings on the environment.

Annotations

- **Label:** Anthropogenic Feature
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/GeospatialOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/AnthropogenicFeature

Hierarchy



Direct Super Types

- EnvironmentalFeature

Direct Sub Types

- ConstructedFeature
- Park
- PopulatedPlace

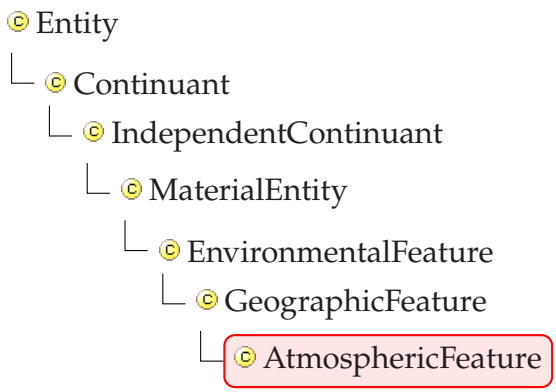
6.1.2 AtmosphericFeature

Definition
A Geographic Feature that is part of the atmosphere (including the atmosphere itself as a non-proper part) having a relatively stable lifecycle and which has a location that can be distinguished from the surrounding portion of the atmosphere.

Annotations

- **Label:** Atmospheric Feature
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/GeospatialOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/AtmosphericFeature

Hierarchy



Direct Super Types

- GeographicFeature

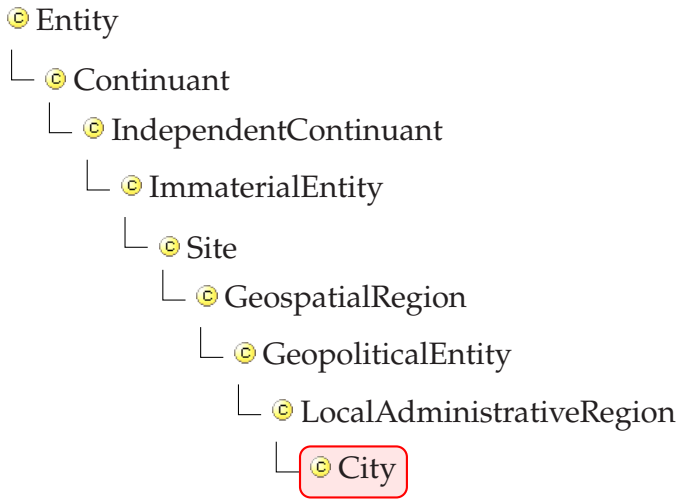
6.1.3 City

Definition
A Local Administrative Region in which a relatively large human population permanently resides; is designated as a city based on a particular administrative, legal, or historical status; and which delimits a local Government that typically oversees the provision of systems for sanitation, utilities, land usage, housing, and transportation.

Annotations

- **Label:** City
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/GeospatialOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/City

Hierarchy



Direct Super Types

- LocalAdministrativeRegion

6.1.4 ConstructedFeature

Definition
An Anthropogenic Feature that has been constructed by deliberate human effort.

Annotations

- **Label:** Constructed Feature
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/GeospatialOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/ConstructedFeature

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - MaterialEntity
        - EnvironmentalFeature
          - AnthropogenicFeature
            - ConstructedFeature

Direct Super Types

- AnthropogenicFeature

6.1.5 Continent

Definition
A Geospatial Region bounded by any of the Earth's main continuous expanses of land.

Annotations

- **Label:** Continent
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/GeospatialOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/Continent

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - ImmaterialEntity
        - Site
          - GeospatialRegion
            - Continent

Direct Super Types

- GeospatialRegion

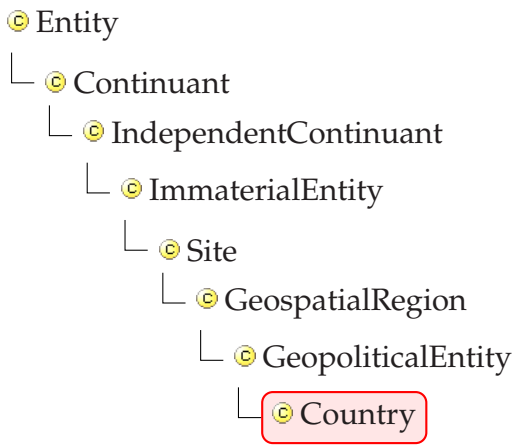
6.1.6 Country

Definition
A Geopolitical Entity that delimits a Government with effective internal and external sovereignty over the region and its population, and which is not dependent on or subject to any other power or Geopolitical Entity.

Annotations

- **Label:** Country
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/GeospatialOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/Country

Hierarchy



Direct Super Types

- GeopoliticalEntity

6.1.7 County

Definition
A Geopolitical Entity that is part of either a First-Order or Second-Order Administrative Region.

Annotations

- **Label:** County
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/GeospatialOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/County

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - ImmaterialEntity
        - Site
          - GeospatialRegion
            - GeopoliticalEntity
              - County

Direct Super Types

- GeopoliticalEntity

6.1.8 DivisonOfGeopoliticalEntity

Definition
A Geospatial Region that is a fiat division of a Geopolitical Entity and not a Geopolitical Entity.

Annotations

- **Label:** Division of Geopolitical Entity
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/GeospatialOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/DivisonOfGeopoliticalEntity

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - ImmaterialEntity
        - Site
          - GeospatialRegion
            - DivisonOfGeopoliticalEntity

Direct Super Types

- GeospatialRegion
- partOf GeopoliticalEntity

Disjoint Classes

- GeopoliticalEntity

6.1.9 EnvironmentalFeature

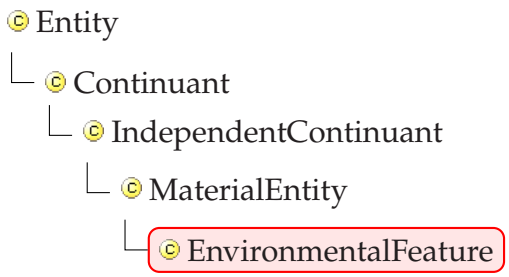
Definition

A Material Entity that is either a natural or man-made feature of the environment.

Annotations

- **Label:** Environmental Feature
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/GeospatialOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/EnvironmentalFeature

Hierarchy



Direct Super Types

- MaterialEntity

Direct Sub Types

- AnthropogenicFeature
- GeographicFeature

6.1.10 FirstOrderAdministrativeRegion

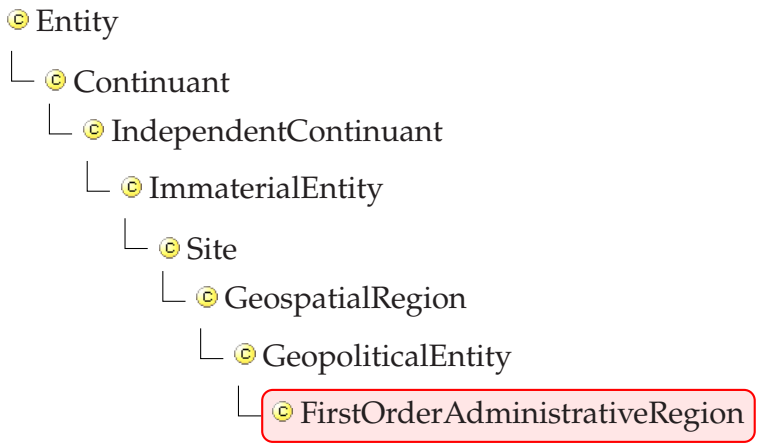
Definition

A Geopolitical Entity that is a primary administrative division of a Country.

Annotations

- **Label:** First-Order Administrative Region
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/GeospatialOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/FirstOrderAdministrativeRegion

Hierarchy



Direct Super Types

- GeopoliticalEntity
- partOf Country

Direct Sub Types

- Province
- State

6.1.11 FourthOrderAdministrativeRegion

Definition
A Geopolitical Entity that is a subdivision of a Third-Order Administrative Region.

Annotations

- **Label:** Fourth-Order Administrative Region
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/GeospatialOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/FourthOrderAdministrativeRegion

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - ImmaterialEntity
        - Site
          - GeospatialRegion
            - GeopoliticalEntity
              - FourthOrderAdministrativeRegion

Direct Super Types

- GeopoliticalEntity
- partOf ThirdOrderAdministrativeRegion

6.1.12 GeographicFeature

Definition
An Environmental Feature that is a natural (i.e. not human made) topographical feature having a (relatively) stable location in some Geospatial Region which can be designated by location-specific data.

Annotations

- **Label:** Geographic Feature
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/GeospatialOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/GeographicFeature

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - MaterialEntity
        - EnvironmentalFeature
          - GeographicFeature

Direct Super Types

- EnvironmentalFeature

Direct Sub Types

- AtmosphericFeature
- PhysiographicFeature

6.1.13 GeopoliticalEntity

Definition
A Geospatial Region that delimits the authority of a formally constituted Government to exercise its control within the bounded area.

Annotations

- **Label:** Geopolitical Entity
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/GeospatialOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/GeopoliticalEntity

Hierarchy

Direct Super Types

- GeospatialRegion

Direct Sub Types

- Country
- County
- FirstOrderAdministrativeRegion
- FourthOrderAdministrativeRegion
- LocalAdministrativeRegion

- SecondOrderAdministrativeRegion
- ThirdOrderAdministrativeRegion

Disjoint Classes

- DivisonOfGeopoliticalEntity

Domain Of

- delimits

Range For

- isDelimitedBy

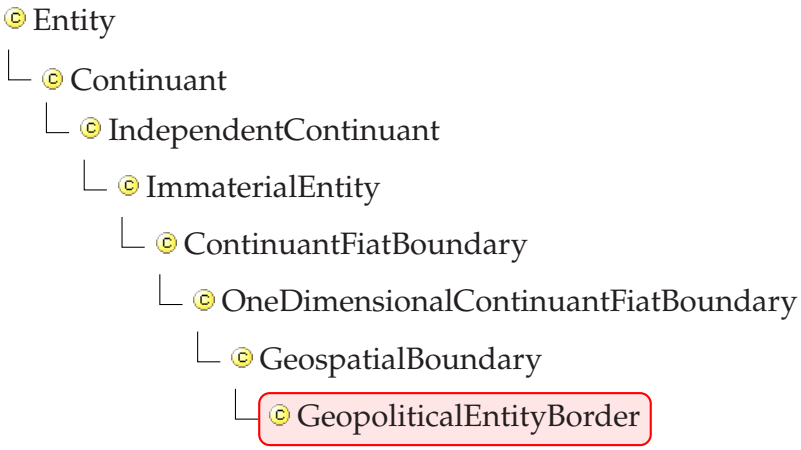
6.1.14 GeopoliticalEntityBorder

Definition
A Geospatial Boundary that is a boundary of some Geopolitical Entity.

Annotations

- **Label:** Geopolitical Entity Border
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/GeospatialOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/GeopoliticalEntityBorder

Hierarchy



Direct Super Types

- GeospatialBoundary

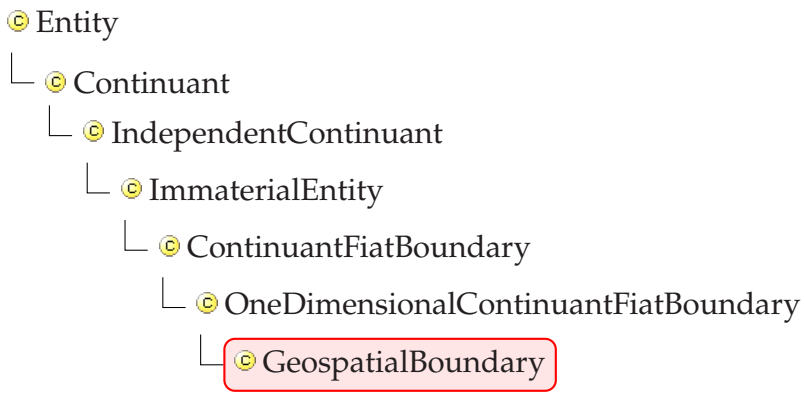
6.1.15 GeospatialBoundary

Definition
A One-Dimensional Continuant Fiat Boundary that is a boundary of some Geospatial Region.

Annotations

- **Label:** Geospatial Boundary
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/GeospatialOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/GeospatialBoundary

Hierarchy



Direct Super Types

- OneDimensionalContinuantFiatBoundary

Direct Sub Types

- GeopoliticalEntityBorder

6.1.16 GeospatialLocation

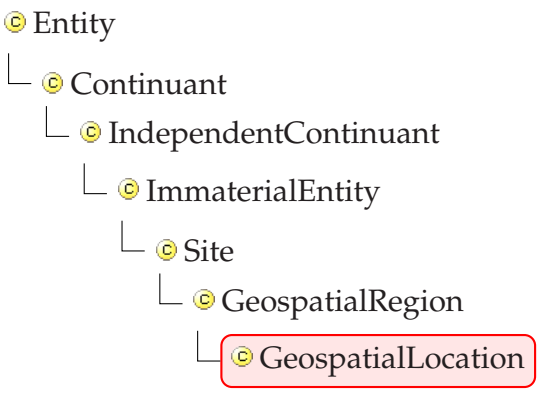
Definition
A Geospatial Region at which an Entity or Event is located.

Annotations

- **Label:** Geospatial Location
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/GeospatialOntology

- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/GeospatialLocation

Hierarchy



Direct Super Types

- GeospatialRegion
- locationOf Entity

6.1.17 GeospatialPosition

Definition
A zero-dimensional continuant fiat boundary that is at or near the surface of the Earth and fixed according to some Geospatial Coordinate Reference System.

Annotations

- **Label:** Geospatial Position
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/GeospatialOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/GeospatialPosition

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - ImmaterialEntity
        - ContinuantFiatBoundary
          - ZeroDimensionalContinuantFiatBoundary
            - GeospatialPosition

Direct Super Types

- ZeroDimensionalContinuantFiatBoundary

6.1.18 GeospatialRegion

Definition
A Site at or near the surface of the Earth.

Annotations

- **Label:** Geospatial Region
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/GeospatialOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/GeospatialRegion

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - ImmaterialEntity
        - Site
          - GeospatialRegion

Direct Super Types

- Site

Direct Sub Types

- Continent
- DivisonOfGeopoliticalEntity
- GeopoliticalEntity
- GeospatialLocation

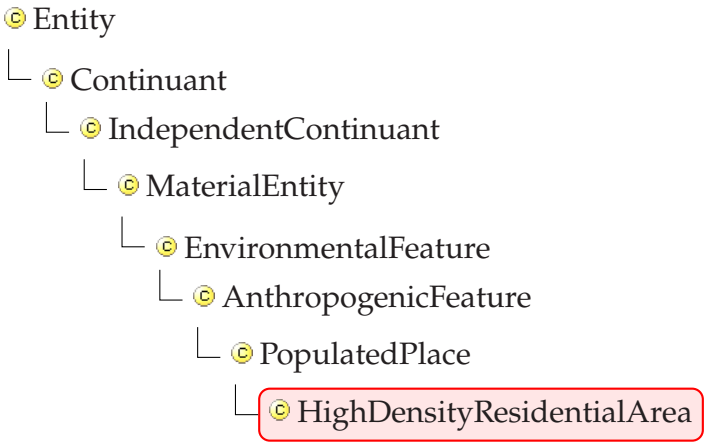
6.1.19 HighDensityResidentialArea

Definition
A Populated Place which is characterized by densely contained multiple-unit living structures.

Annotations

- **Label:** High Density Residential Area
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/GeospatialOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/HighDensityResidentialArea

Hierarchy



Direct Super Types

- PopulatedPlace

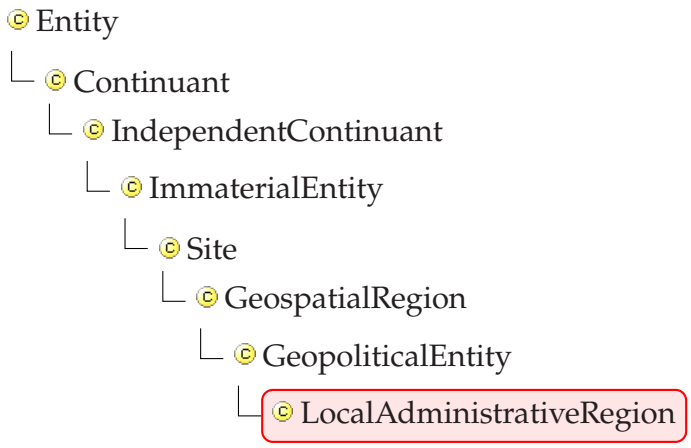
6.1.20 LocalAdministrativeRegion

Definition
A Geopolitical Entity that delimits a local Government.

Annotations

- **Label:** Local Administrative Region
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/GeospatialOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/LocalAdministrativeRegion

Hierarchy



Direct Super Types

- GeopoliticalEntity

Direct Sub Types

- City
- Town
- Village

6.1.21 LowDensityResidentialArea

Definition
A Populated Place where houses are on lots of more than one acre.

Annotations

- **Label:** Low Density Residential Area
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/GeospatialOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/LowDensityResidentialArea

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - MaterialEntity
        - EnvironmentalFeature
          - AnthropogenicFeature
            - PopulatedPlace
              - LowDensityResidentialArea

Direct Super Types

- PopulatedPlace

6.1.22 Park

Definition

An Anthropogenic Feature that is a bounded area of land, or water, usually in its natural or semi-natural (landscaped) state and set aside for some purpose, usually to do with recreation or conservation.

Annotations

- **Label:** Park
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/GeospatialOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/Park

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - MaterialEntity
        - EnvironmentalFeature
          - AnthropogenicFeature
            - Park

Direct Super Types

- AnthropogenicFeature

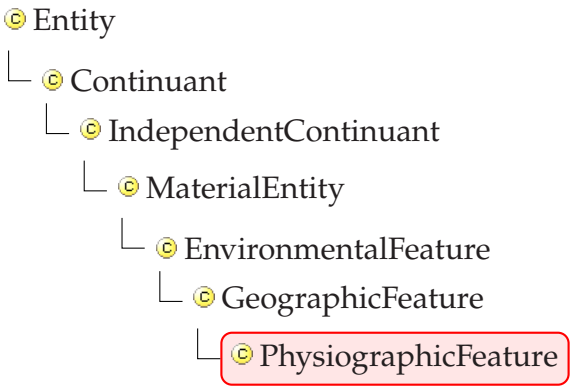
6.1.23 PhysiographicFeature

Definition
A Geographic Feature that is a geomorphological unit characterized by its surface form and location in the landscape.

Annotations

- **Label:** Physiographic Feature
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/GeospatialOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/PhysiographicFeature

Hierarchy



Direct Super Types

- GeographicFeature

6.1.24 PopulatedPlace

Definition
An Anthropogenic Feature at which people live or have lived.

Annotations

- **Label:** Populated place
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/GeospatialOntology

- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/PpopulatedPlace

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - MaterialEntity
        - EnvironmentalFeature
          - AnthropogenicFeature
            - PopulatedPlace

Direct Super Types

- AnthropogenicFeature

Direct Sub Types

- HighDensityResidentialArea
- LowDensityResidentialArea

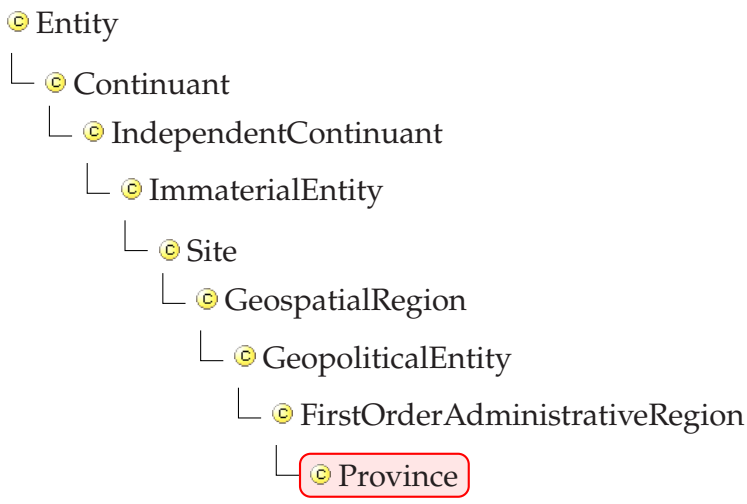
6.1.25 Province

Definition
A First-Order Administrative Region that is part of a Country and delimits the authority of a magistrate who holds constitutionally-defined administrative jurisdiction over the defined geographic territory that bounds the Province.

Annotations

- **Label:** Province
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/GeospatialOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/Province

Hierarchy



Direct Super Types

- FirstOrderAdministrativeRegion

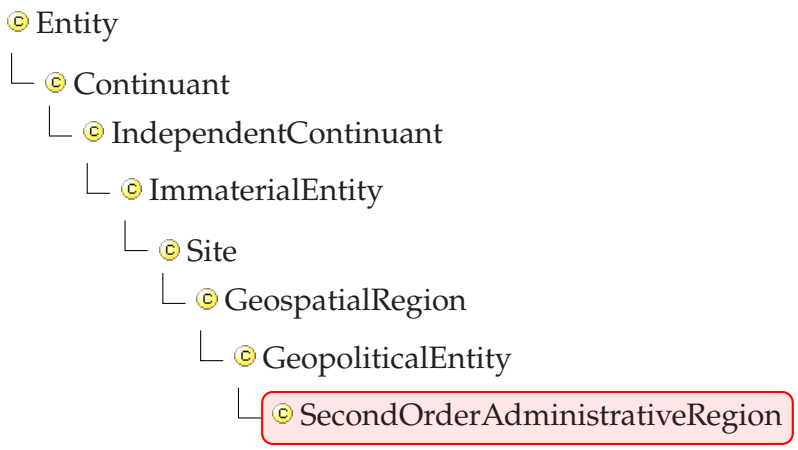
6.1.26 SecondOrderAdministrativeRegion

Definition
A Geopolitical Entity that is a subdivision of a First-Order Administrative Region.

Annotations

- **Label:** Second-Order Administrative Region
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/GeospatialOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/SecondOrderAdministrativeRegion

Hierarchy



Direct Super Types

- GeopoliticalEntity
- partOf FirstOrderAdministrativeRegion

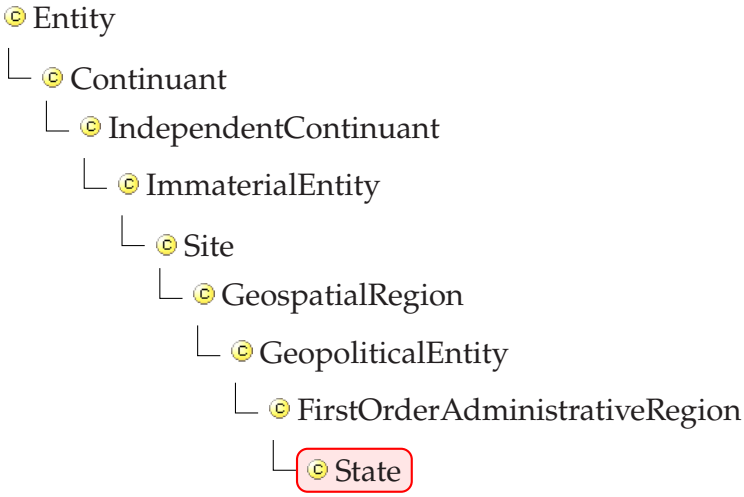
6.1.27 State

Definition
A First-Order Administrative Region that is part of a Country and delimits a centralized regional Government that holds constitutionally-defined administrative jurisdiction over the defined geographic territory that bounds the State.

Annotations

- **Label:** State
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/GeospatialOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/State

Hierarchy



Direct Super Types

- FirstOrderAdministrativeRegion

6.1.28 ThirdOrderAdministrativeRegion

Definition
A Geopolitical Entity that is a subdivision of a Second-Order Administrative Region.

Annotations

- **Label:** Third-Order Administrative Region
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/GeospatialOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/ThirdOrderAdministrativeRegion

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - ImmaterialEntity
        - Site
          - GeospatialRegion
            - GeopoliticalEntity
              - ThirdOrderAdministrativeRegion

Direct Super Types

- GeopoliticalEntity
- partOf SecondOrderAdministrativeRegion

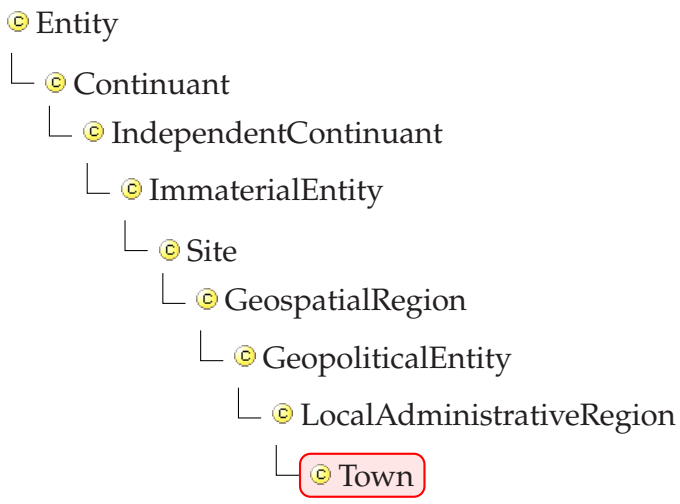
6.1.29 Town

Definition
A Local Administrative Region in which a human population permanently resides that is typically larger than the population of a Village but smaller than that of a City; is designated as a town based on a particular administrative, legal, or historical status; and which delimits a local Government that typically exercises less power than that of a City Government.

Annotations

- **Label:** Town
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/GeospatialOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/Town

Hierarchy



Direct Super Types

- LocalAdministrativeRegion

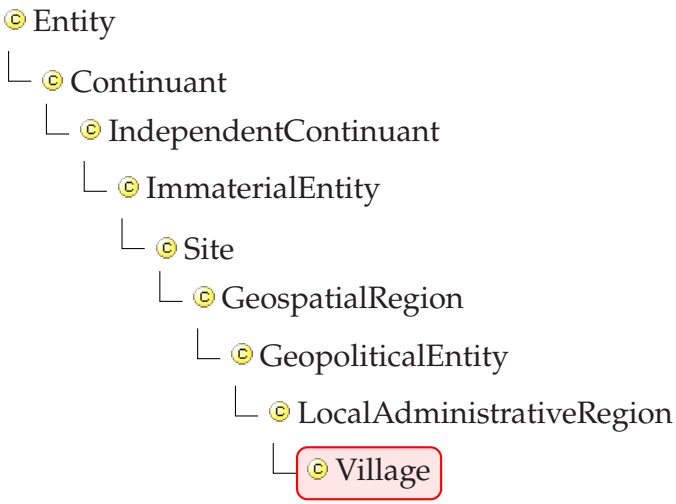
6.1.30 Village

Definition
A Local Administrative Region in which a human population permanently resides that is typically larger than the population of a hamlet but smaller than that of a Town.

Annotations

- **Label:** Village
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/GeospatialOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/Village

Hierarchy



Direct Super Types

- LocalAdministrativeRegion

6.2 Properties

6.2.1 coincidesWith

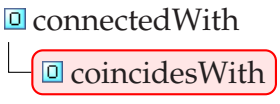
Annotations

- **Label:** coincides with
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/GeospatialOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/coincides_with

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Transitive:** True
- **Symmetric:** True

Hierarchy



Direct Super Types

- connectedWith

Domain

- ImmaterialEntity

Range

- ImmaterialEntity

6.2.2 connectedWith

Annotations

- **Label:** connected with
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/GeospatialOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/connected_with

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Symmetric:** True

Direct Sub Types

- coincidesWith
- externallyConnectsWith
- hasSpatialPart
- partiallyOverlapsWith
- spatialPartOf

Domain

- ImmaterialEntity

Range

- ImmaterialEntity

6.2.3 disconnectedWith

Annotations

- **Label:** disconnected with
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/GeospatialOntology

- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/disconnected_with

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Symmetric:** True

Domain

- ImmaterialEntity

Range

- ImmaterialEntity

6.2.4 externallyConnectsWith

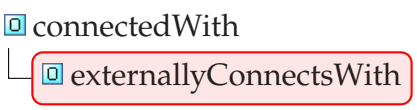
Annotations

- **Label:** externally connects with
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/GeospatialOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/externally_connects_with

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Symmetric:** True

Hierarchy



Direct Super Types

- connectedWith

Domain

- ImmaterialEntity

Range

- ImmaterialEntity

6.2.5 hasAltitudeValue

This data property can be used along with has_latitude_value and has_longitude_value to connect three-dimensional spatial data to a single Information Bearing Entity to specify the location of an entity in a Geospatial Region.

Annotations

- **Label:** has altitude value
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/GeospatialOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/has_altitude_value

Facets

- **Property Type:** DatatypeProperty
- **Functional:** False

6.2.6 hasLatitudeValue

Annotations

- **Label:** has latitude value
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/GeospatialOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/has_latitude_value

Facets

- **Property Type:** DatatypeProperty
- **Functional:** False

Range

- http://www.w3.org/2001/XMLSchema#decimal

6.2.7 hasLongitudeValue

Annotations

- **Label:** has longitude value

- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/GeospatialOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/has_longitude_value

Facets

- **Property Type:** DatatypeProperty
- **Functional:** False

Range

- http://www.w3.org/2001/XMLSchema#decimal

6.2.8 hasSpatialPart

Annotations

- **Label:** has spatial part
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/GeospatialOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/has_spatial_part

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Transitive:** True
- **Inverse Of:** spatialPartOf

Hierarchy

connectedWith
└ hasSpatialPart

Direct Super Types

- connectedWith
- hasPart

Domain

- ImmaterialEntity

Range

- ImmaterialEntity

6.2.9 partiallyOverlapsWith

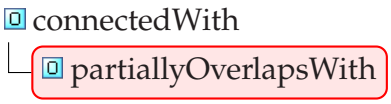
Annotations

- **Label:** partially overlaps with
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/GeospatialOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/partially_overlaps_with

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Symmetric:** True

Hierarchy



Direct Super Types

- connectedWith

Domain

- ImmaterialEntity

Range

- ImmaterialEntity

6.2.10 spatialPartOf

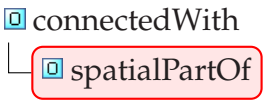
Annotations

- **Label:** spatial part of
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/GeospatialOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/spatial_part_of

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Transitive:** True
- **Inverse Of:** hasSpatialPart

Hierarchy



Direct Super Types

- connectedWith
- partOf

Domain

- ImmaterialEntity

Range

- ImmaterialEntity

7

Event Ontology

This ontology is designed to represent processual entities, especially those performed by agents, that occur within multiple domains.

7.1 Named Classes

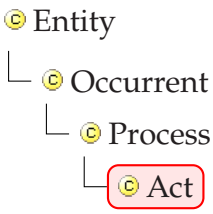
7.1.1 Act

Definition
A Process in which at least one Agent plays a causative role.

Annotations

- **Label:** Act
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/EventOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/Act

Hierarchy



Direct Super Types

- Process

Direct Sub Types

- Behavior
- CyberAct
- IntentionalAct
- UnintentionalAct

Figures

- Figure 2.5

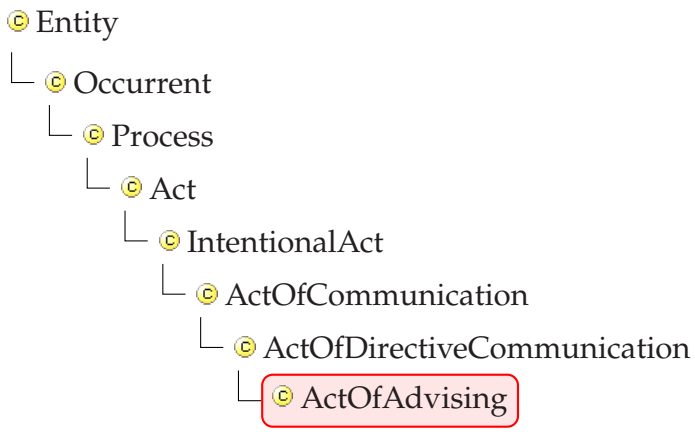
7.1.2 ActOfAdvising

Definition
An Act of Directive Communication performed by providing advice or counsel to another agent.

Annotations

- **Label:** Act of Advising
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/EventOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/ActOfAdvising

Hierarchy



Direct Super Types

- ActOfDirectiveCommunication

7.1.3 ActOfAppraisal

In the context of an Act of Appraisal, the terms 'value', 'condition', and 'quality' do not have the same meanings as their counterparts that are defined in the Common Core Ontologies. For example, a knife may be appraised to be of high quality if it is sharp and sturdy or to be of inferior quality if it is dull or fragile.

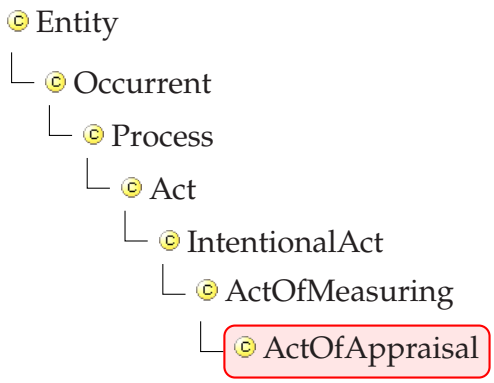
Definition
An Act of Measuring that involves evaluating, assessing, estimating, or judging the

nature, value, importance, condition, or quality of something or someone.

Annotations

- **Label:** Act of Appraisal
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/EventOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/ActOfAppraisal

Hierarchy



Direct Super Types

- ActOfMeasuring

Direct Sub Types

- ActOfRiskAppraisal
- ActOfValueAppraisal

7.1.4 ActOfCommanding

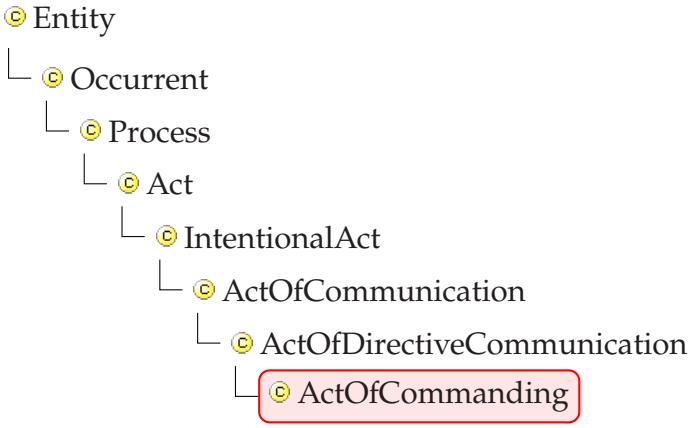
Definition

An Act of Directive Communication that exercises authoritative control or power over another agent's actions.

Annotations

- **Label:** Act of Commanding
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/EventOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/ActOfCommanding

Hierarchy



Direct Super Types

- ActOfDirectiveCommunication

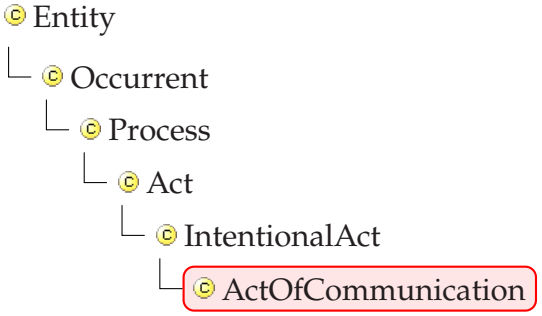
7.1.5 ActOfCommunication

Definition
An Intentional Act in which some Information Content Entity is transferred from some Agent to Another.

Annotations

- **Label:** Act of Communication
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/EventOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/ActOfCommunication

Hierarchy



Direct Super Types

- IntentionalAct

Direct Sub Types

- ActOfDeceptiveCommunication
- ActOfDirectiveCommunication
- ActOfPersonalCommunication
- ActOfRepresentativeCommunication

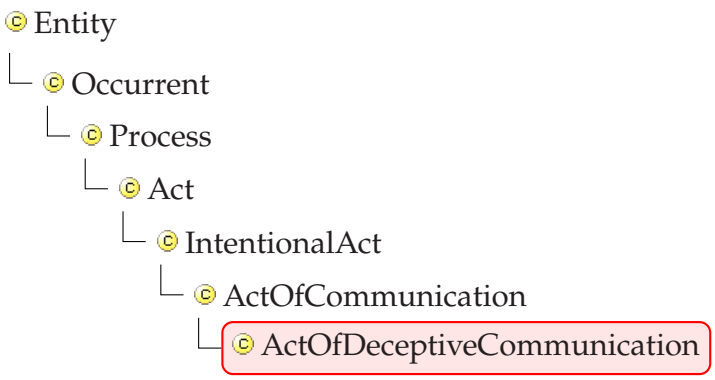
7.1.6 ActOfDeceptiveCommunication

Definition
Ac Act of Communication intended to mislead the audience by distortion or falsification of evidence and induce a reaction that is prejudicial to the interests of the audience.

Annotations

- **Label:** Act of Deceptive Communication
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/EventOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/ActOfDeceptiveCommunication

Hierarchy



Direct Super Types

- ActOfCommunication

7.1.7 ActOfDirectiveCommunication

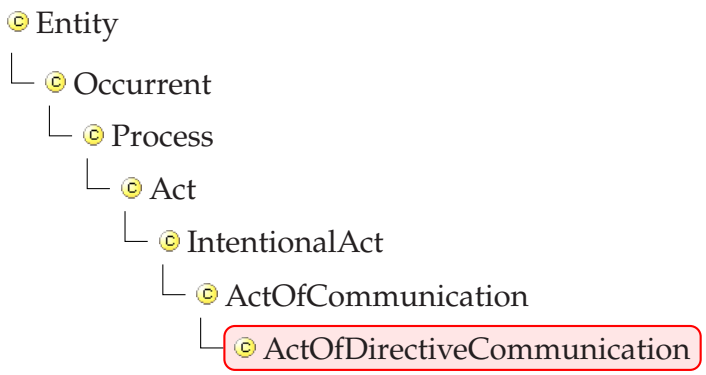
Definition
An Act of Communication that is intended to cause the hearer to take a particular action.

Annotations

- **Label:** Act of Directive Communication

- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/EventOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/ActOfDirectiveCommunication

Hierarchy



Direct Super Types

- ActOfCommunication

Direct Sub Types

- ActOfAdvising
- ActOfCommanding
- ActOfRequesting
- ActOfWarning

7.1.8 ActOfEstimation

In all cases, the Agent in an Act of Estimation either lacks complete information, lacks access to the relevant information, or chooses not to use the complete information (perhaps to save money or time) about the thing being estimated; instead, the Agent uses some or all of the relevant information that the Agent does have as a basis for arriving at the estimate.

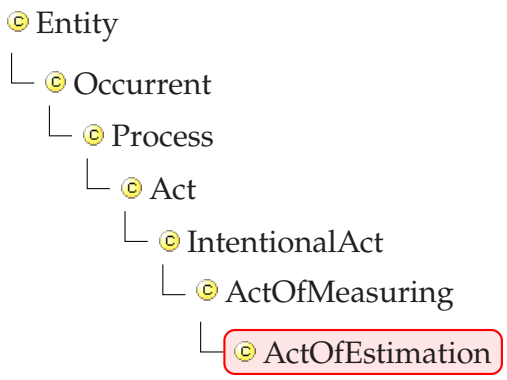
Definition
An Act of Measuring that involves the comparison of a measurement of a similar Entity or of a portion of the Entity being estimated to produce an approximated measurement of the target Entity.

Annotations

- **Label:** Act of Estimation

- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/EventOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/ActOfEstimation

Hierarchy



Direct Super Types

- ActOfMeasuring

7.1.9 ActOfMeasuring

Definition
An Intentional Act that involves determining the extent, dimensions, quanity, or quality of an Entity relative to some standard.

Annotations

- **Label:** Act of Measuring
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/EventOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/ActOfMeasuring

Hierarchy

- Entity
  - Occurrent
    - Process
      - Act
        - IntentionalAct
          - ActOfMeasuring

Direct Super Types

- IntentionalAct

Direct Sub Types

- ActOfAppraisal
- ActOfEstimation

7.1.10 ActOfObservation

Definition
An Intentional Act of acquiring information from a source via the use of one or more senses.

Annotations

- **Label:** Act of Observation
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/EventOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/ActOfObservation

Hierarchy

- Entity
  - Occurrent
    - Process
      - Act
        - IntentionalAct
          - ActOfObservation

Direct Super Types

- IntentionalAct

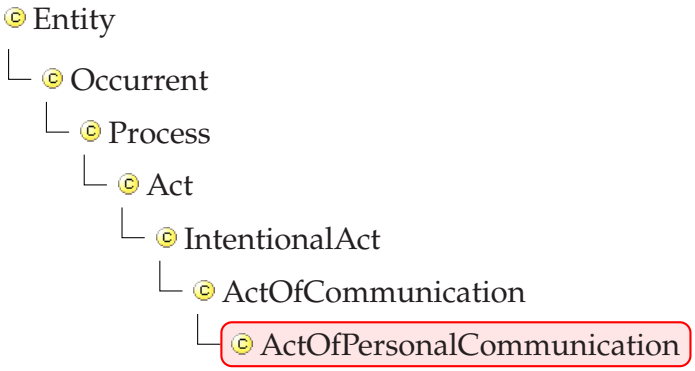
7.1.11 ActOfPersonalCommunication

Definition
An Act of Communication having a small audience.

Annotations

- **Label:** Act of Personal Communication
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/EventOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/ActOfPersonalCommunication

Hierarchy



Direct Super Types

- ActOfCommunication

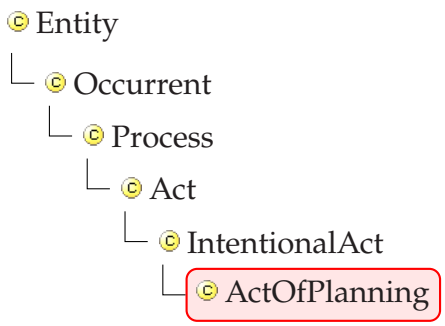
7.1.12 ActOfPlanning

Definition
An Intentional Act that involves making a Plan to achieve some specified Objective.

Annotations

- **Label:** Act of Planning
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/EventOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/ActOfPlanning

Hierarchy



Direct Super Types

- IntentionalAct

7.1.13 ActOfPrediction

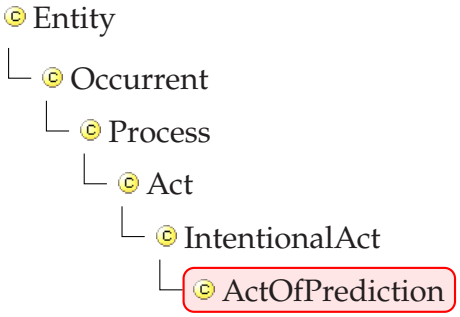
Predictions can only be made about things that are not yet the case (i.e. future things) and are further restricted to being about things that do not have a probability of either 1 (necessary) or 0 (impossible). For example, assuming that no organism is immortal, one cannot predict of a given organism that it will eventually die; however, one may predict uncertain things about the organism's eventual death, such as its precise cause or time.

Definition
An Intentional Act that involves the generation of a Predictive Information Content entity that is intended to describe an uncertain possible future event, value, entity, or attribute of an entity.

Annotations

- **Label:** Act of Prediction
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/EventOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/ActOfPrediction

Hierarchy



Direct Super Types

- IntentionalAct

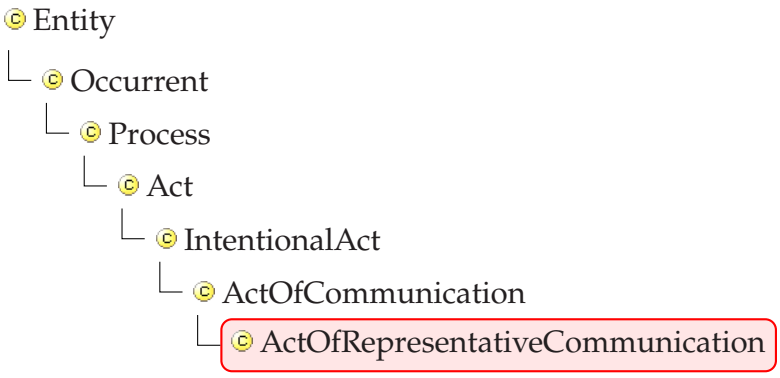
7.1.14 ActOfRepresentativeCommunication

Definition
An Act of Communication that commits a speaker to the truth of the expressed proposition.

Annotations

- **Label:** Act of Representative Communication
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/EventOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/ActOfRepresentativeCommunication

Hierarchy



Direct Super Types

- ActOfCommunication

7.1.15 ActOfRequesting

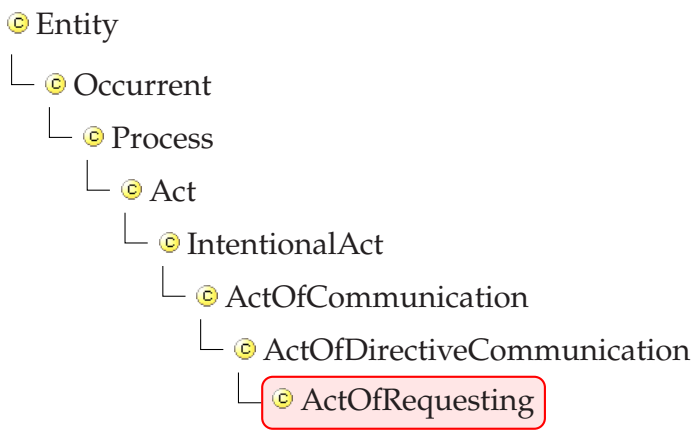
Definition

An Act of Directive Communication performed by asking for something.

Annotations

- **Label:** Act of Requesting
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/EventOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/ActOfRequesting

Hierarchy



Direct Super Types

- ActOfDirectiveCommunication

7.1.16 ActOfTargeting

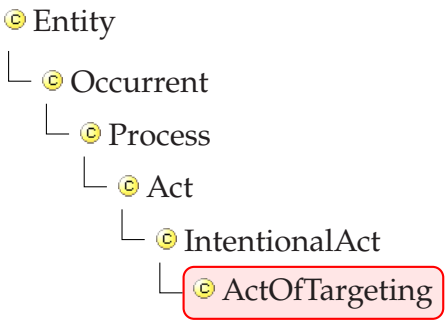
Definition

An Intentional Act wherein some Agent maintains one or more entities as the objects of potential action given some operational requirement.

Annotations

- **Label:** Act of Targeting
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/EventOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/ActOfTargeting

Hierarchy



Direct Super Types

- IntentionalAct

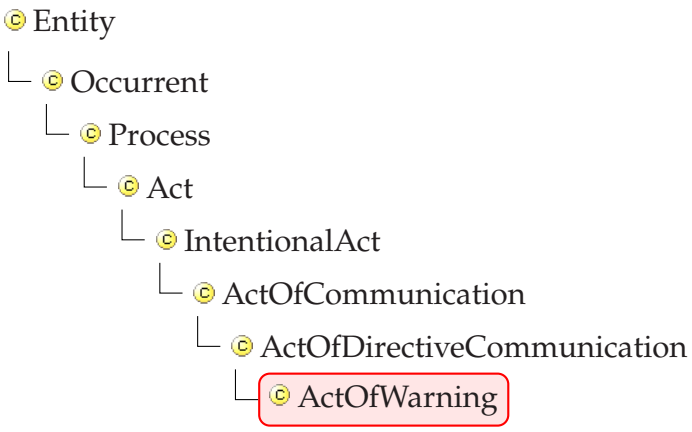
7.1.17 ActOfWarning

Definition
An Act of Directive Communication performed by indicating a possible or impending danger, problem, or other unpleasant situation.

Annotations

- **Label:** Act of Warning
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/EventOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/ActOfWarning

Hierarchy



Direct Super Types

- ActOfDirectiveCommunication

7.1.18 ActiveStasis

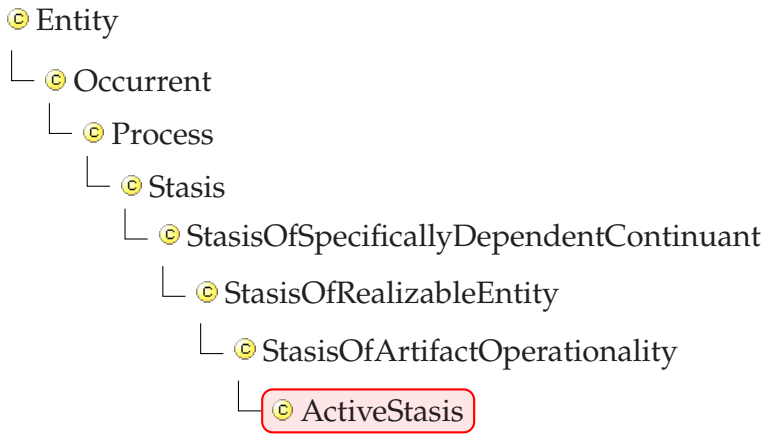
Definition

A Stasis of Artifact Operationality that holds during a Temporal Interval when an Artifact is realizing one or more of its designed Artifact Functions (especially one of its primary functions).

Annotations

- **Label:** Active Stasis
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/EventOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/ActiveStasis

Hierarchy



Direct Super Types

- StasisOfArtifactOperationality

Direct Sub Types

- NetworkCommunicationWaitingStatus
- NetworkConnectionEstablished
- UnderActiveControl

Disjoint Classes

- DeactivatedStasis

7.1.19 Behavior

Definition

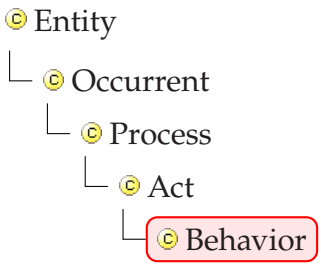
An Act in which an Independent Continuant participates as an Agent in response to

external or internal stimuli and following some pattern which is dependent upon some combination of that Independent Continuant's internal state and external conditions.

Annotations

- **Label:** Behavior
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/EventOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/Behavior

Hierarchy



Direct Super Types

- Act

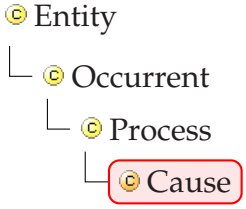
7.1.20 Cause

Definition
A Process that is the cause of or one of the causes of some other Process.

Annotations

- **Label:** Cause
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/EventOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/Cause

Hierarchy



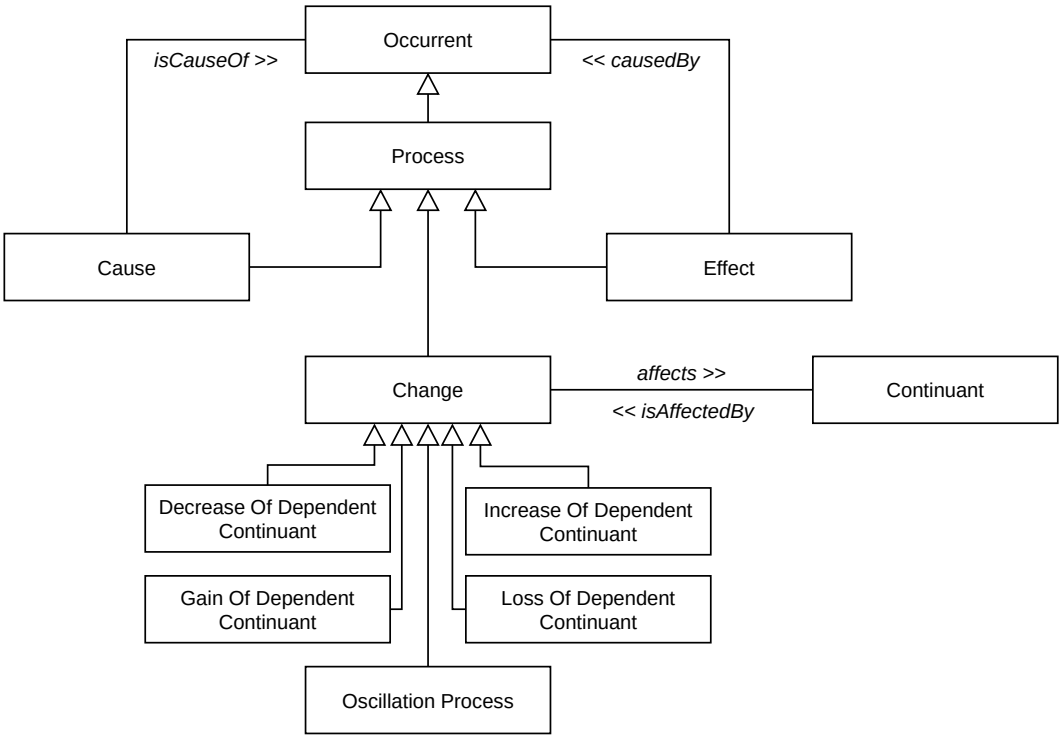


Figure 7.1: Causes, effects and changes.

Direct Super Types

- Process

Equivalent Classes

- isCauseOf Occurrent

Figures

- Figure 7.1

7.1.21 Change

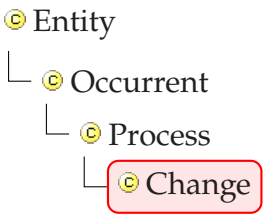
Definition

A Process in which some independent continuant endures and 1) one or more of the dependent entities it bears increase or decrease in intensity, 2) the entity begins to bear some dependent entity or 3) the entity ceases to bear some dependent entity.

Annotations

- **Label:** Change
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/EventOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/Change

Hierarchy



Direct Super Types

- Process

Direct Sub Types

- DecreaseOfDependentContinuant
- GainOfDependentContinuant
- IncreaseOfDependentContinuant
- LossOfDependentContinuant
- OscillationProcess

Figures

- Figure 7.1

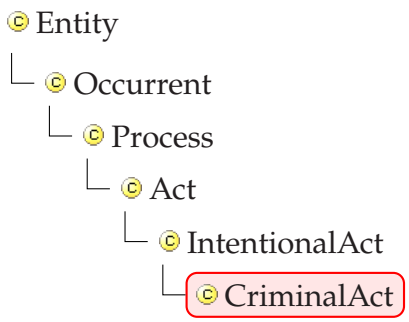
7.1.22 CriminalAct

Definition
An Intentional Act committed in violation of rules or laws for which some governing authority (via mechanisms such as legal systems) can prescribe a conviction.

Annotations

- **Label:** Criminal Act
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/EventOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/CriminalAct

Hierarchy



Direct Super Types

- IntentionalAct

7.1.23 DamagedStasis

This class can be used to instantiate instances that might otherwise be treated by defined classes such as Damaged Vehicle or Wounded Person. The Independent Continuant and Quality or Realizable Entity are participants of the stasis which can in turn be related to the temporal interval via the occurs on property.

Definition
A Stasis of Specifically Dependent Continuant in which some Independent Continuant bears a Quality or Realizable Entity that has suffered impairment (i.e., a decrease or loss) due to a previous action or event such that the Independent Continuant is now of lesser value, usefulness, or functionality.

Annotations

- **Label:** Damaged Stasis
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/EventOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/DamagedStasis

Hierarchy

- Entity
  - Occurrent
    - Process
      - Stasis
        - StasisOfSpecificallyDependentContinuant
          - DamagedStasis

Direct Super Types

- StasisOfSpecificallyDependentContinuant

7.1.24 DeactivatedStasis

Definition
A Stasis of Artifact Operationality that holds during a Temporal Interval when an Artifact is not realizing any of its designed Artifact Functions (or at least not realizing any of its primary functions).

Annotations

- **Label:** Deactivated Stasis
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/EventOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/DeactivatedStasis

Hierarchy

- Entity
  - Occurrent
    - Process
      - Stasis
        - StasisOfSpecificallyDependentContinuant
          - StasisOfRealizableEntity
            - StasisOfArtifactOperationality
              - DeactivatedStasis

Direct Super Types

- StasisOfArtifactOperationality

Direct Sub Types

- NetworkConnectionClosed

Disjoint Classes

- ActiveStasis

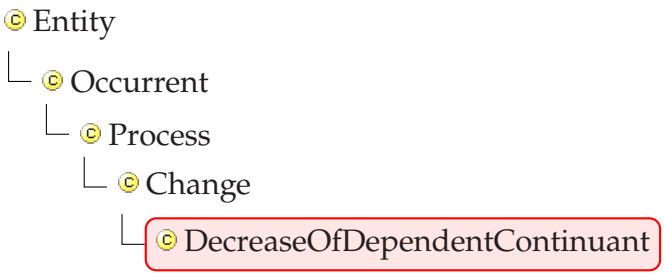
7.1.25 DecreaseOfDependentContinuant

Definition
A Change in which some Independent Continuant has a decrease in the level of some Dependent Continuant that it bears.

Annotations

- **Label:** Decrease of Dependent Continuant
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/EventOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/DecreaseOfDependentContinuant

Hierarchy



Direct Super Types

- Change

Direct Sub Types

- DecreaseOfGenericallyDependentContinuant
- DecreaseOfSpecificallyDependentContinuant

Figures

- Figure 7.1

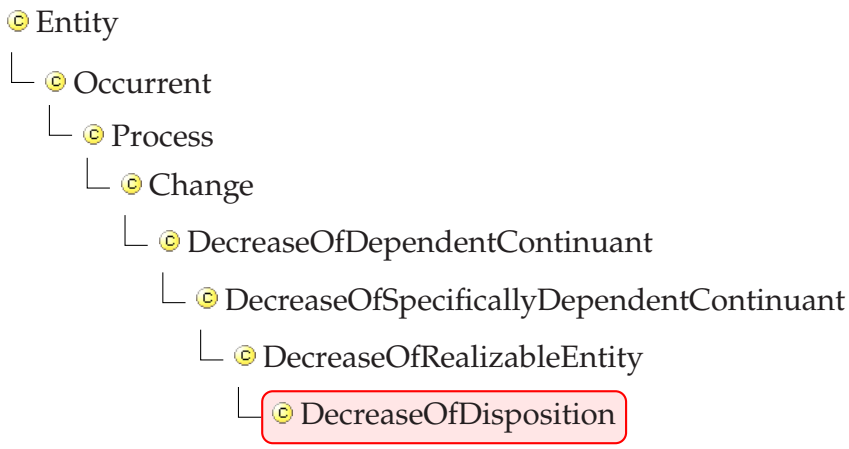
7.1.26 DecreaseOfDisposition

Definition
A Decrease of Realizable Entity in which some Independent Continuant has a decrease of some Disposition it bears.

Annotations

- **Label:** Decrease of Disposition
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/EventOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/DecreaseOfDisposition

Hierarchy



Direct Super Types

- DecreaseOfRealizableEntity

Figures

- Figure 4.2

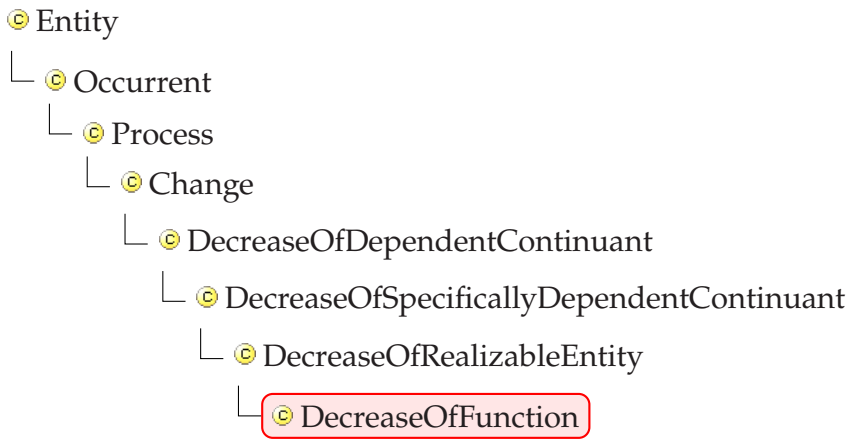
7.1.27 DecreaseOfFunction

Definition
A Decrease of Realizable Entity in which some Independent Continuant has a decrease of some Function that it bears.

Annotations

- **Label:** Decrease of Function
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/EventOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/DecreaseOfFunction

Hierarchy



Direct Super Types

- DecreaseOfRealizableEntity

7.1.28 DecreaseOfGenericallyDependentContinuant

Definition
A Decrease of Dependent Continuant in which some Independent Continuant has a decrease in the level of a Generically Dependent Continuant that it bears.

Annotations

- **Label:** Decrease of Generically Dependent Continuant
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/EventOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/DecreaseOfGenericallyDependentContinuant

Hierarchy

- Entity
  - Occurrent
    - Process
      - Change
        - DecreaseOfDependentContinuant
          - DecreaseOfGenericallyDependentContinuant

Direct Super Types

- DecreaseOfDependentContinuant

7.1.29 DecreaseOfQuality

Definition
A Decrease of Specifically Dependent Continuant in which some Independent Continuant has a decrease of some Quality that it bears.

Annotations

- **Label:** Decrease of Quality
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/EventOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/DecreaseOfQuality

Hierarchy

- Entity
  - Occurrent
    - Process
      - Change
        - DecreaseOfDependentContinuant
          - DecreaseOfSpecificallyDependentContinuant
            - DecreaseOfQuality

Direct Super Types

- DecreaseOfSpecificallyDependentContinuant

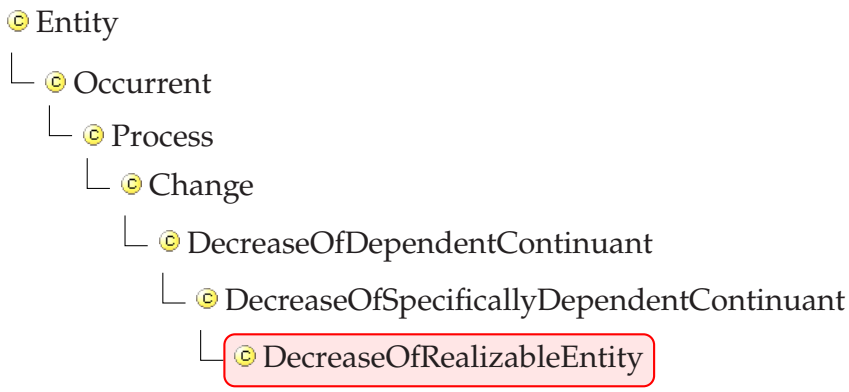
7.1.30 DecreaseOfRealizableEntity

Definition
A Decrease of Specifically Dependent Continuant in which some Independent Continuant has a decrease of some Realizable Entity that it bears.

Annotations

- **Label:** Decrease of Realizable Entity
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/EventOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/DecreaseOfRealizableEntity

Hierarchy



Direct Super Types

- DecreaseOfSpecificallyDependentContinuant

Direct Sub Types

- DecreaseOfDisposition
- DecreaseOfFunction
- DecreaseOfRole

7.1.31 DecreaseOfRole

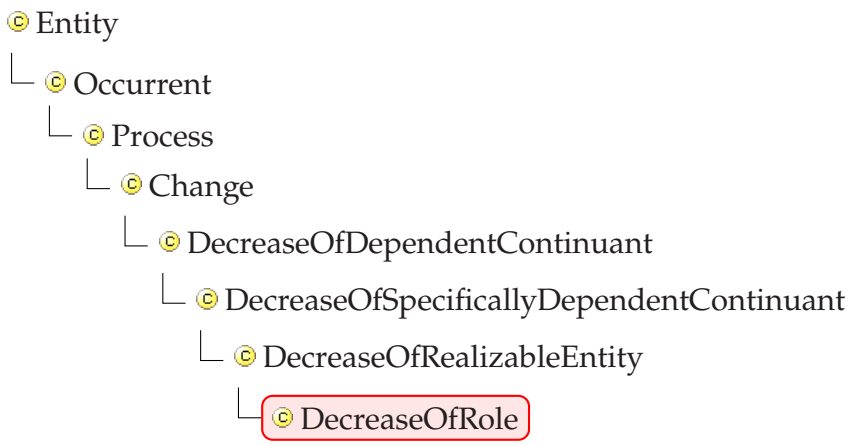
Definition
A Decrease of Realizable Entity in which some Independent Continuant has a decrease of some Role that it bears.

Annotations

- **Label:** Decrease of Role

- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/EventOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/DecreaseOfRole

Hierarchy



Direct Super Types

- DecreaseOfRealizableEntity

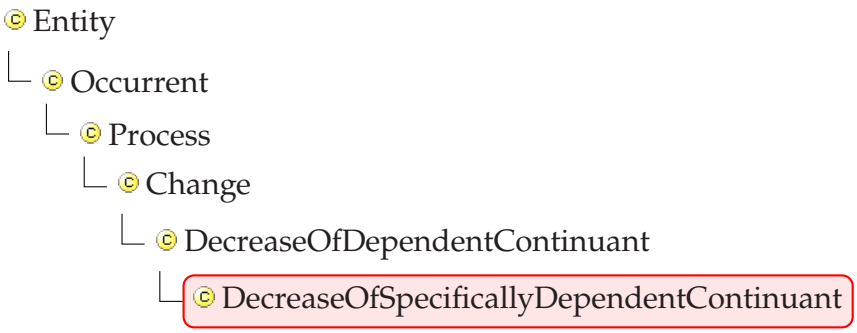
7.1.32 DecreaseOfSpecificallyDependentContinuant

Definition
A Decrease of Dependent Continuant in which some Independent Continuant has a decrease in some Specifically Dependent Continuant that it bears.

Annotations

- **Label:** Decrease of Specifically Dependent Continuant
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/EventOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/DecreaseOfSpecificallyDependentContinuant

Hierarchy



Direct Super Types

- DecreaseOfDependentContinuant

Direct Sub Types

- DecreaseOfQuality
- DecreaseOfRealizableEntity

7.1.33 DefunctStasis

Definition
A Stasis of Artifact Operationality that holds during a Temporal Interval when an Artifact no longer maintains its designed set of Artifact Functions (or at least no longer maintains its primary functions).

Annotations

- **Label:** Defunct Stasis
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/EventOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/DefunctStasis

Hierarchy

- Entity
  - Occurrent
    - Process
      - Stasis
        - StasisOfSpecificallyDependentContinuant
          - StasisOfRealizableEntity
            - StasisOfArtifactOperationality
              - DefunctStasis

Direct Super Types

- StasisOfArtifactOperationality

Disjoint Classes

- OperationalStasis

7.1.34 Effect

Definition
A Process that follows and is caused by some previous Process.

Annotations

- **Label:** Effect
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/EventOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/Effect

Hierarchy

- Entity
  - Occurrent
    - Process
      - Effect

Direct Super Types

- Process

Direct Sub Types

- EffectOfLocationChange
- NegativeValueEffect
- PositiveValueEffect

Equivalent Classes

- causedBy Occurrent

Figures

- Figure 7.1
- Figure 13.1
- Figure 13.2
- Figure 13.4
- Figure 13.6

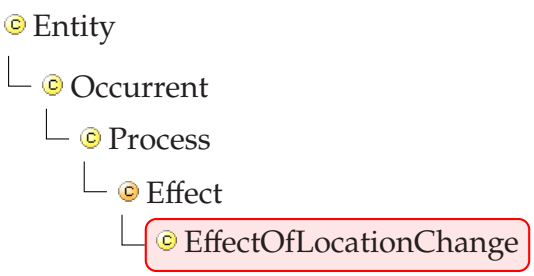
7.1.35 EffectOfLocationChange

Definition
An Effect caused by some Act of Location Change and which results in an Object being located in a different place.

Annotations

- **Label:** Effect of Location Change
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/EventOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/EffectOfLocationChange

Hierarchy



Direct Super Types

- Effect
- partOf ActOfLocationChange

- ∃ causedBy ActOfLocationChange

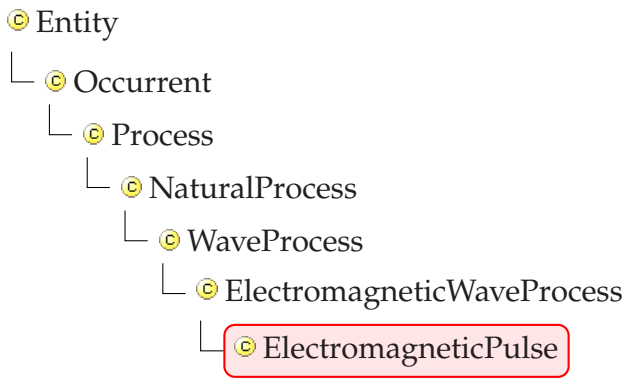
7.1.36 ElectromagneticPulse

Definition
An Electromagnetic Wave Process that consists of a short high-energy burst of electromagnetic energy.

Annotations

- **Label:** Electromagnetic Pulse
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/EventOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/ElectromagneticPulse

Hierarchy



Direct Super Types

- ElectromagneticWaveProcess

7.1.37 ElectromagneticWaveProcess

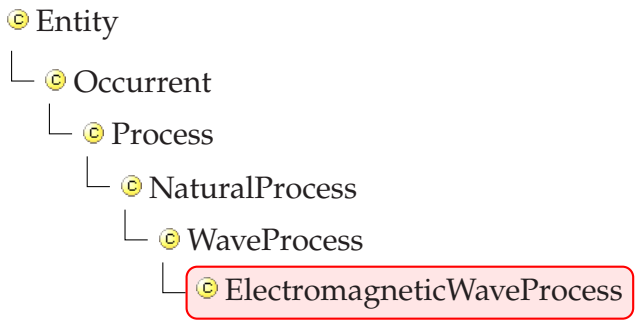
Definition
A Wave Process that is produced by charged particles, involves the periodic Oscillation of electric and magnetic fields at right angles to each other and the direction of wave propogation such that it has a Transverse Wave Profile, and which transfers electromagnetic radiant energy through a portion of space or matter.

Annotations

- **Label:** Electromagnetic Wave Process

- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/EventOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/ElectromagneticWaveProcess

Hierarchy



Direct Super Types

- WaveProcess
- hasProcessPart TransverseWaveProfile

Direct Sub Types

- ElectromagneticPulse

7.1.38 EndOfLifeStasis

Definition
A Stasis of Artifact Operationality that holds during a Temporal Interval when the participating Artifact is no longer capable of realizing all of its designed primary Artifact Functions.

Annotations

- **Label:** End of Life Stasis
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/EventOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/EndOfLifeStasis

Hierarchy

- Entity
  - Occurrent
    - Process
      - Stasis
        - StasisOfSpecificallyDependentContinuant
          - StasisOfRealizableEntity
            - StasisOfArtifactOperationality
              - EndOfLifeStasis

Direct Super Types

- StasisOfArtifactOperationality

7.1.39 EnhancedStasis

Definition
A Stasis of Specifically Dependent Continuant in which some Independent Continuant bears a Quality or Realizable Entity that has undergone improvement (i.e., an increase or gain) due to a previous action or event such that the Independent Continuant is now of greater value, usefulness, or functionality.

Annotations

- **Label:** Enhanced Stasis
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/EventOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/EnhancedStasis

Hierarchy

- Entity
  - Occurrent
    - Process
      - Stasis
        - StasisOfSpecificallyDependentContinuant
          - EnhancedStasis

Direct Super Types

- StasisOfSpecificallyDependentContinuant

7.1.40 GainOfDependentContinuant

Definition
A Change in which an Independent Continuant becomes the bearer or carrier of some Dependent Continuant.

Annotations

- **Label:** Gain of Dependent Continuant
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/EventOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/GainOfDependentContinuant

Hierarchy

- Entity
  - Occurrent
    - Process
      - Change
        - GainOfDependentContinuant

Direct Super Types

- Change

Direct Sub Types

- GainOfGenericallyDependentContinuant
- GainOfSpecificallyDependentContinuant

Figures

- Figure 7.1

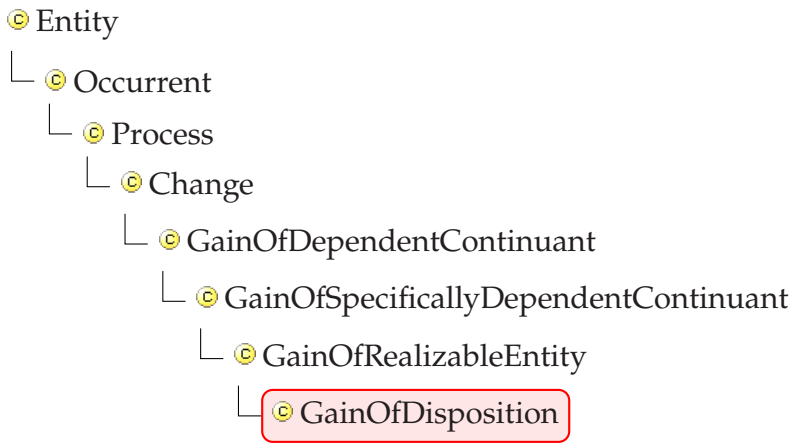
7.1.41 GainOfDisposition

Definition
A Gain of Realizable Entity in which some Independent Continuant becomes the bearer of some Disposition.

Annotations

- **Label:** Gain of Disposition
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/EventOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/GainOfDisposition

Hierarchy



Direct Super Types

- GainOfRealizableEntity
- hasParticipant (IndependentContinuant ⊓ hasDisposition Disposition)

7.1.42 GainOfFunction

Definition
A Gain of Realizable Entity in which some Independent Continuant becomes the bearer of some Function.

Annotations

- **Label:** Gain of Function
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/EventOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/GainOfFunction

Hierarchy

- Entity
  - Occurrent
    - Process
      - Change
        - GainOfDependentContinuant
          - GainOfSpecificallyDependentContinuant
            - GainOfRealizableEntity
              - GainOfFunction

Direct Super Types

- GainOfRealizableEntity
- hasParticipant (IndependentContinuant ⊓ hasFunction Function)

7.1.43 GainOfGenericallyDependentContinuant

Definition
A Gain of Dependent Continuant wherein some Independent Continuant becomes the carrier of some Generically Dependent Continuant.

Annotations

- **Label:** Gain of Generically Dependent Continuant
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/EventOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/GainOfGenericallyDependentContinuant

Hierarchy

- Entity
  - Occurrent
    - Process
      - Change
        - GainOfDependentContinuant
          - GainOfGenericallyDependentContinuant

Direct Super Types

- GainOfDependentContinuant
- hasParticipant (IndependentContinuant ⊓ ∃ isCarrierOf GenericallyDependentContinuant)

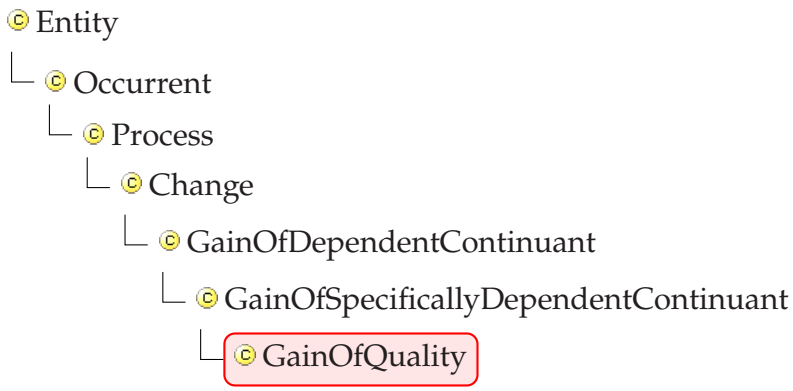
7.1.44 GainOfQuality

Definition
A Gain of Specifically Dependent Continuant in which an Independent Continuant becomes the bearer of some Quality.

Annotations

- **Label:** Gain of Quality
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/EventOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/GainOfQuality

Hierarchy



Direct Super Types

- GainOfSpecificallyDependentContinuant
- hasParticipant (IndependentContinuant ⊓ ∃ hasQuality Quality)

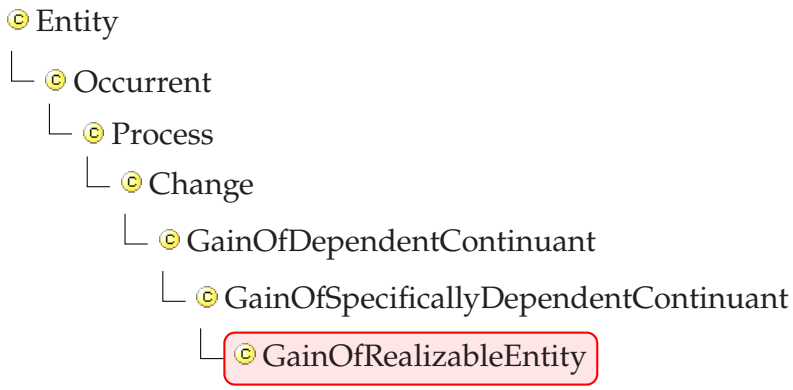
7.1.45 GainOfRealizableEntity

Definition
A Gain of Specifically Dependent Continuant in which some Independent Continuant becomes the bearer of some Realizable Entity.

Annotations

- **Label:** Gain of Realizable Entity
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/EventOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/GainOfRealizableEntity

Hierarchy



Direct Super Types

- GainOfSpecificallyDependentContinuant
- hasParticipant (IndependentContinuant ⊓ bearerOf RealizableEntity)

Direct Sub Types

- GainOfDisposition
- GainOfFunction
- GainOfRole

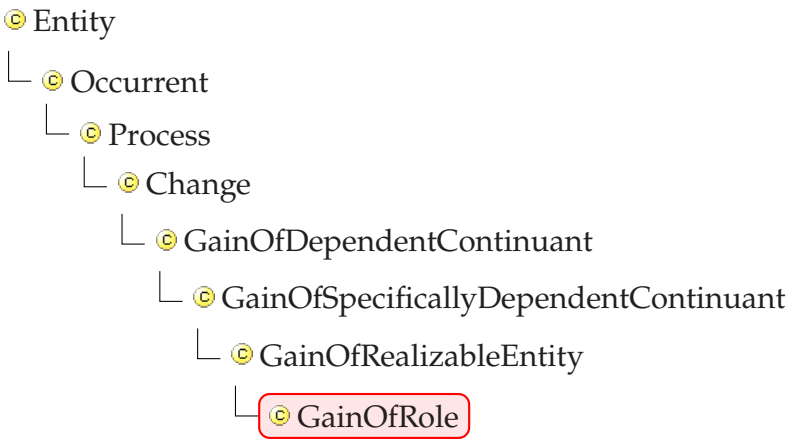
7.1.46 GainOfRole

Definition
A Gain of Realizable Entity in which some Independent Continuant becomes bearer of some Role.

Annotations

- **Label:** Gain of Role
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/EventOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/GainOfRole

Hierarchy



Direct Super Types

- GainOfRealizableEntity
- hasParticipant (IndependentContinuant ⊓ ∃ hasRole Role)

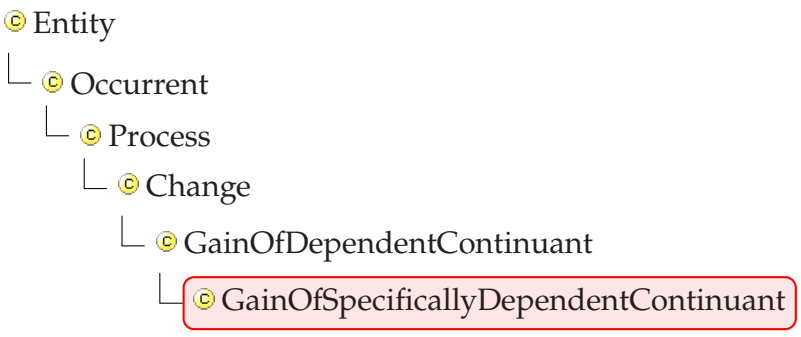
7.1.47 GainOfSpecificallyDependentContinuant

Definition
A Gain of Dependent Continuant in which some Independent Continuant becomes the bearer of some Specifically Dependent Continuant.

Annotations

- **Label:** Gain of Specifically Dependent Continuant
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/EventOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/GainOfSpecificallyDependentContinuant

Hierarchy



Direct Super Types

- GainOfDependentContinuant
- hasParticipant (IndependentContinuant ⊓ ∃ bearerOf SpecificallyDependentContinuant)

Direct Sub Types

- GainOfQuality
- GainOfRealizableEntity

Figures

- Figure 13.4

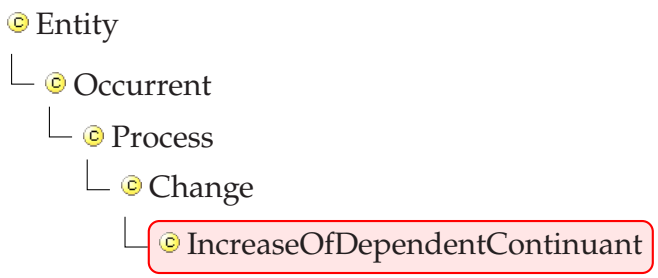
7.1.48 IncreaseOfDependentContinuant

Definition
A Change in which some Independent Continuant has an increase in the level of some Dependent Continuant that it bears.

Annotations

- **Label:** Increase of Dependent Continuant
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/EventOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/IncreaseOfDependentContinuant

Hierarchy



Direct Super Types

- Change

Direct Sub Types

- IncreaseOfGenericallyDependentContinuant
- IncreaseOfSpecificallyDependentContinuant

Figures

- Figure 7.1

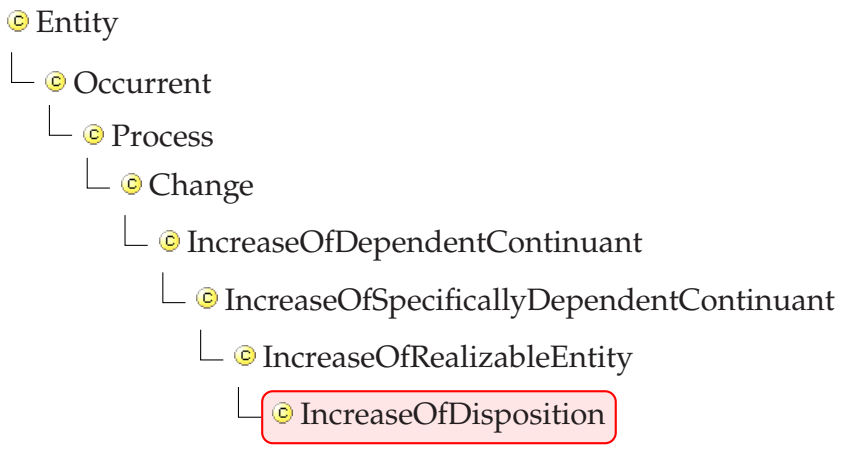
7.1.49 IncreaseOfDisposition

Definition
An Increase of Realizable Entity in which some Independent Continuant has an increase of some Disposition that it bears.

Annotations

- **Label:** Increase of Disposition
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/EventOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/IncreaseOfDisposition

Hierarchy



Direct Super Types

- IncreaseOfRealizableEntity

7.1.50 IncreaseOfFunction

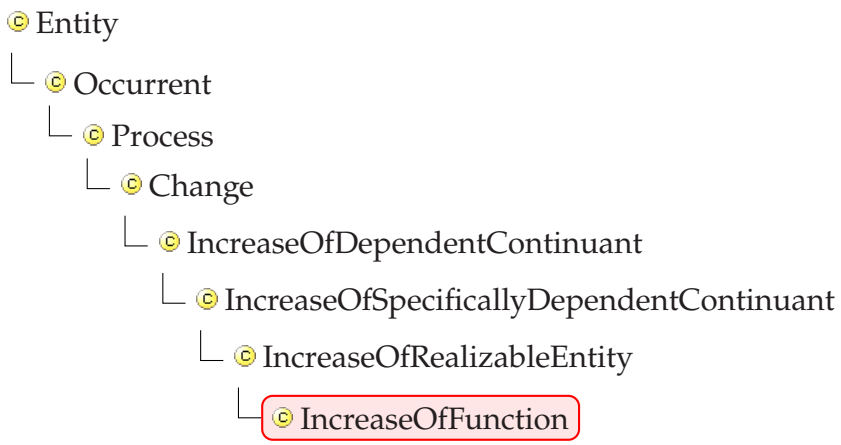
Definition
An Increase of Realizable Entity in which some Independent Continuant has an increase of some Function that it bears.

Annotations

- **Label:** Increase of Function

- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/EventOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/IncreaseOfFunction

Hierarchy



Direct Super Types

- IncreaseOfRealizableEntity

7.1.51 IncreaseOfGenericallyDependentContinuant

Definition
An Increase of Dependent Continuant in which some Independent Continuant has an increase of some Generically Dependent Continuant that it bears.

Annotations

- **Label:** Increase of Generically Dependent Continuant
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/EventOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/IncreaseOfGenericallyDependentContinuant

Hierarchy

- Entity
  - Occurrent
    - Process
      - Change
        - IncreaseOfDependentContinuant
          - IncreaseOfGenericallyDependentContinuant

Direct Super Types

- IncreaseOfDependentContinuant

7.1.52 IncreaseOfQuality

Definition
An Increase of Specifically Dependent Continuant in which some Indpendent Continuant has an increase of some Quality that it bears.

Annotations

- **Label:** Increase of Quality
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/EventOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/IncreaseOfQuality

Hierarchy

- Entity
  - Occurrent
    - Process
      - Change
        - IncreaseOfDependentContinuant
          - IncreaseOfSpecificallyDependentContinuant
            - IncreaseOfQuality

Direct Super Types

- IncreaseOfSpecificallyDependentContinuant

7.1.53 IncreaseOfRealizableEntity

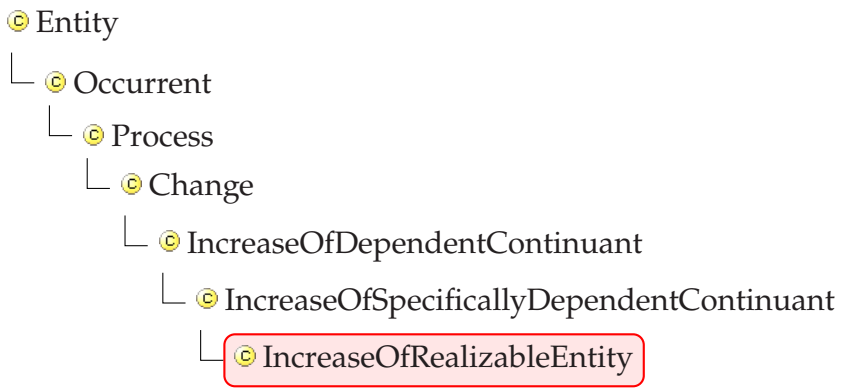
Definition

An Increase of Specifically Dependent Continuant in which some Independent Continuant has an increase of some Realizable Entity that it bears.

Annotations

- **Label:** Increase of Realizable Entity
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/EventOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/IncreaseOfRealizableEntity

Hierarchy



Direct Super Types

- IncreaseOfSpecificallyDependentContinuant

Direct Sub Types

- IncreaseOfDisposition
- IncreaseOfFunction
- IncreaseOfRole

7.1.54 IncreaseOfRole

Definition

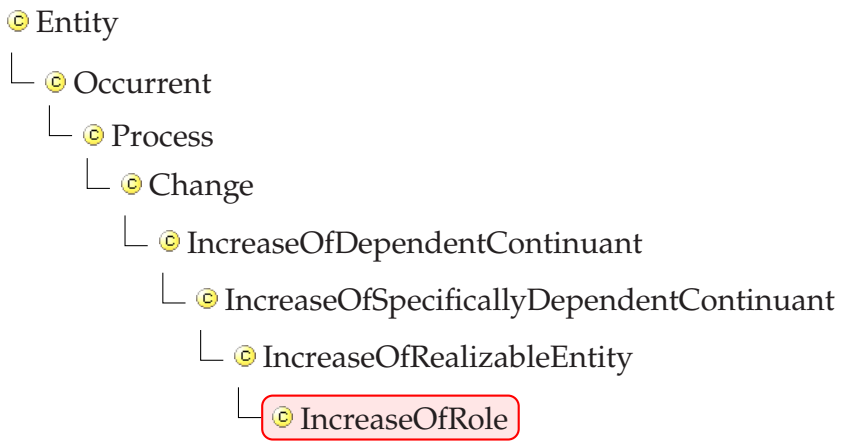
An Increase of Realizable Entity in which some Independent Continuant has an increase of some Role that it bears.

Annotations

- **Label:** Increase of Role

- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/EventOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/IncreaseOfRole

Hierarchy



Direct Super Types

- IncreaseOfRealizableEntity

7.1.55 IncreaseOfSpecificallyDependentContinuant

Definition
An Increase of Dependent Continuant in which some Independent Continuant has an increase of some Specifically Dependent Continuant that it bears.

Annotations

- **Label:** Increase of Specifically Dependent Continuant
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/EventOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/IncreaseOfSpecificallyDependentContinuant

Hierarchy

- Entity
  - Occurrent
    - Process
      - Change
        - IncreaseOfDependentContinuant
          - IncreaseOfSpecificallyDependentContinuant

Direct Super Types

- IncreaseOfDependentContinuant

Direct Sub Types

- IncreaseOfQuality
- IncreaseOfRealizableEntity

7.1.56 IntentionalAct

Definition
An Act in which at least one Agent plays a causative role and which is prescribed by some Directive Information Content Entity held by at least one of the Agents.

Annotations

- **Label:** Intentional Act
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/EventOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/IntentionalAct

Hierarchy

- Entity
  - Occurrent
    - Process
      - Act
        - IntentionalAct

Direct Super Types

- Act

Direct Sub Types

- ActOfCommunication
- ActOfCyberExploitation
- ActOfEvasion
- ActOfExperimentation
- ActOfInhibiting
- ActOfMeasuring
- ActOfObservation
- ActOfPlanning
- ActOfPrediction
- ActOfSearching
- ActOfTargeting
- CriminalAct
- SocialAct

Figures

- Figure 2.5

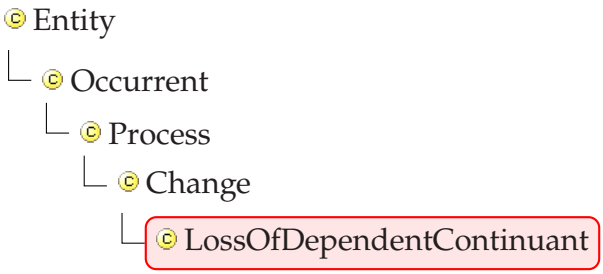
7.1.57 LossOfDependentContinuant

Definition
A Change in which some Independent Continuant ceases to be the bearer or carrier of some Dependent Continuant.

Annotations

- **Label:** Loss of Dependent Continuant
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/EventOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/LossOfDependentContinuant

Hierarchy



Direct Super Types

- Change

Direct Sub Types

- LossOfGenericallyDependentContinuant
- LossOfSpecificallyDependentContinuant

Figures

- Figure 7.1

7.1.58 LossOfDisposition

Definition
A Loss of Realizable Entity in which some Independent Continuant ceases to be the bearer of some Disposition.

Annotations

- **Label:** Loss of Disposition
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/EventOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/LossOfDisposition

Hierarchy

- Entity
  - Occurrent
    - Process
      - Change
        - LossOfDependentContinuant
          - LossOfSpecificallyDependentContinuant
            - LossOfRealizableEntity
              - LossOfDisposition

Direct Super Types

- LossOfRealizableEntity

7.1.59 LossOfFunction

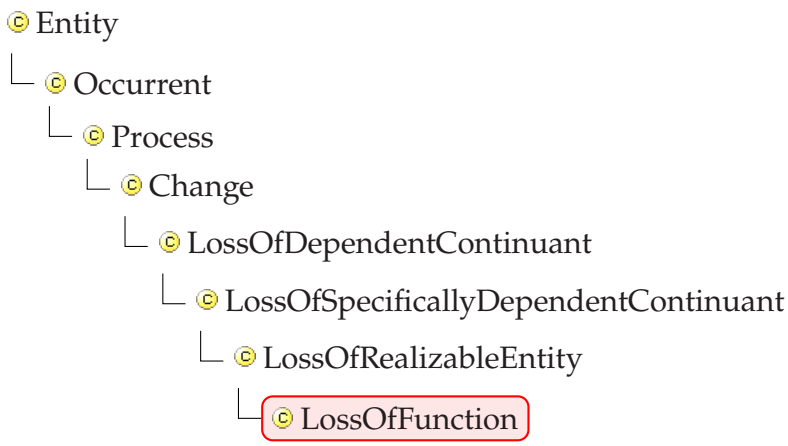
Definition

A Loss of Realizable Entity in which some Independent Continuant ceases to be the bearer of some Function.

Annotations

- **Label:** Loss of Function
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/EventOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/LossOfFunction

Hierarchy



Direct Super Types

- LossOfRealizableEntity

7.1.60 LossOfGenericallyDependentContinuant

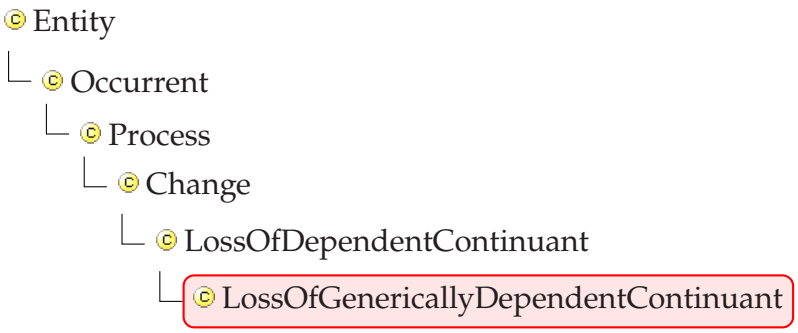
Definition

A Loss of Dependent Continuant in which some Independent Continuant ceases to be the carrier of some Generically Dependent Continuant.

Annotations

- **Label:** Loss of Generically Dependent Continuant
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/EventOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/LossOfGenericallyDependentContinuant

Hierarchy



Direct Super Types

- LossOfDependentContinuant

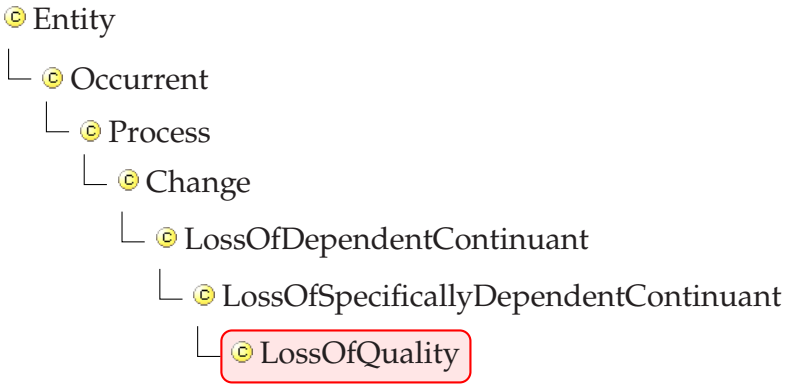
7.1.61 LossOfQuality

Definition
A Loss of Specifically Dependent Continuant in which some Independent Continuant ceases to be the bearer of some Quality.

Annotations

- **Label:** Loss of Quality
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/EventOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/LossOfQuality

Hierarchy



Direct Super Types

- LossOfSpecificallyDependentContinuant

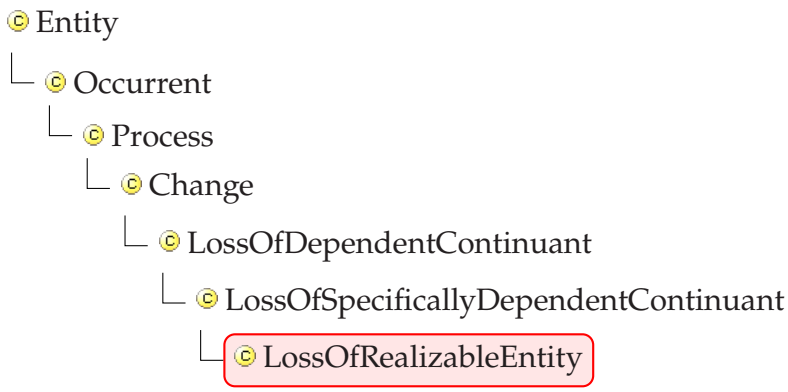
7.1.62 LossOfRealizableEntity

Definition
A Loss of Specifically Dependent Continuant in which some Independent Continuant ceases to be the bearer of some Realizable Entity.

Annotations

- **Label:** Loss of Realizable Entity
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/EventOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/LossOfRealizableEntity

Hierarchy



Direct Super Types

- LossOfSpecificallyDependentContinuant

Direct Sub Types

- LossOfDisposition
- LossOfFunction
- LossOfRole

7.1.63 LossOfRole

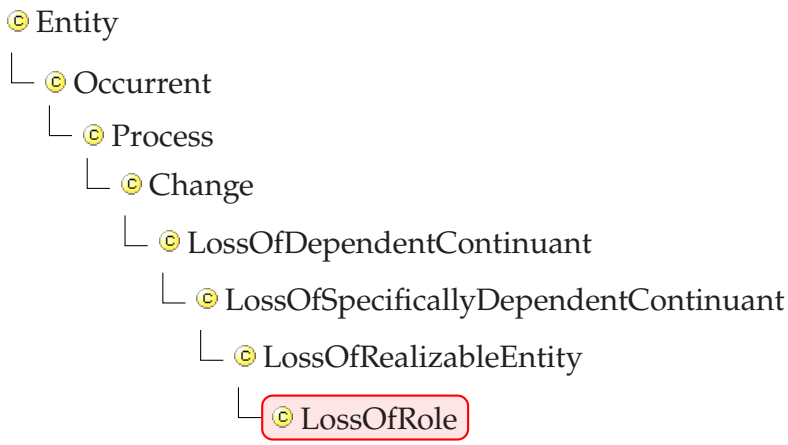
Definition
A Loss of Realizable Entity in which some Independent Continuant ceases to be the bearer of some Role.

Annotations

- **Label:** Loss of Role

- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/EventOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/LossOfRole

Hierarchy



Direct Super Types

- LossOfRealizableEntity

7.1.64 LossOfSpecificallyDependentContinuant

Definition
A Loss of Dependent Continuant in which some Independent Continuant ceases to be the bearer of some Specifically Dependent Continuant.

Annotations

- **Label:** Loss of Specifically Dependent Continuant
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/EventOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/LossOfSpecificallyDependentContinuant

Hierarchy

- Entity
  - Occurrent
    - Process
      - Change
        - LossOfDependentContinuant
          - LossOfSpecificallyDependentContinuant

Direct Super Types

- LossOfDependentContinuant

Direct Sub Types

- LossOfQuality
- LossOfRealizableEntity

Figures

- Figure 13.4

7.1.65 MechanicalProcess

Definition
A Process that is the realization of some Disposition of an Artifact

Annotations

- **Label:** Mechanical Process
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/EventOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/MechanicalProcess

Hierarchy

- Entity
  - Occurrent
    - Process
      - MechanicalProcess

Direct Super Types

- Process

Direct Sub Types

- ComputerProgramExecution
- TelemetryProcess

7.1.66 MechanicalWaveProcess

Definition

A Wave Process that involves Oscillation of a portion of matter such that energy is transferred through the material medium.

Annotations

- **Label:** Mechanical Wave Process
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/EventOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/MechanicalWaveProcess

Hierarchy

- Entity
  - Occurrent
    - Process
      - NaturalProcess
        - WaveProcess
          - MechanicalWaveProcess

Direct Super Types

- WaveProcess

Direct Sub Types

- ShearWaveProcess
- SoundWaveProcess

7.1.67 MuzzleBlast

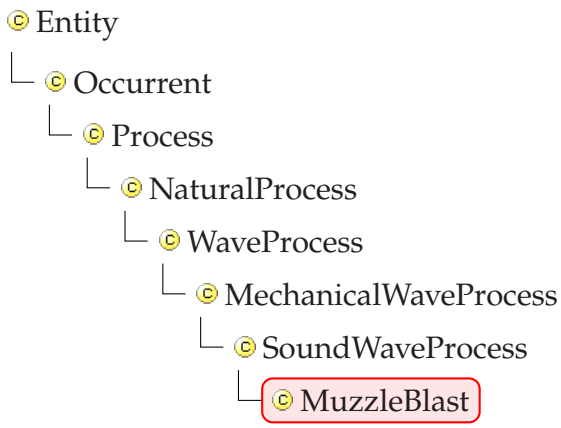
Definition

A Sound Wave Process that is caused by a projectile being pushed from the barrel of a firearm by an explosive charge.

Annotations

- **Label:** Muzzle Blast
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/EventOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/MuzzleBlast

Hierarchy



Direct Super Types

- SoundWaveProcess

7.1.68 NaturalProcess

Definition

A Process existing in or produced by nature; rather than by the intent of human beings.

Annotations

- **Label:** Natural Process
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/EventOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/NaturalProcess

Hierarchy

- Entity
  - Occurrent
    - Process
      - NaturalProcess

Direct Super Types

- Process

Direct Sub Types

- RadioInterference
- WaveProcess
- WaveProduction

7.1.69 NominalStasis

Definition
A Stasis of Specifically Dependent Continuant in which some Independent Continuant bears a Quality or Realizable Entity that has a level of intensity or functionality that falls within the designed, expected, or acceptable range such that the Independent Continuant is of normal value, usefulness, or functionality.

Annotations

- **Label:** Nominal Stasis
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/EventOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/NominalStasis

Hierarchy

- Entity
  - Occurrent
    - Process
      - Stasis
        - StasisOfSpecificallyDependentContinuant
          - NominalStasis

Direct Super Types

- StasisOfSpecificallyDependentContinuant

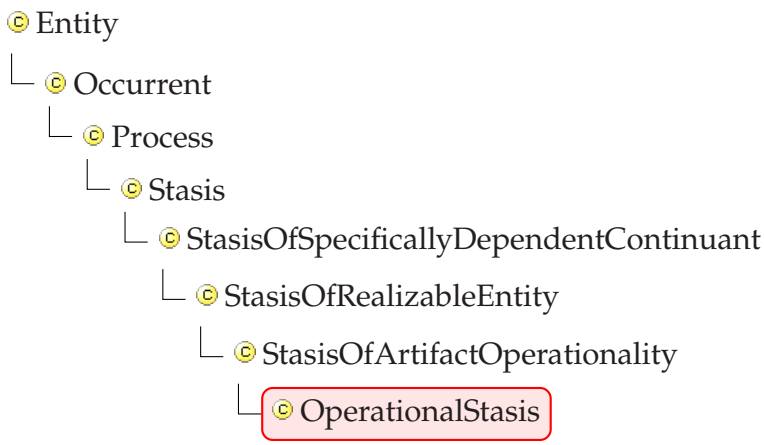
7.1.70 OperationalStasis

Definition
A Stasis of Artifact Operationality that holds during a Temporal Interval when an Artifact maintains its designed set of Artifact Functions (or at least maintains its primary functions).

Annotations

- **Label:** Operational Stasis
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/EventOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/OperationalStasis

Hierarchy



Direct Super Types

- StasisOfArtifactOperationality

Disjoint Classes

- DefunctStasis

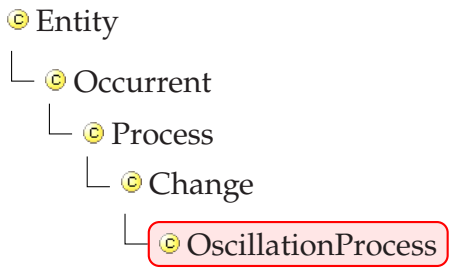
7.1.71 OscillationProcess

Definition
A Change in which the dependent entity alternates between two or more stases.

Annotations

- **Label:** Oscillation Process
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/EventOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/OscillationProcess

Hierarchy



Direct Super Types

- Change

Figures

- Figure 7.1

7.1.72 ProcessBeginning

Definition
A Process Boundary that occurs on a Zero-Dimensional Temporal Region that is the starting instant of the One-Dimensional Temporal Region on which the Process, of which the Process Boundary is a part, occurs.

Annotations

- **Label:** Process Beginning
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/EventOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/ProcessBeginning

Hierarchy

- Entity
  - Occurrent
    - ProcessBoundary
      - ProcessBeginning

Direct Super Types

- ProcessBoundary

7.1.73 ProcessEnding

Definition
A Process Boundary that occurs on a Zero-Dimensional Temporal Region that is the ending instant of the One-Dimensional Temporal Region on which the Process, of which the Process Boundary is a part, occurs.

Annotations

- **Label:** Process Ending
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/EventOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/ProcessEnding

Hierarchy

- Entity
  - Occurrent
    - ProcessBoundary
      - ProcessEnding

Direct Super Types

- ProcessBoundary

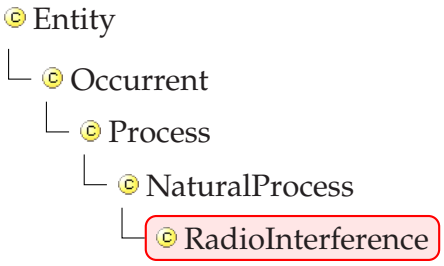
7.1.74 RadioInterference

Definition
A Natural Process in which a radio signal is disrupted, whether unintentionally or as the result of an Act of Radio Jamming, Act of Radio Spoofing, or similar Intentional Act.

Annotations

- **Label:** Radio Interference
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/EventOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/RadioInterference

Hierarchy



Direct Super Types

- NaturalProcess

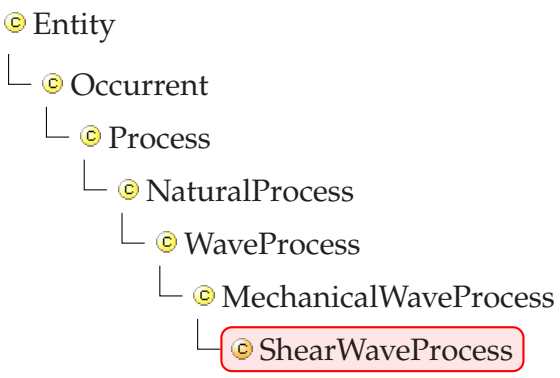
7.1.75 ShearWaveProcess

Definition
A Mechanical Wave that has a Transverse Wave Profile.

Annotations

- **Label:** Shear Wave Process
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/EventOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/ShearWaveProcess

Hierarchy



Direct Super Types

- MechanicalWaveProcess

Equivalent Classes

- (MechanicalWaveProcess ∩ ∃ hasProcessPart TransverseWaveProfile)

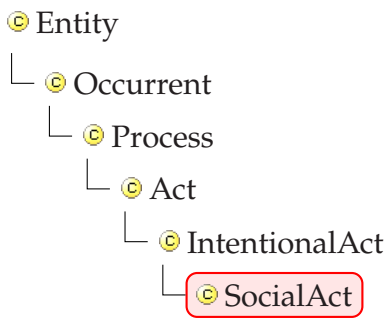
7.1.76 SocialAct

Definition
An Intentional Act having an objective that affects, is performed by, or is performed on behalf of, a community or group of Persons.

Annotations

- **Label:** Social Act
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/EventOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/SocialAct

Hierarchy



Direct Super Types

- IntentionalAct

7.1.77 SoundProduction

Definition
A Wave Production Process that produces a Sound Wave.

Annotations

- **Label:** Sound Production
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/EventOntology

- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/SoundProduction

Hierarchy

- Entity
  - Occurrent
    - Process
      - NaturalProcess
        - WaveProduction
          - SoundProduction

Direct Super Types

- WaveProduction

7.1.78 SoundWaveProcess

Definition
A Mechanical Wave Process of Pressure and displacement that is parallel to the propogation direction of the Wave Process through a medium.

Annotations

- **Label:** Sound Wave Process
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/EventOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/SoundWaveProcess

Hierarchy

- Entity
  - Occurrent
    - Process
      - NaturalProcess
        - WaveProcess
          - MechanicalWaveProcess
            - SoundWaveProcess

Direct Super Types

- MechanicalWaveProcess
- hasProcessPart LongitudinalWaveProfile

Direct Sub Types

- MuzzleBlast

7.1.79 Stasis

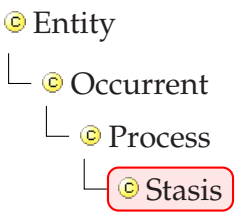
Definition

A Process in which one or more Independent Continuants endure in an unchanging condition.

Annotations

- **Label:** Stasis
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/EventOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/Stasis

Hierarchy



Direct Super Types

- Process

Direct Sub Types

- StasisOfGenericallyDependentContinuant
- StasisOfSpecificallyDependentContinuant

7.1.80 StasisOfArtifactOperationality

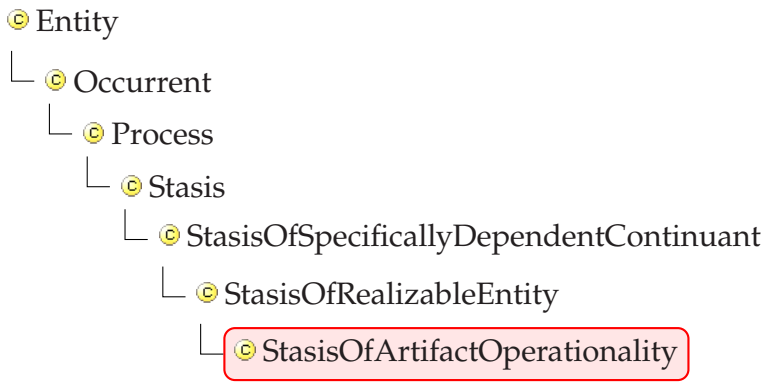
Definition

A Stasis of Realizable Entity that holds during a Temporal Interval when an Artifact's designed set of Artifact Functions (or at least its primary functions) or the realizations of those functions remain unchanged.

Annotations

- **Label:** Stasis of Artifact Operationality
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/EventOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/StasisOfArtifactOperationality

Hierarchy



Direct Super Types

- StasisOfRealizableEntity

Direct Sub Types

- ActiveStasis
- DeactivatedStasis
- DefaultStasis
- DefunctStasis
- EndOfLifeStasis
- OperationalStasis

7.1.81 StasisOfDisposition

Definition
A Stasis of Realizable Entity in which some Independent Continuant bears some Disposition that remains unchanged during a Temporal Interval.

Annotations

- **Label:** Stasis of Disposition
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/EventOntology

- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/StasisOfDisposition

Hierarchy

- Entity
  - Occurrent
    - Process
      - Stasis
        - StasisOfSpecificallyDependentContinuant
          - StasisOfRealizableEntity
            - StasisOfDisposition

Direct Super Types

- StasisOfRealizableEntity

7.1.82 StasisOfFunction

Definition

A Stasis of Realizable Entity in which some Independent Continuant bears some Function that remains unchanged during a Temporal Interval.

Annotations

- **Label:** Stasis of Function
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/EventOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/StasisOfFunction

Hierarchy

- Entity
  - Occurrent
    - Process
      - Stasis
        - StasisOfSpecificallyDependentContinuant
          - StasisOfRealizableEntity
            - StasisOfFunction

Direct Super Types

- StasisOfRealizableEntity

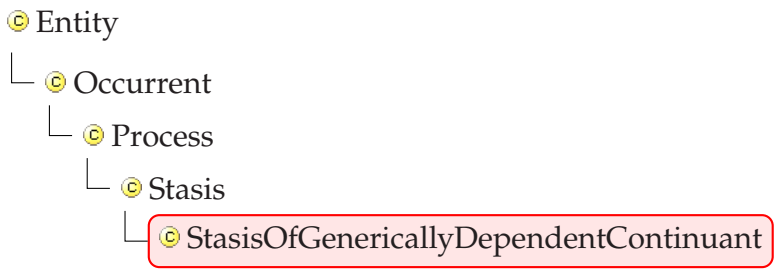
7.1.83 StasisOfGenericallyDependentContinuant

Definition
A Stasis in which some Independent Continuant bears some Generically Dependent Continuant that remains unchanged during a Temporal Interval.

Annotations

- **Label:** Stasis of Generically Dependent Continuant
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/EventOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/StasisOfGenericallyDependentContinuant

Hierarchy



Direct Super Types

- Stasis

Direct Sub Types

- StasisOfInformationConcretization

7.1.84 StasisOfQuality

Definition
A Stasis of Specifically Dependent Continuant in which some Independent Continuant bears some Quality that remains unchanged during a Temporal Interval.

Annotations

- **Label:** Stasis of Quality

- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/EventOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/StasisOfQuality

Hierarchy

- Entity
  - Occurrent
    - Process
      - Stasis
        - StasisOfSpecificallyDependentContinuant
          - StasisOfQuality

Direct Super Types

- StasisOfSpecificallyDependentContinuant

7.1.85 StasisOfRealizableEntity

Definition
A Stasis of Specifically Dependent Continuant in which some Independent Continuant bears some Realizable Entity that remains unchanged during a Temporal Interval.

Annotations

- **Label:** Stasis of Realizable Entity
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/EventOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/StasisOfRealizableEntity

Hierarchy

- Entity
  - Occurrent
    - Process
      - Stasis
        - StasisOfSpecificallyDependentContinuant
          - StasisOfRealizableEntity

Direct Super Types

- StasisOfSpecificallyDependentContinuant

Direct Sub Types

- StasisOfArtifactOperationality
- StasisOfDisposition
- StasisOfFunction
- StasisOfRole

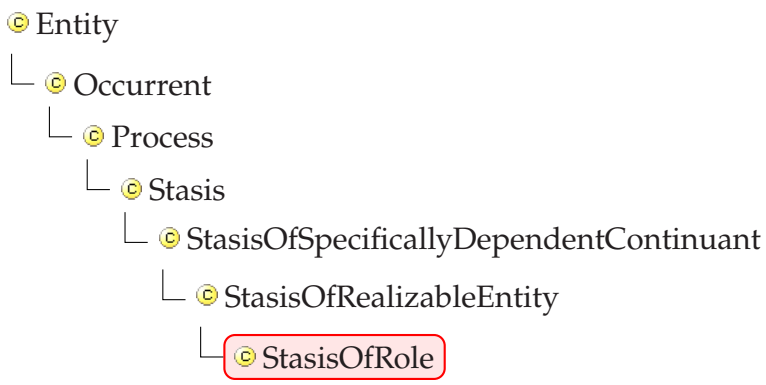
7.1.86 StasisOfRole

Definition
A Stasis of Realizable Entity in which some Independent Continuant bears some Role that remains unchanged during a Temporal Interval.

Annotations

- **Label:** Stasis of Role
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/EventOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/StasisOfRole

Hierarchy



Direct Super Types

- StasisOfRealizableEntity

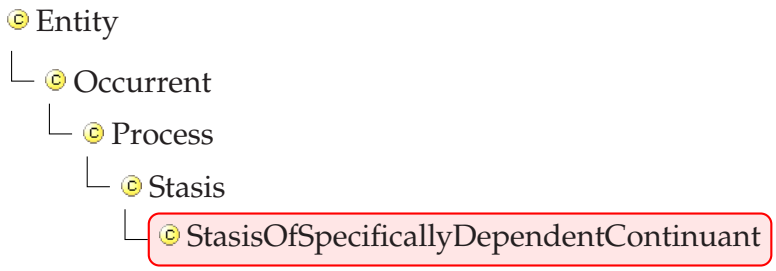
7.1.87 StasisOfSpecificallyDependentContinuant

Definition
A Stasis in which some Independent Continuant bears some Specifically Dependent Continuant that remains unchanged during a Temporal Interval.

Annotations

- **Label:** Stasis of Specifically Dependent Continuant
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/EventOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/StasisOfSpecificallyDependentContinuant

Hierarchy



Direct Super Types

- Stasis

Direct Sub Types

- DamagedStasis
- EnhancedStasis
- NominalStasis
- StasisOfQuality
- StasisOfRealizableEntity

7.1.88 Target

Definition
A Material Entity that is the object of an Act of Targeting.

Annotations

- **Label:** Target
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/EventOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/Target

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - MaterialEntity
        - Target

Direct Super Types

- MaterialEntity

Equivalent Classes

- (MaterialEntity ∩ ∃ isObjectOf ActOfTargeting)

7.1.89 TelemetryProcess

Definition
A Mechanical Process that is highly automated and in which measurements are made or other data is collected and transmitted to receiving equipment to facilitate the monitoring of environmental conditions or equipment parameters at a remote or inaccessible location.

Annotations

- **Label:** Telemetry Process
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/EventOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/TelemetryProcess

Hierarchy

- Entity
  - Occurrent
    - Process
      - MechanicalProcess
        - TelemetryProcess

Direct Super Types

- MechanicalProcess
- hasProcessPart ActOfCommunicationByMedia
- hasProcessPart ActOfMeasuring

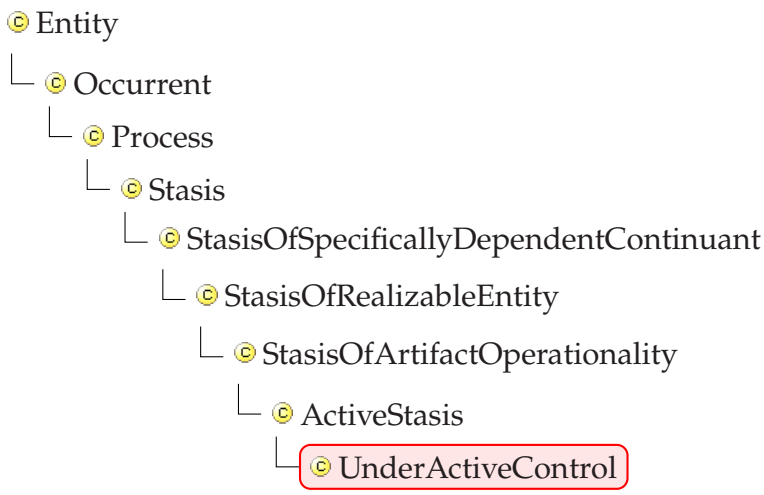
7.1.90 UnderActiveControl

Definition
An Active Stasis during which an Artifact participates in an Act of Artifact Employment.

Annotations

- **Label:** Under Active Control
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/EventOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/UnderActiveControl

Hierarchy



Direct Super Types

- ActiveStasis
- hasProcessPart ActOfArtifactEmployment

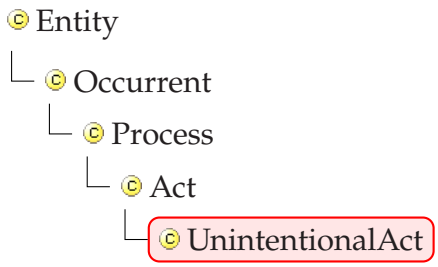
7.1.91 UnintentionalAct

Definition
An Act in which at least one Agent plays a causative role and which is not prescribed by some Objective held by any of the Agents.

Annotations

- **Label:** Unintentional Act
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/EventOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/UnintentionalAct

Hierarchy



Direct Super Types

- Act

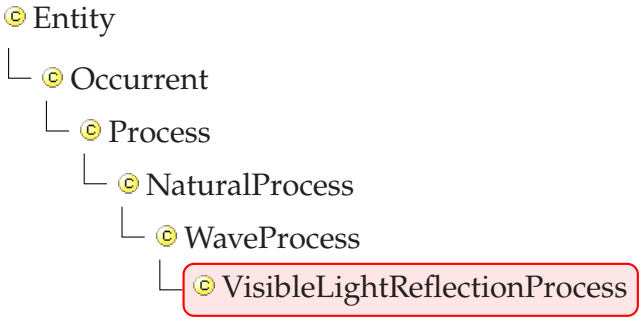
7.1.92 VisibleLightReflectionProcess

Definition
A Wave Process in which an Electromagnetic Wave with a Visible Light Frequency is reflected off a portion of matter.

Annotations

- **Label:** Visible Light Reflection Process
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/EventOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/VisibleLightReflectionProcess

Hierarchy



Direct Super Types

- WaveProcess

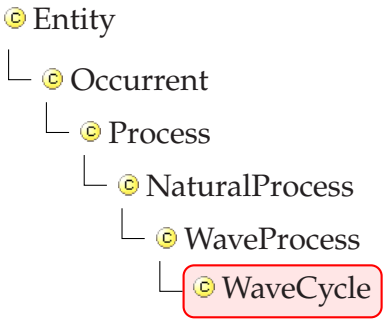
7.1.93 WaveCycle

Definition
A Wave Process that consists of a portion of a Wave Process that begins at an arbitrary point of the Wave Process and ends at the next point when the pattern of the Wave Process begins to repeat.

Annotations

- **Label:** Wave Cycle
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/EventOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/WaveCycle

Hierarchy



Direct Super Types

- WaveProcess

7.1.94 WaveProcess

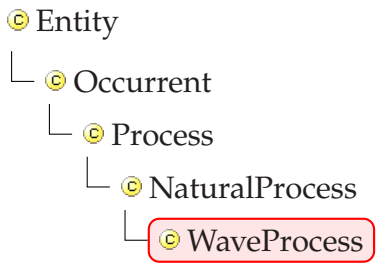
Definition

A Natural Process that involves Oscillation accompanied by a transfer of energy that travels through a portion of matter or spatial region.

Annotations

- **Label:** Wave Process
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/EventOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/WaveProcess

Hierarchy



Direct Super Types

- NaturalProcess
- hasProcessPart WaveProcessProfile
- processPrecededBy WaveProduction

Direct Sub Types

- ElectromagneticWaveProcess
- MechanicalWaveProcess
- VisibleLightReflectionProcess
- WaveCycle

7.1.95 WaveProduction

Definition

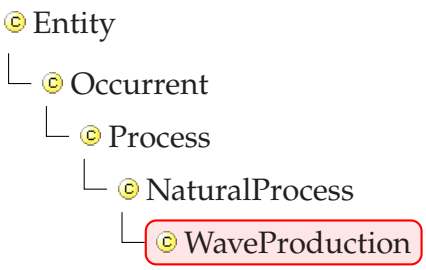
A Natural Process in which a Wave Process is generated.

Annotations

- **Label:** Wave Production
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/EventOntology

- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/WaveProduction

Hierarchy



Direct Super Types

- NaturalProcess

Direct Sub Types

- SoundProduction

7.2 Properties

7.2.1 processPrecededBy

Annotations

- **Label:** process preceded by
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/EventOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/process_preceded_by

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** processPrecedes

Figures

- Figure 3.2

7.2.2 processPrecedes

Annotations

- **Label:** process precedes
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/EventOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/process_precedes

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** processPrecededBy

Figures

- Figure 3.2

8

Artifact Ontology

This ontology is designed to represent artifacts that are common to multiple domains along with their models, specifications, and functions.

8.1 Named Classes

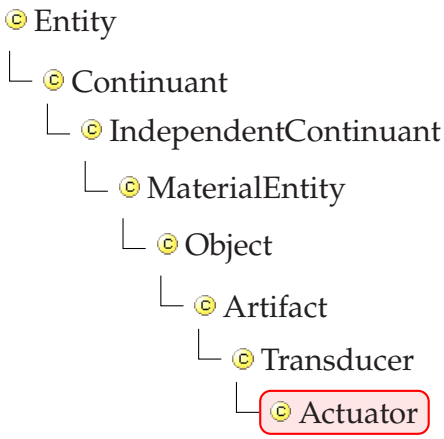
8.1.1 Actuator

Definition
A Transducer that is designed to convert some control signal into mechanical motion.

Annotations

- **Label:** Actuator
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ArtifactOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/Actuator

Hierarchy



Direct Super Types

- Transducer

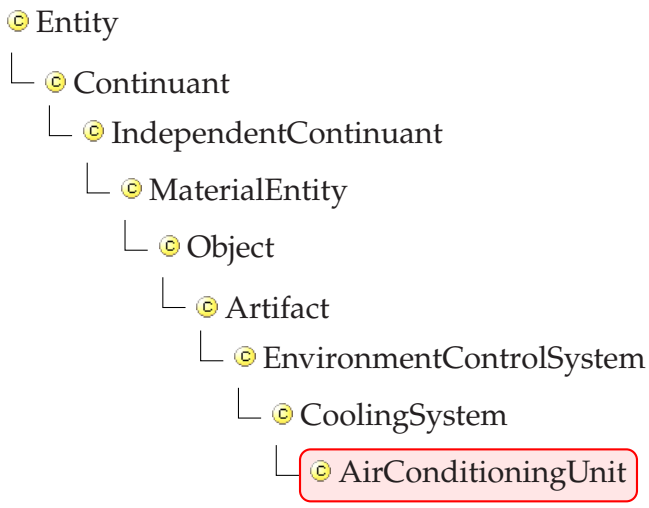
8.1.2 AirConditioningUnit

Definition
A Cooling System that is designed to remove excess heat and humidity from the air in an enclosed space.

Annotations

- **Label:** Air Conditioning Unit
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ArtifactOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/AirConditioningUnit

Hierarchy



Direct Super Types

- CoolingSystem

8.1.3 Artifact

Definition
An Object that was designed by some Agent to realize a certain Function.

Annotations

- **Label:** Artifact
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ArtifactOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/Artifact

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - MaterialEntity
        - Object
          - Artifact

Direct Super Types

- Object

Direct Sub Types

- CommunicationInstrument
- CommunicationSystem
- ComputerComponent
- Container
- CyberExploit
- ElectronicComponent
- EnvironmentControlSystem
- Facility
- ImagingInstrument
- InformationBearingArtifact
- InformationMediumArtifact
- InformationProcessingArtifact
- Infrastructure
- MedicalArtifact
- Transducer
- Vehicle

Disjoint Classes

- Organism

Figures

- Figure 2.5
- Figure 5.1

8.1.4 ArtifactDesignContentEntity

Definition

A Directive Information Content Entity that is a specification of an object, manifested by an agent, intended to accomplish goals, in a particular environment, using a set of primitive components, satisfying a set of requirements, subject to constraints.

Annotations

- **Label:** Artifact Design
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ArtifactOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/ArtifactDesignContentEntity

Hierarchy

Direct Super Types

- DirectiveInformationContentEntity
- prescribes Artifact

Direct Sub Types

- ApplicationBinaryInterface
- ArtifactModel

8.1.5 ArtifactFunction

Definition

A Function that inheres in some Artifact in virtue of that Artifact being designed to be used in processes that require that Function to be realized.

Annotations

- **Label:** Artifact Function
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ArtifactOntology

- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/ArtifactFunction

Hierarchy

- Entity
  - Continuant
    - SpecificallyDependentContinuant
      - RealizableEntity
        - Disposition
          - Function
            - ArtifactFunction

Direct Super Types

- Function
- inheresIn Artifact

Direct Sub Types

- CommunicationArtifactFunction
- CommunicationInterferenceArtifactFunction
- CommunicationReceptionArtifactFunction
- CommunicationRelayArtifactFunction
- ComputingArtifactFunction
- DeceptionArtifactFunction
- MeasurementArtifactFunction
- NavigationArtifactFunction

8.1.6 ArtifactFunctionSpecification

Definition
A Directive Information Content Entity that prescribes some Artifact Function and which is part of some Artifact Model.

Annotations

- **Label:** Artifact Function Specification
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ArtifactOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/ArtifactFunctionSpecification

Hierarchy

- Entity
  - Continuant
    - GenericallyDependentContinuant
      - InformationContentEntity
        - DirectiveInformationContentEntity
          - ArtifactFunctionSpecification

Direct Super Types

- DirectiveInformationContentEntity

Equivalent Classes

- prescribes ArtifactFunction

8.1.7 ArtifactHistory

Definition
A History of an Artifact.

Annotations

- **Label:** Artifact History
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ArtifactOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/ArtifactHistory

Hierarchy

- Entity
  - Occurrent
    - Process
      - History
        - ArtifactHistory

Direct Super Types

- History

8.1.8 ArtifactIdentifier

Definition
A Designative Information Content Entity which designates some Artifact.

Annotations

- **Label:** Artifact Identifier
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ArtifactOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/ArtifactIdentifier

Hierarchy

Direct Super Types

- DesignativeInformationContentEntity

Equivalent Classes

- designates Artifact

8.1.9 ArtifactLocation

Definition
A Site that is the location of some Artifact.

Annotations

- **Label:** Artifact Location
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ArtifactOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/ArtifactLocation

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - ImmaterialEntity
        - Site
          - ArtifactLocation

Direct Super Types

- Site

Equivalent Classes

- (Site ∩ ∃ locationOf Artifact)

8.1.10 ArtifactModel

Definition
A Directive Information Content Entity that prescribes a common set of Functions and Qualities to inhere in a set of artifact instances.

Annotations

- **Label:** Artifact Model
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ArtifactOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/ArtifactModel

Hierarchy

- Entity
  - Continuant
    - GenericallyDependentContinuant
      - InformationContentEntity
        - DirectiveInformationContentEntity
          - ArtifactDesignContentEntity
            - ArtifactModel

Direct Super Types

- ArtifactDesignContentEntity

Direct Sub Types

- ComputerProgramArtifactModel

8.1.11 ArtifactModelName

Definition
A Designative Information Content Entity that designates some Artifact Model.

Annotations

- **Label:** Artifact Model Name
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ArtifactOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/ArtifactModelName

Hierarchy

- Entity
  - Continuant
    - GenericallyDependentContinuant
      - InformationContentEntity
        - DesignativeInformationContentEntity
          - ArtifactModelName

Direct Super Types

- DesignativeInformationContentEntity

Equivalent Classes

- designates ArtifactModel

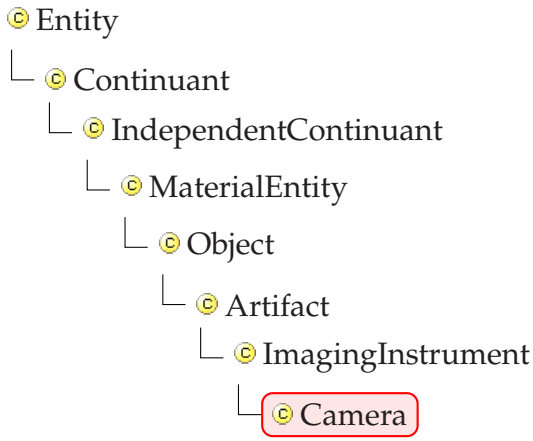
8.1.12 Camera

Definition
An Imaging Instrument that is designed to form and digitally or physically record an image of an entity.

Annotations

- **Label:** Camera
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ArtifactOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/Camera

Hierarchy



Direct Super Types

- ImagingInstrument

Direct Sub Types

- InfraredCamera
- OpticalCamera
- VideoCamera

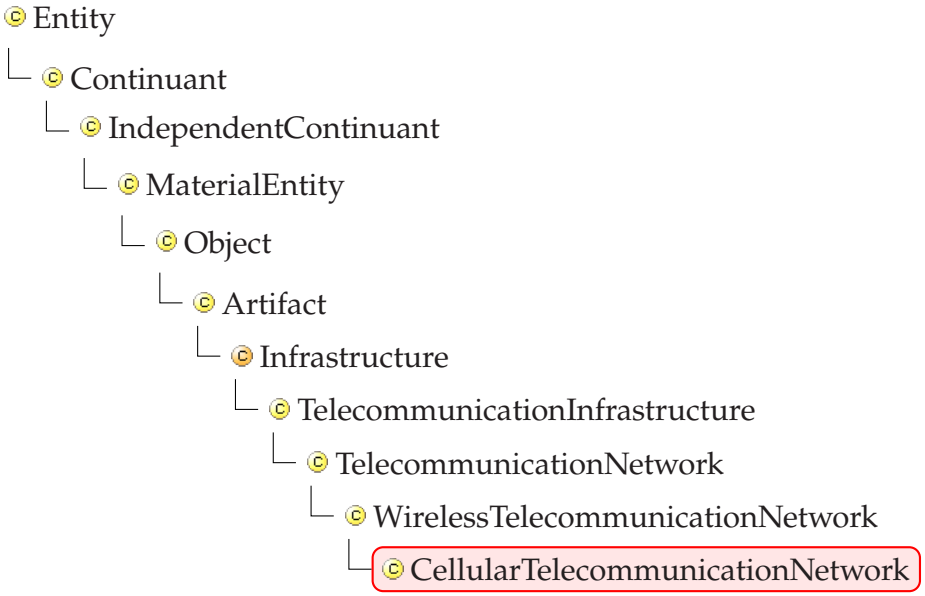
8.1.13 CellularTelecommunicationNetwork

Definition
A Wireless Telecommunication Network where the last link between the network and the end user is wireless and is distributed over service areas called cells.

Annotations

- **Label:** Cellular Telecommunication Network
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ArtifactOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/CellularTelecommunicationNetwork

Hierarchy



Direct Super Types

- WirelessTelecommunicationNetwork

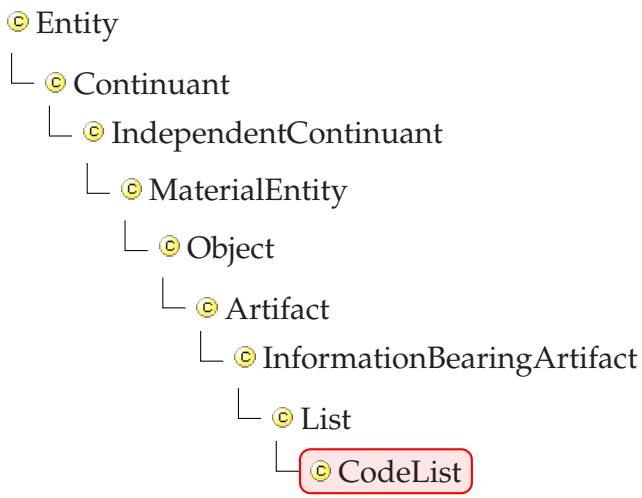
8.1.14 CodeList

Definition
A List that represents an ordered sequence of Information Bearing Entities that bear Code Identifiers.

Annotations

- **Label:** Code List
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ArtifactOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/CodeList

Hierarchy



Direct Super Types

- List

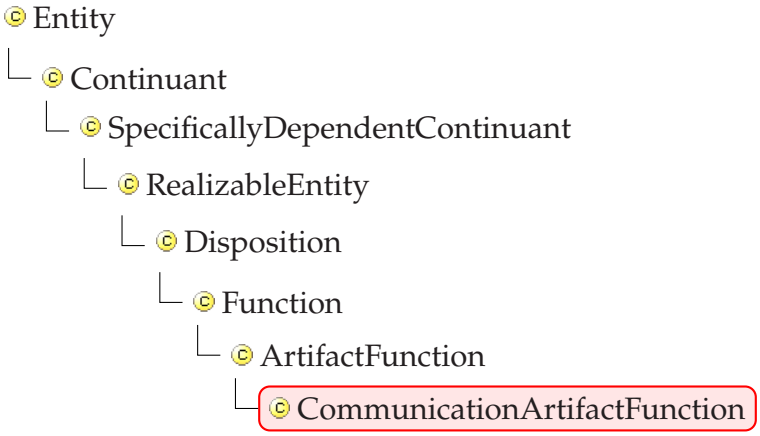
8.1.15 CommunicationArtifactFunction

Definition
An Artifact Function that is realized in a process in which meaningful signs are conveyed from one entity to another.

Annotations

- **Label:** Communication Artifact Function
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ArtifactOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/CommunicationArtifactFunction

Hierarchy



Direct Super Types

- ArtifactFunction

Direct Sub Types

- BroadbandCommunicationArtifactFunction
- InformationProcessingArtifactFunction

8.1.16 CommunicationInstrument

Definition
An Artifact that is designed to facilitate communication between at least two entities.

Annotations

- **Label:** Communication Instrument
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ArtifactOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/CommunicationInstrument

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - MaterialEntity
        - Object
          - Artifact
            - CommunicationInstrument

Direct Super Types

- Artifact

8.1.17 CommunicationInterferenceArtifactFunction

Definition
An Artifact Function that is realized during events in which an Artifact is used to interfere with the transmission of information for the purpose of preventing communication.

Annotations

- **Label:** Communication Interference Artifact Function
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ArtifactOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/CommunicationInterferenceArtifactFunction

Hierarchy

- Entity
  - Continuant
    - SpecificallyDependentContinuant
      - RealizableEntity
        - Disposition
          - Function
            - ArtifactFunction
              - CommunicationInterferenceArtifactFunction

Direct Super Types

- ArtifactFunction

Direct Sub Types

- RadioCommunicationInterferenceArtifactFunction

8.1.18 CommunicationReceptionArtifactFunction

Definition
An Artifact Function that is realized during events in which an Artifact is used to receive information that has been transmitted for the purpose of communiction.

Annotations

- **Label:** Communication Reception Artifact Function
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ArtifactOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/CommunicationReceptionArtifactFunction

Hierarchy

- Entity
  - Continuant
    - SpecificallyDependentContinuant
      - RealizableEntity
        - Disposition
          - Function
            - ArtifactFunction
              - CommunicationReceptionArtifactFunction

Direct Super Types

- ArtifactFunction

Direct Sub Types

- RadioCommunicationReceptionArtifactFunction
- WiredCommunicationReceptionArtifactFunction

8.1.19 CommunicationRelayArtifactFunction

Definition
An Artifact Function that is realized during events in which an Artifact is used to first receive and then transmit information from one Artifact to another for the purpose of communiction.

Annotations

- **Label:** Communication Relay Artifact Function
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ArtifactOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/CommunicationRelayArtifactFunction

Hierarchy

Direct Super Types

- ArtifactFunction

Direct Sub Types

- RadioCommunicationRelayArtifactFunction
- WiredCommunicationRelayArtifactFunction

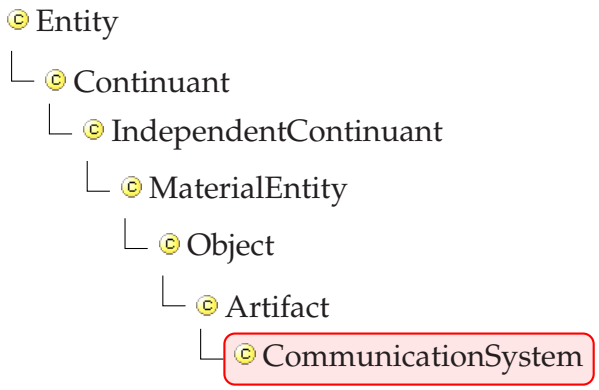
8.1.20 CommunicationSystem

Definition
An Artifact that is designed to enable some Act of Communication by means of transmission systems, relay stations, tributary stations, and data terminal equipment, usually capable of interconnection and interoperation to form an integrated whole.

Annotations

- **Label:** Communication System
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ArtifactOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/CommunicationSystem

Hierarchy



Direct Super Types

- Artifact

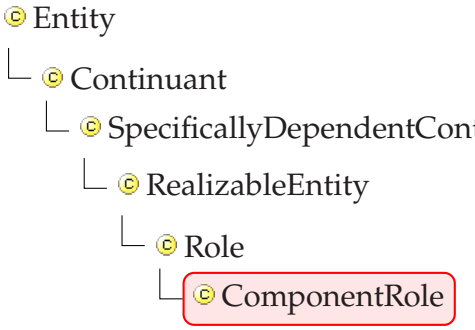
8.1.21 ComponentRole

Definition
A Role that inheres in an entity having a discrete structure in virtue of that entity being part of a system considered at a particular level of analysis.

Annotations

- **Label:** Component Role
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ArtifactOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/ComponentRole

Hierarchy



Direct Super Types

- Role

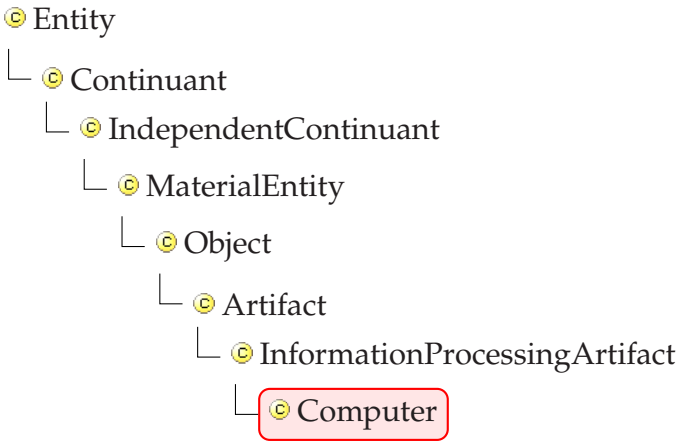
8.1.22 Computer

Definition
An Information Processing Artifact that is designed to execute an arbitrary set of arithmetic or logical operations automatically.

Annotations

- **Label:** Computer
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ArtifactOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/Computer

Hierarchy



Direct Super Types

- InformationProcessingArtifact

Direct Sub Types

- ComputerTablet
- DesktopComputer
- LaptopComputer
- MainframeComputer
- ProgrammableLogicController
- RemoteTerminalUnit

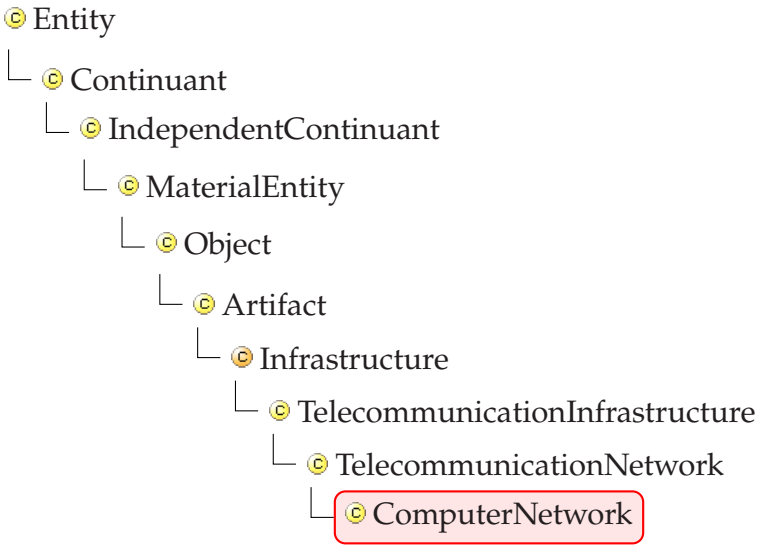
8.1.23 ComputerNetwork

Definition
A Telecommunication Network that is designed to allow the exchange of data between two or more computers connected to the network.

Annotations

- **Label:** Computer Network
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ArtifactOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/ComputerNetwork

Hierarchy



Direct Super Types

- TelecommunicationNetwork

Direct Sub Types

- Botnet
- LocalAreaNetwork
- MetropolitanAreaNetwork
- OverlayNetwork
- PersonalAreaNetwork
- PrivateComputerNetwork
- StorageAreaNetwork
- WideAreaNetwork

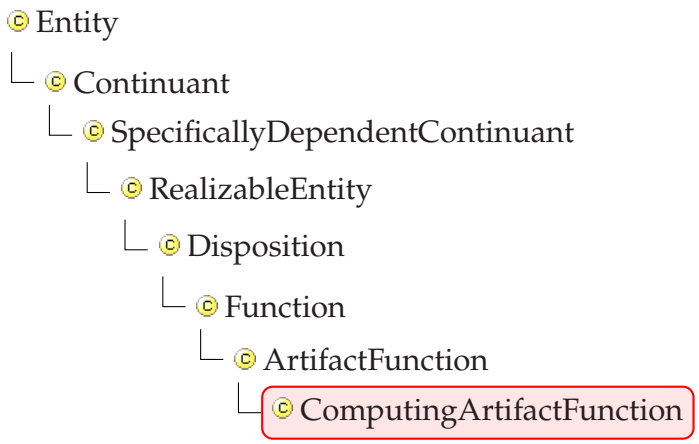
8.1.24 ComputingArtifactFunction

Definition
An Artifact Function that is realized by an Artifact participating in a computation process.

Annotations

- **Label:** Computing Artifact Function
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ArtifactOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/ComputingArtifactFunction

Hierarchy



Direct Super Types

- ArtifactFunction

8.1.25 Container

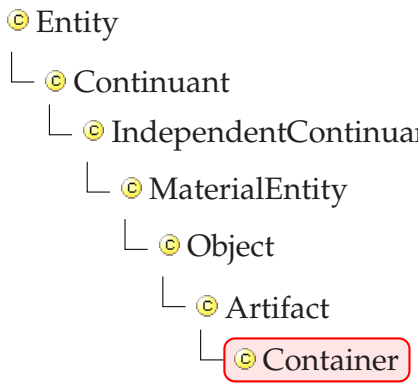
Definition

An Artifact that is designed to contain (wholly or partially) some material entity.

Annotations

- **Label:** Container
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ArtifactOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/Container

Hierarchy



Direct Super Types

- Artifact

8.1.26 CoolingSystem

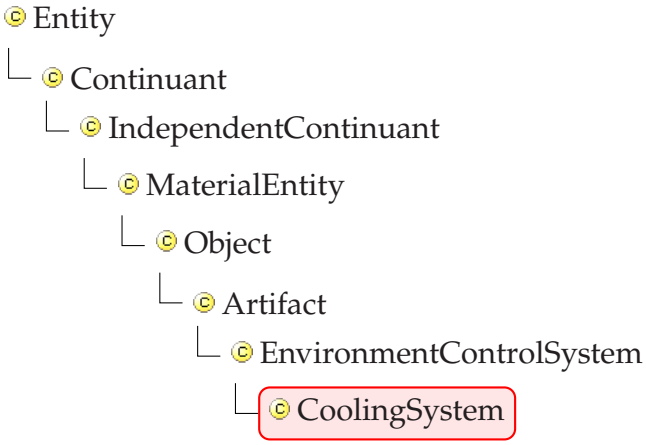
Definition

An Environment Control System that is designed to cool the air or objects in a Site.

Annotations

- **Label:** Cooling System
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ArtifactOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/CoolingSystem

Hierarchy



Direct Super Types

- EnvironmentControlSystem

Direct Sub Types

- AirConditioningUnit
- EquipmentCoolingSystem

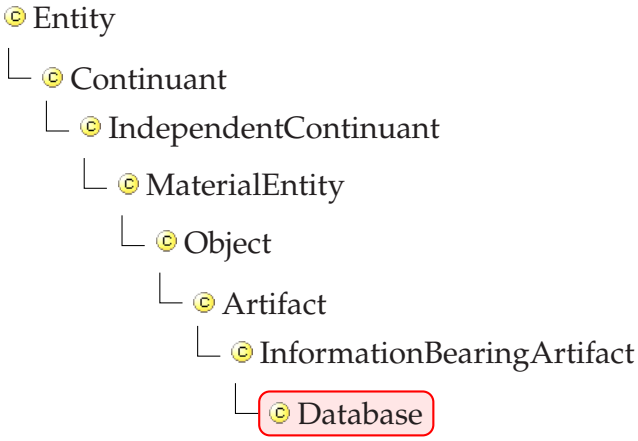
8.1.27 Database

Definition
An Information Bearing Artifact that is designed to bear some set of specific Information Content Entities and to be rapidly searchable and retrievable.

Annotations

- **Label:** Database
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ArtifactOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/Database

Hierarchy



Direct Super Types

- InformationBearingArtifact

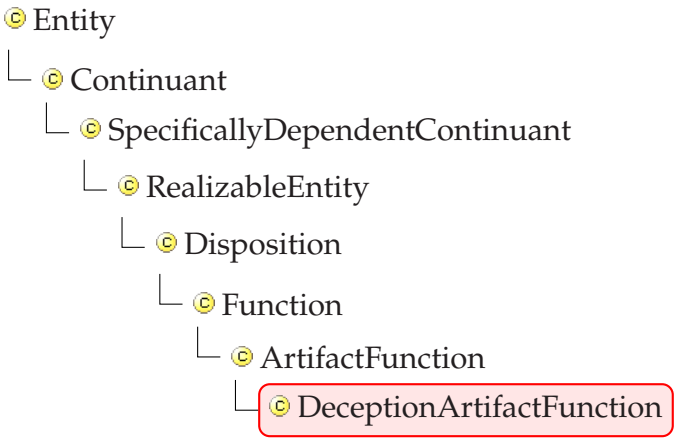
8.1.28 DeceptionArtifactFunction

Definition
An Artifact Function that is realized in processes which misinform or mislead some other entity.

Annotations

- **Label:** Deception Artifact Function
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ArtifactOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/DeceptionArtifactFunction

Hierarchy



Direct Super Types

- ArtifactFunction

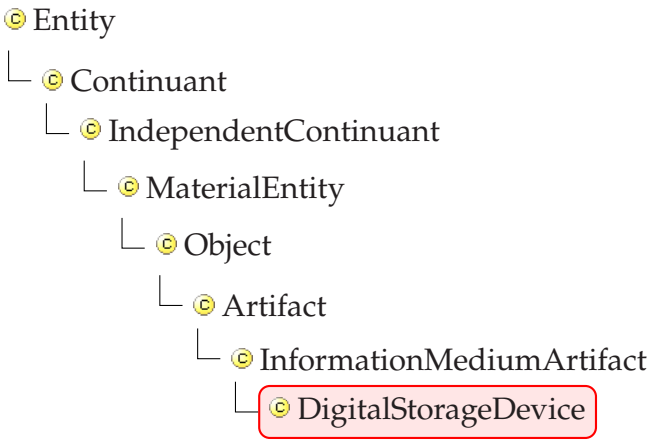
8.1.29 DigitalStorageDevice

Definition
An Information Medium Artifact that is designed to bear some Information Content Entity by means of recording that information in digital (binary) format.

Annotations

- **Label:** Digital Storage Device
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ArtifactOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/DigitalStorageDevice

Hierarchy



Direct Super Types

- InformationMediumArtifact

Direct Sub Types

- ComputerMemory
- FlashDrive
- HardDiskDrive

8.1.30 DistanceMeasurementArtifactFunction

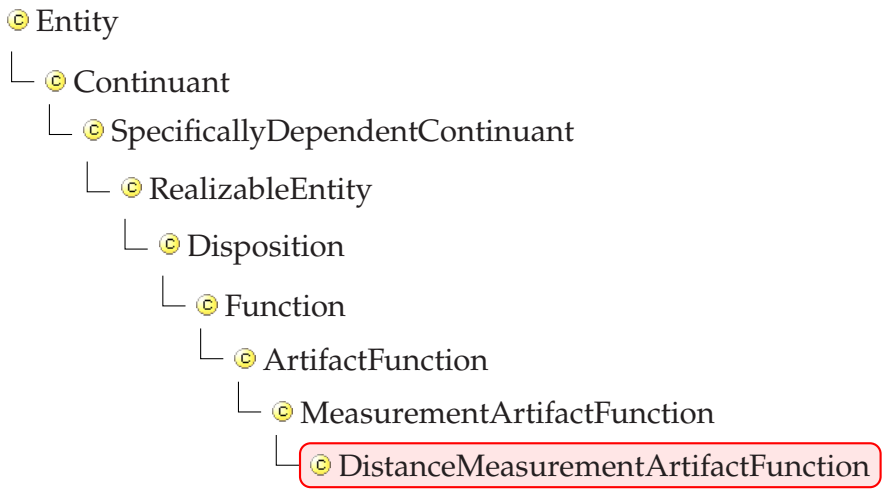
Definition

A Measurement Artifact Function that is realized during events in which an Artifact is used to measure the spatial Distance to a specified object or class of objects.

Annotations

- **Label:** Distance Measurement Artifact Function
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ArtifactOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/DistanceMeasurementArtifactFunction

Hierarchy



Direct Super Types

- MeasurementArtifactFunction

8.1.31 ElectronicComponent

Definition

An Artifact that consists of a basic discrete device or physical entity in an electronic system that is used to affect electrons or their associated fields.

Annotations

- **Label:** Electronic Component
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ArtifactOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/ElectronicComponent

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - MaterialEntity
        - Object
          - Artifact
            - ElectronicComponent

Direct Super Types

- Artifact

8.1.32 EnvironmentControlSystem

Definition
An Artifact that is designed to control the temperature, air quality, or other feature of a Site that is relevant to the comfort or operation of entities located within that Site.

Annotations

- **Label:** Environment Control System
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ArtifactOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/EnvironmentControlSystem

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - MaterialEntity
        - Object
          - Artifact
            - EnvironmentControlSystem

Direct Super Types

- Artifact

Direct Sub Types

- CoolingSystem
- HeatingSystem

8.1.33 EquipmentCoolingSystem

Definition
A Cooling System that is designed to cool some piece of equipment.

Annotations

- **Label:** Equipment Cooling System
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ArtifactOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/EquipmentCoolingSystem

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - MaterialEntity
        - Object
          - Artifact
            - EnvironmentControlSystem
              - CoolingSystem
                - EquipmentCoolingSystem

Direct Super Types

- CoolingSystem

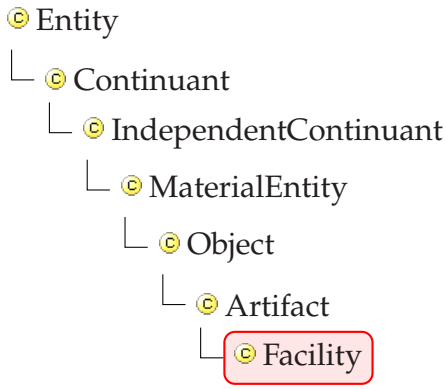
8.1.34 Facility

Definition
An Artifact that is designed as a building or campus dedicated to some specific purpose.

Annotations

- **Label:** Facility
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ArtifactOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/Facility

Hierarchy



Direct Super Types

- Artifact

Direct Sub Types

- AgriculturalFacility
- CommunicationsFacility
- Factory
- HealthcareFacility
- MaintenanceFacility
- ResidentialFacility
- RetailFacility
- TransportationFacility

8.1.35 FrequencyMeasurementArtifactFunction

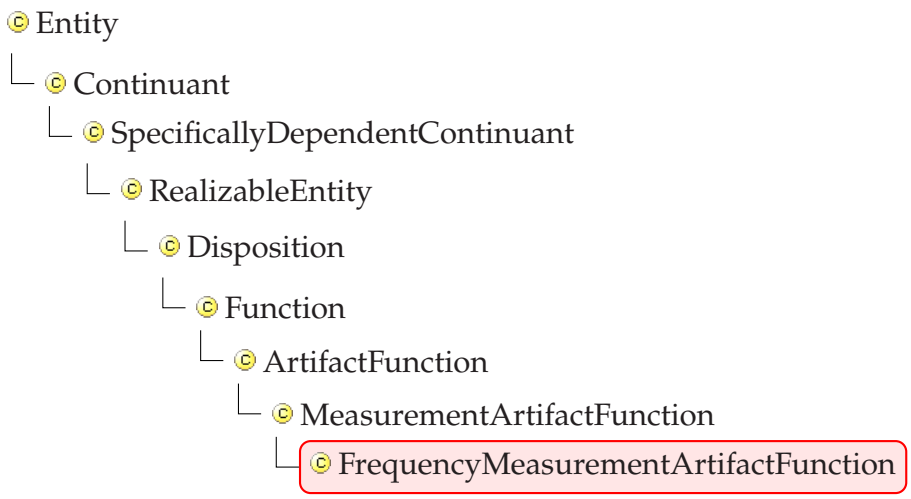
Definition
A Measurement Artifact Function that is realized during events in which an Artifact is used to measure the Frequency of a specified object or class of objects.

Annotations

- **Label:** Frequency Measurement Artifact Function
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ArtifactOntology

- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/FrequencyMeasurementArtifactFunction

Hierarchy



Direct Super Types

- MeasurementArtifactFunction

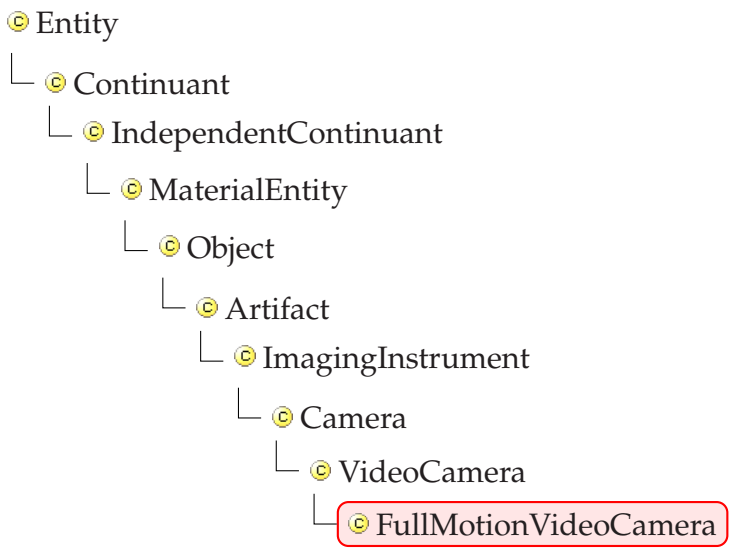
8.1.36 FullMotionVideoCamera

Definition
A Video Camera that is designed to capture and record images of sufficiently high quality and in rapid enough succession that the resulting video supports smooth playback.

Annotations

- **Label:** Full Motion Video Camera
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ArtifactOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/FullMotionVideoCamera

Hierarchy



Direct Super Types

- VideoCamera

8.1.37 HeatingSystem

Definition
An Environment Control System that is designed to heat the air or objects in a Site.

Annotations

- **Label:** Heating System
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ArtifactOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/HeatingSystem

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - MaterialEntity
        - Object
          - Artifact
            - EnvironmentControlSystem
              - HeatingSystem

Direct Super Types

- EnvironmentControlSystem

8.1.38 ImagingInstrument

Definition
An Artifact that is designed to produce images (visual representations) of an entity.

Annotations

- **Label:** Imaging Instrument
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ArtifactOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/ImagingInstrument

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - MaterialEntity
        - Object
          - Artifact
            - ImagingInstrument

Direct Super Types

- Artifact

Direct Sub Types

- Camera
- ImageScanner

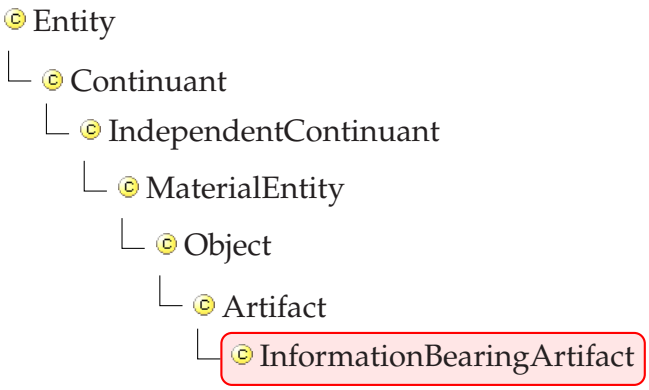
8.1.39 InformationBearingArtifact

Definition
An Artifact that carries an Information Content Entity and is designed to do so using a particular format or structure.

Annotations

- **Label:** Information Bearing Artifact
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ArtifactOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/InformationBearingArtifact

Hierarchy



Direct Super Types

- Artifact
- partOf InformationMediumArtifact
- isCarrierOf InformationContentEntity

Direct Sub Types

- ApplicationProgrammingInterface
- Array
- Bit

- Byte
- ComputerMemoryLocation
- Database
- DigitalFile
- DigitalObject
- HashValue
- InformationHeader
- List
- NetworkPacket
- Node
- NodeAttribute
- NodeTrack
- NodeTree
- Ontology
- SoftwareLibrary
- Variable
- Website
- WrittenSymbol

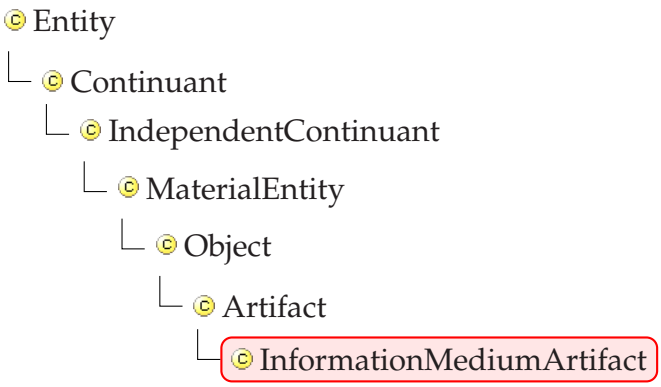
8.1.40 InformationMediumArtifact

Definition
An Artifact that is designed to have some Information Bearing Artifact as part.

Annotations

- **Label:** Information Medium Artifact
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ArtifactOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/InformationMediumArtifact

Hierarchy



Direct Super Types

- Artifact

Direct Sub Types

- DigitalStorageDevice

8.1.41 InformationProcessingArtifact

Definition
An Artifact that is designed to use algorithms to transform some Information Content Entity into another Information Content Entity.

Annotations

- **Label:** Information Processing Artifact
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ArtifactOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/InformationProcessingArtifact

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - MaterialEntity
        - Object
          - Artifact
            - InformationProcessingArtifact

Direct Super Types

- Artifact

Direct Sub Types

- AccessReader
- Computer
- ComputerProgram
- Emulator
- InternetofThingsDevice
- NetworkHost

- ProcessingUnit
- RecordingDevice
- SoftwareStack
- Subroutine

8.1.42 InfraredCamera

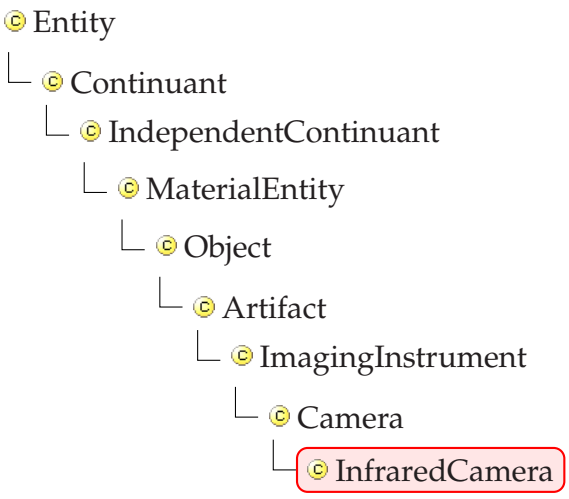
Definition

A Camera that is designed to form and record an image generated from infrared radiation.

Annotations

- **Label:** Infrared Camera
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ArtifactOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/InfraredCamera

Hierarchy



Direct Super Types

- Camera

8.1.43 Infrastructure

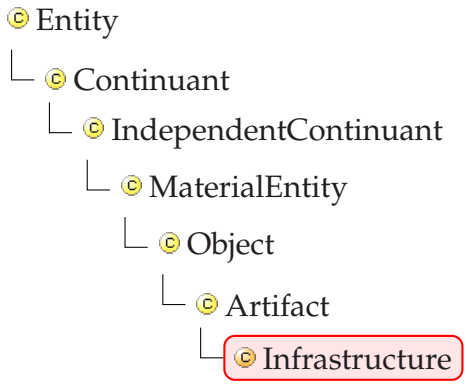
Definition

An Artifact that bears an Infrastructure Role.

Annotations

- **Label:** Infrastructure
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ArtifactOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/Infrastructure

Hierarchy



Direct Super Types

- Artifact

Direct Sub Types

- TelecommunicationInfrastructure
- TransportationInfrastructure

Equivalent Classes

- (Artifact ⊓ ∃ bearerOf InfrastructureRole)

8.1.44 InfrastructureRole

Definition
A Role that inheres in facilities and systems in virture of their being necessary for the economy of a geopolitical region to function

Annotations

- **Label:** Infrastructure Role
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ArtifactOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/InfrastructureRole

Hierarchy

- Entity
  - Continuant
    - SpecificallyDependentContinuant
      - RealizableEntity
        - Role
          - InfrastructureRole

Direct Super Types

- Role

8.1.45 List

Definition
An Information Bearing Artifact that represents an ordered sequence of values, where the same value may occur more than once.

Annotations

- **Label:** List
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ArtifactOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/List

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - MaterialEntity
        - Object
          - Artifact
            - InformationBearingArtifact
              - List

Direct Super Types

- InformationBearingArtifact

Direct Sub Types

- CodeList

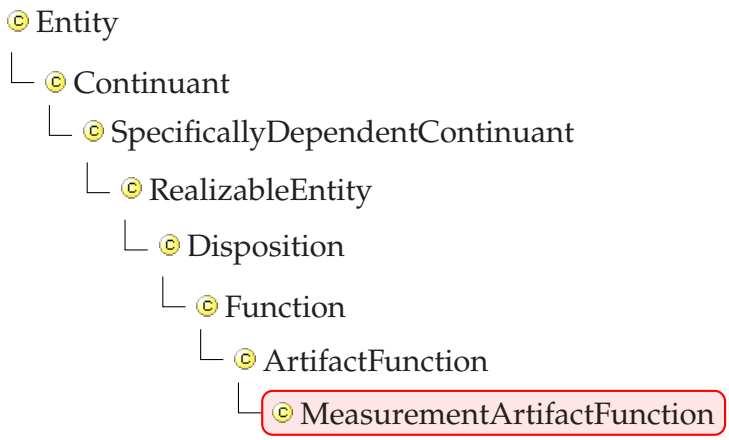
8.1.46 MeasurementArtifactFunction

Definition
An Artifact Function that is realized during events in which an Artifact is used to measure one or more features of a specified object or class of objects.

Annotations

- **Label:** Measurement Artifact Function
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ArtifactOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/MeasurementArtifactFunction

Hierarchy



Direct Super Types

- ArtifactFunction

Direct Sub Types

- DistanceMeasurementArtifactFunction
- FrequencyMeasurementArtifactFunction
- SpeedMeasurementArtifactFunction
- TemperatureMeasurementArtifactFunction

8.1.47 MedicalArtifact

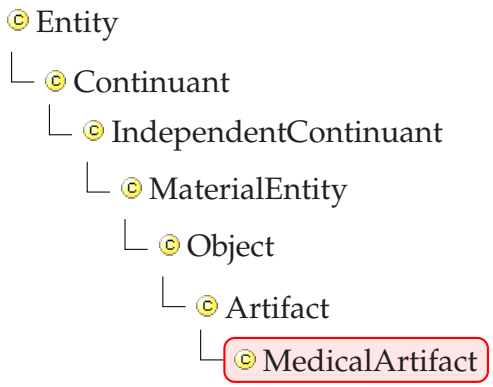
Definition

An Artifact that is designed for diagnosing, treating, or preventing disease or disability.

Annotations

- **Label:** Medical Artifact
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ArtifactOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/MedicalArtifact

Hierarchy



Direct Super Types

- Artifact

Direct Sub Types

- Prosthesis

8.1.48 NavigationArtifactFunction

Definition

An Artifact Function that is realized during events in which an Artifact is used to determine the precise location of itself or another object and plan a route to a specified destination.

Annotations

- **Label:** Navigation Artifact Function
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ArtifactOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/NavigationArtifactFunction

Hierarchy

- Entity
  - Continuant
    - SpecificallyDependentContinuant
      - RealizableEntity
        - Disposition
          - Function
            - ArtifactFunction
              - NavigationArtifactFunction

Direct Super Types

- ArtifactFunction

8.1.49 OpticalCamera

Definition
A Camera that is designed to form and record an image generated from visible light.

Annotations

- **Label:** Optical Camera
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ArtifactOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/OpticalCamera

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - MaterialEntity
        - Object
          - Artifact
            - ImagingInstrument
              - Camera
                - OpticalCamera

Direct Super Types

- Camera

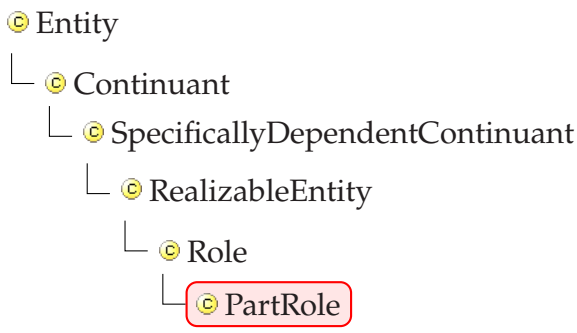
8.1.50 PartRole

Definition
A Role that inheres in an entity in virtue of it being part of some other entity without being subject to further subdivision or disassembly without destruction of its designated use.

Annotations

- **Label:** Part Role
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ArtifactOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/PartRole

Hierarchy



Direct Super Types

- Role

8.1.51 Prosthesis

Definition
A Medical Artifact that is designed to replace a missing body part.

Annotations

- **Label:** Prosthesis
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ArtifactOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/Prosthesis

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - MaterialEntity
        - Object
          - Artifact
            - MedicalArtifact
              - Prosthesis

Direct Super Types

- MedicalArtifact

8.1.52 QualitySpecification

Definition
A Directive Information Content Entity that prescribes some Quality.

Annotations

- **Label:** Quality Specification
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ArtifactOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/QualitySpecification

Hierarchy

- Entity
  - Continuant
    - GenericallyDependentContinuant
      - InformationContentEntity
        - DirectiveInformationContentEntity
          - QualitySpecification

Direct Super Types

- DirectiveInformationContentEntity

Equivalent Classes

- ∃ prescribes Quality

8.1.53 RadioCommunicationInterferenceArtifactFunction

Definition
A Communication Interference Artifact Function that is realized during events in which an Artifact is used to interfere with the transmission of information via radio waves.

Annotations

- **Label:** Radio Communication Interference Artifact Function
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ArtifactOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/RadioCommunicationInterferenceArtifactFunction

Hierarchy

- Entity
  - Continuant
    - SpecificallyDependentContinuant
      - RealizableEntity
        - Disposition
          - Function
            - ArtifactFunction
              - CommunicationInterferenceArtifactFunction
                - RadioCommunicationInterferenceArtifactFunction

Direct Super Types

- CommunicationInterferenceArtifactFunction

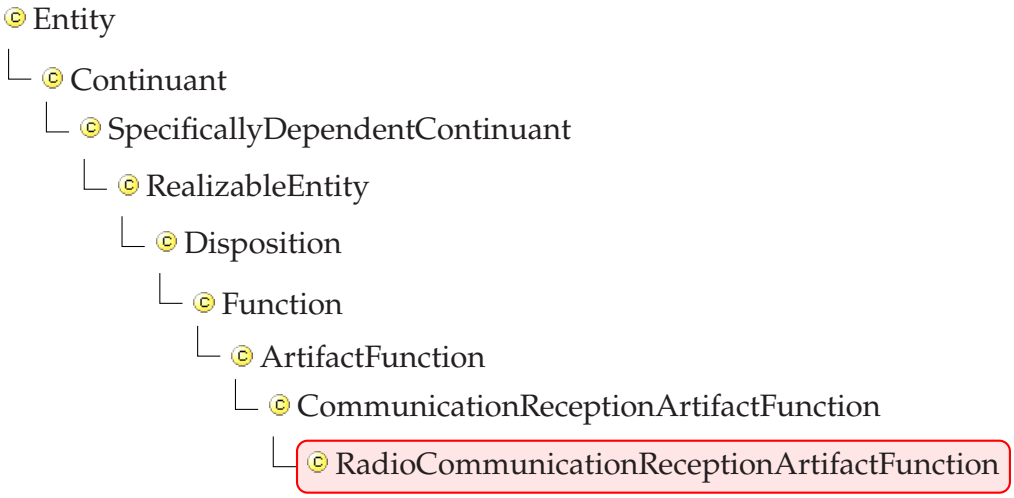
8.1.54 RadioCommunicationReceptionArtifactFunction

Definition
A Communication Reception Artifact Function that inheres in an Artifact that is capable of receiving information transmitted from another Artifact to which it is not connected by an electrical conductor.

Annotations

- **Label:** Radio Communication Reception Artifact Function
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ArtifactOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/RadioCommunicationReceptionArtifactFunction

Hierarchy



Direct Super Types

- CommunicationReceptionArtifactFunction

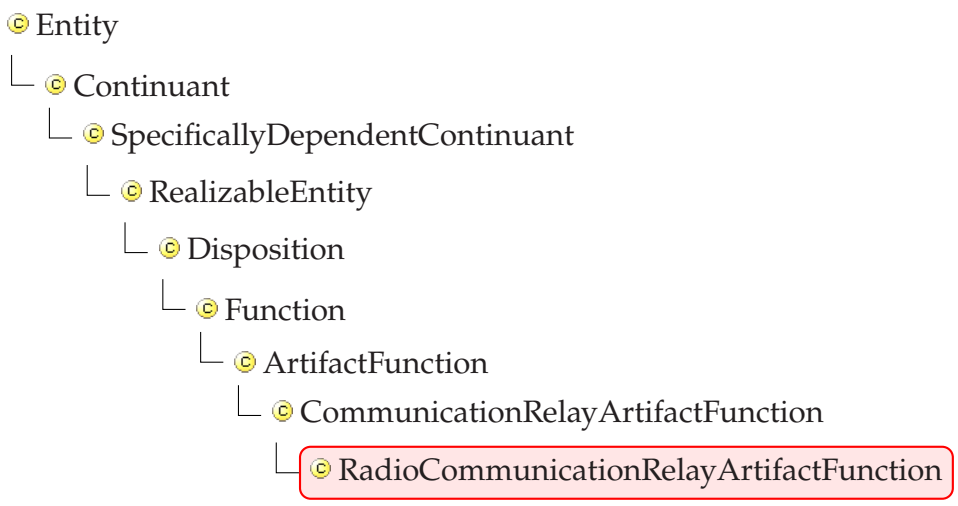
8.1.55 RadioCommunicationRelayArtifactFunction

Definition
A Communication Relay Artifact Function that is realized during events in which an Artifact is used to first receive and then transmit information without the use of wires from one Artifact to another for the purpose of communiction.

Annotations

- **Label:** Radio Communication Relay Artifact Function
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ArtifactOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/RadioCommunicationRelayArtifactFunction

Hierarchy



Direct Super Types

- CommunicationRelayArtifactFunction

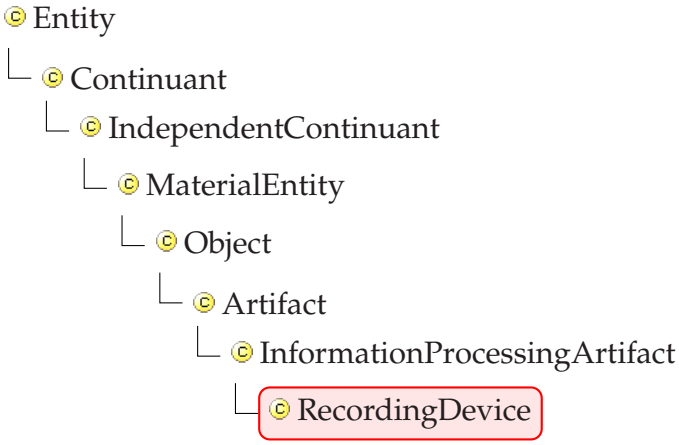
8.1.56 RecordingDevice

Definition
An Information Processing Artifact that is designed to capture some information and store it in some recording format on some storage medium.

Annotations

- **Label:** Recording Device
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ArtifactOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/RecordingDevice

Hierarchy



Direct Super Types

- InformationProcessingArtifact

8.1.57 Resource

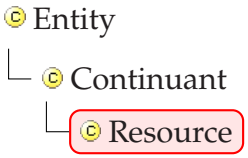
Resources are Resources for some Agent. If no instance of Agent existed, no instance of Resource would exist either. It is not a requirement that something be valuable in order for it to be a Resource. Thus the value of something can drastically change without altering whether that thing is a Resource.

Definition
A Continuant that is owned by, in the possession of, or is otherwise controlled by an Agent such that it could be used by that Agent.

Annotations

- **Label:** Resource
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ArtifactOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/Resource

Hierarchy



Direct Super Types

- Continuant

Direct Sub Types

- Asset

Figures

- Figure 12.2
- Figure 12.4

8.1.58 Sensor

Definition
A Transducer that is designed to convert incoming energy into a output signal which reliably corresponds to changes in that energy.

Annotations

- **Label:** Sensor
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ArtifactOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/Sensor

Hierarchy

Entity
└ Continuant
└ IndependentContinuant
└ MaterialEntity
└ Object
└ Artifact
└ Transducer
└ Sensor

Direct Super Types

- Transducer

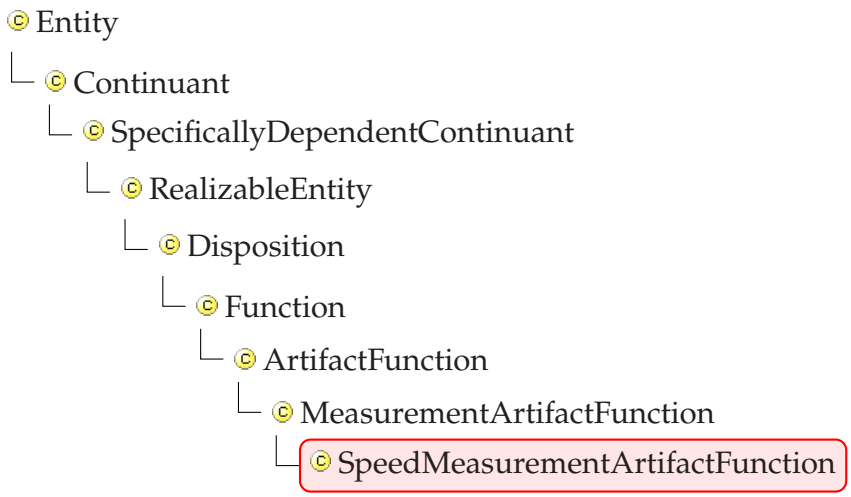
8.1.59 SpeedMeasurementArtifactFunction

Definition
A Measurement Artifact Function that is realized during events in which an Artifact is used to measure the Speed of a specified object's or class of objects' Motion.

Annotations

- **Label:** Speed Measurement Artifact Function
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ArtifactOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/SpeedMeasurementArtifactFunction

Hierarchy



Direct Super Types

- MeasurementArtifactFunction

8.1.60 SystemRole

Definition
A Role that inheres in an entity in virtue of it being an arrangement of parts or elements that together exhibit behavior or meaning that the individual constituents do not.

Annotations

- **Label:** System Role
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ArtifactOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/SystemRole

Hierarchy

- Entity
  - Continuant
    - SpecificallyDependentContinuant
      - RealizableEntity
        - Role
          - SystemRole

Direct Super Types

- Role

8.1.61 TelecommunicationInfrastructure

Definition
An Infrastructure that is designed to support the use of Telecommunication Instruments to communicate.

Annotations

- **Label:** Telecommunication Infrastructure
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ArtifactOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/TelecommunicationInfrastructure

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - MaterialEntity
        - Object
          - Artifact
            - Infrastructure
              - TelecommunicationInfrastructure

Direct Super Types

- Infrastructure

Direct Sub Types

- TelecommunicationNetwork

8.1.62 TelecommunicationNetwork

Definition
A Telecommunication Infrastructure Artifact that is a system of Telecommunication Network Nodes and Lines, and is designed to enable the transmission of information over significant distances between Telecommunication Endpoints.

Annotations

- **Label:** Telecommunication Network
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ArtifactOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/TelecommunicationNetwork

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - MaterialEntity
        - Object
          - Artifact
            - Infrastructure
              - TelecommunicationInfrastructure
                - TelecommunicationNetwork

Direct Super Types

- TelecommunicationInfrastructure

Direct Sub Types

- ComputerNetwork
- TelephoneNetwork

- WirelessTelecommunicationNetwork

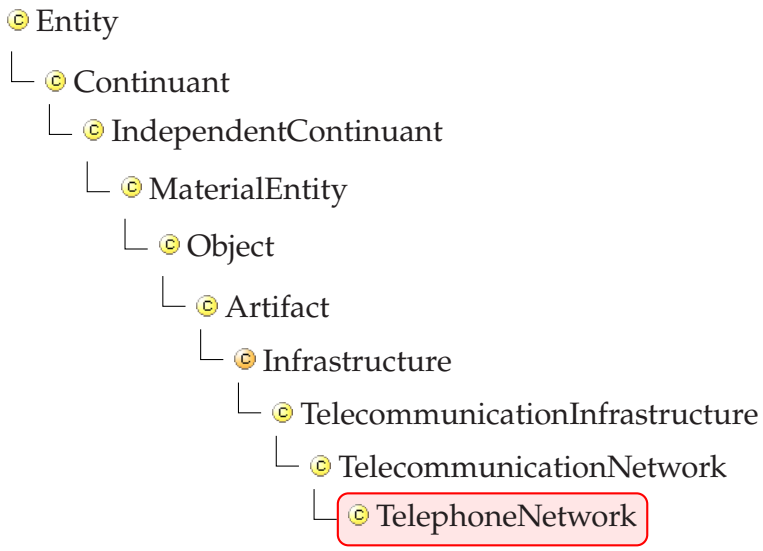
8.1.63 TelephoneNetwork

Definition
A Telecommunication Network that is designed to allow telephone calls to be made between two or more parties connected to the network.

Annotations

- **Label:** Telephone Network
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ArtifactOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/TelephoneNetwork

Hierarchy



Direct Super Types

- TelecommunicationNetwork

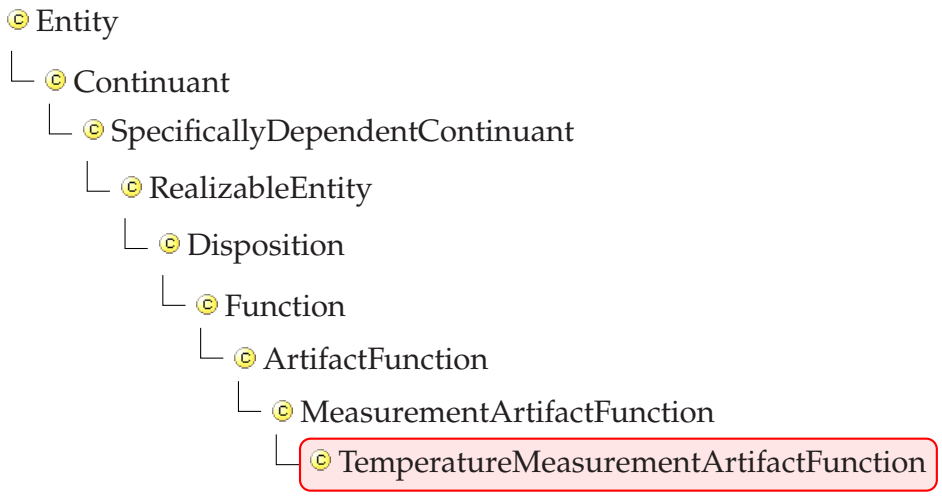
8.1.64 TemperatureMeasurementArtifactFunction

Definition
A Measurement Artifact Function that is realized during events in which an Artifact is used to measure the Temperature of a specified object or class of objects.

Annotations

- **Label:** Temperature Measurement Artifact Function
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ArtifactOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/TemperatureMeasurementArtifactFunction

Hierarchy



Direct Super Types

- MeasurementArtifactFunction

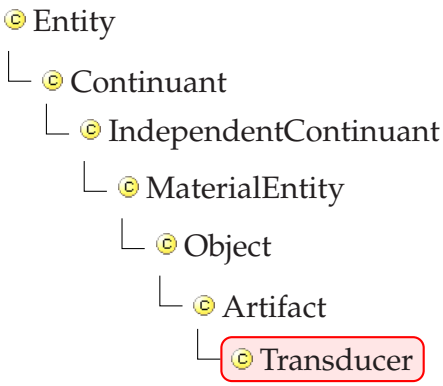
8.1.65 Transducer

Definition
An Artifact that is designed to convert one form of energy to another.

Annotations

- **Label:** Transducer
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ArtifactOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/Transducer

Hierarchy



Direct Super Types

- Artifact

Direct Sub Types

- Actuator
- Sensor

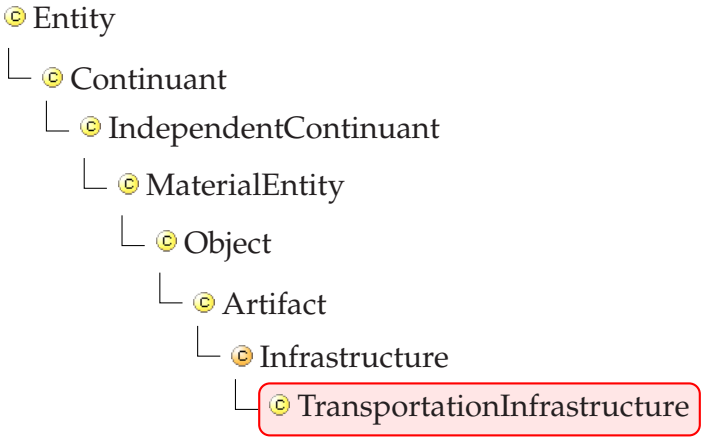
8.1.66 TransportationInfrastructure

Definition
An Infrastructure that is designed to facilitate the movement of material entities from one location to another by providing the necessary structures for Persons to travel or for Vehicles to transport material entities.

Annotations

- **Label:** Transportation Infrastructure
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ArtifactOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/TransportationInfrastructure

Hierarchy



Direct Super Types

- Infrastructure

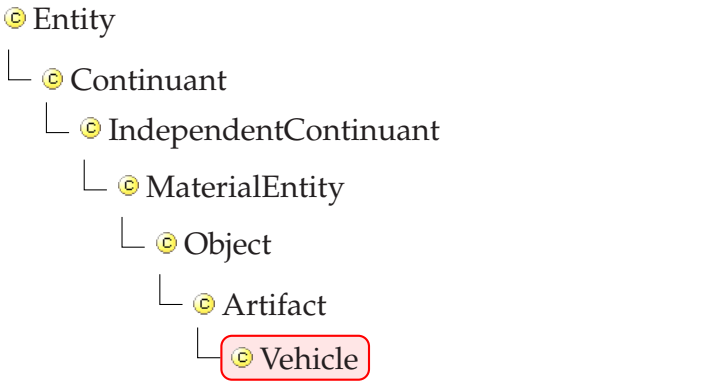
8.1.67 Vehicle

Definition
An Artifact that is designed to facilitate the movement of material entities from one location to another by conveying them there.

Annotations

- **Label:** Vehicle
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ArtifactOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/Vehicle

Hierarchy



Direct Super Types

- Artifact

Figures

- Figure 2.5

8.1.68 VideoCamera

Definition
A Camera that is designed to form and digitally or physically record a continuous stream of subsequent images of an entity or scene such that the images can be played back in succession as a video.

Annotations

- **Label:** Video Camera
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ArtifactOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/VideoCamera

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - MaterialEntity
        - Object
          - Artifact
            - ImagingInstrument
              - Camera
                - VideoCamera

Direct Super Types

- Camera

Direct Sub Types

- FullMotionVideoCamera

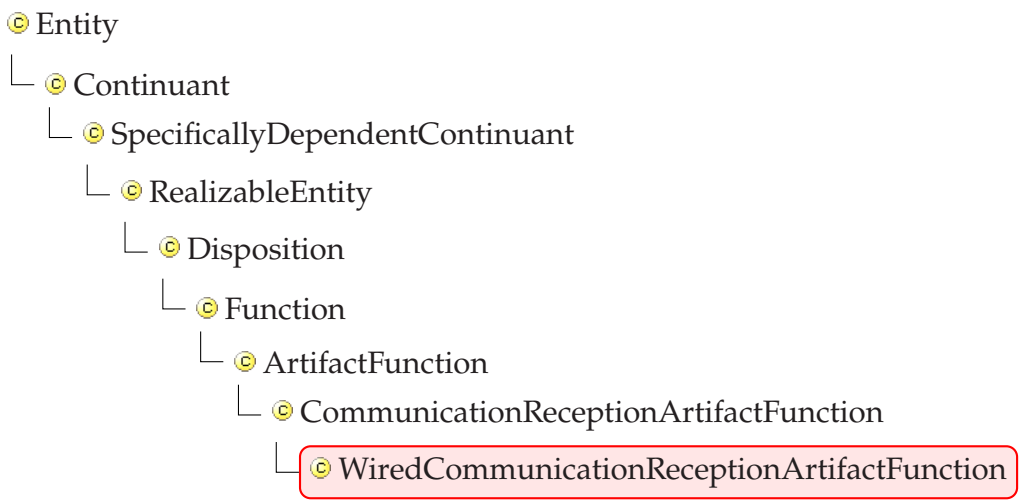
8.1.69 WiredCommunicationReceptionArtifactFunction

Definition
A Communication Reception Artifact Function that inheres in an Artifact that is capable of receiving information transmitted from another Artifact to which it is connected by an electrical conductor.

Annotations

- **Label:** Wired Communication Reception Artifact Function
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ArtifactOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/WiredCommunicationReceptionArtifactFunction

Hierarchy



Direct Super Types

- CommunicationReceptionArtifactFunction

8.1.70 WiredCommunicationRelayArtifactFunction

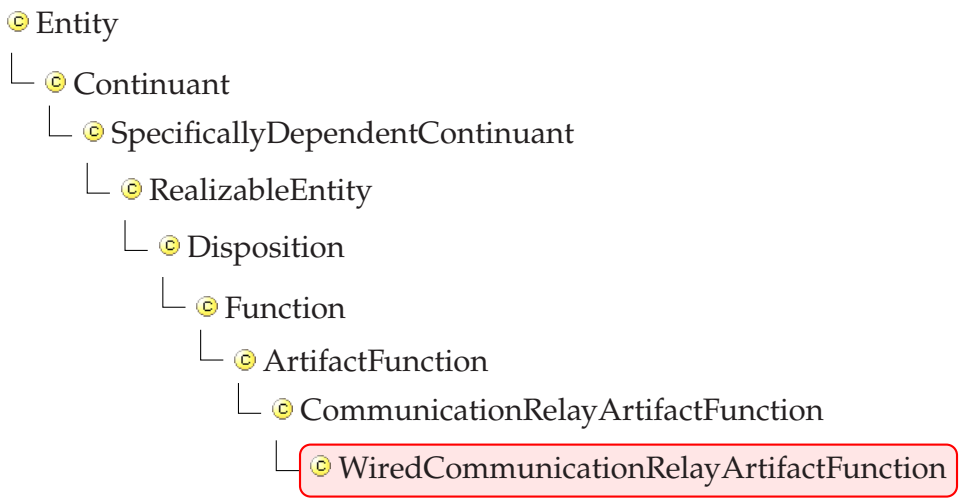
Definition
A Communication Relay Artifact Function that is realized during events in which an Artifact is used to first receive and then transmit information by means of wires from one Artifact to another for the purpose of communiction.

Annotations

- **Label:** Wired Communication Relay Artifact Function

- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ArtifactOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/WiredCommunicationRelayArtifactFunction

Hierarchy



Direct Super Types

- CommunicationRelayArtifactFunction
- hasPart RadioCommunicationArtifactFunction
- hasPart RadioCommunicationReceptionArtifactFunction

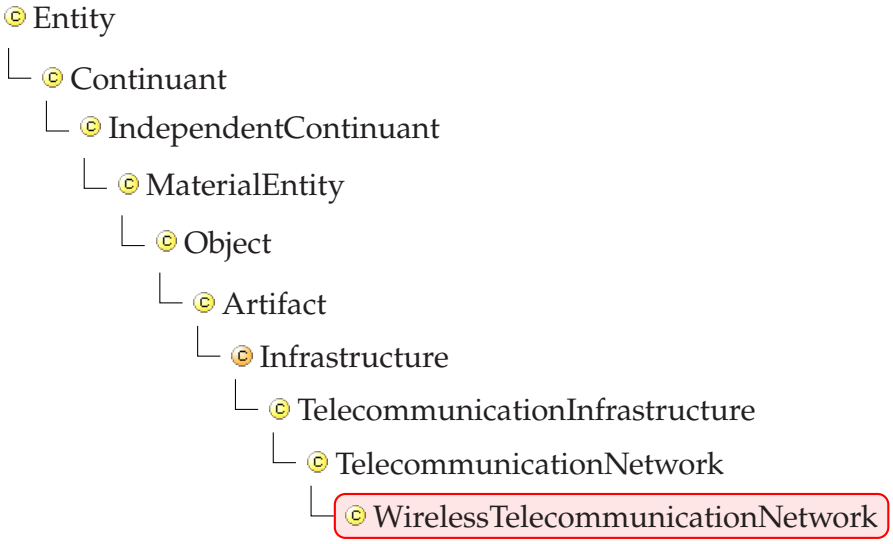
8.1.71 WirelessTelecommunicationNetwork

Definition
A Telecommunication Network that uses wireless connections to connect Telecommunication Network Nodes.

Annotations

- **Label:** Wireless Telecommunication Network
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/ArtifactOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/WirelessTelecommunicationNetwork

Hierarchy



Direct Super Types

- TelecommunicationNetwork

Direct Sub Types

- CellularTelecommunicationNetwork

9

Facility Ontology

This ontology is designed to represent buildings and campuses that are designed to serve some specific purpose and which are common to multiple domains.

9.1 Named Classes

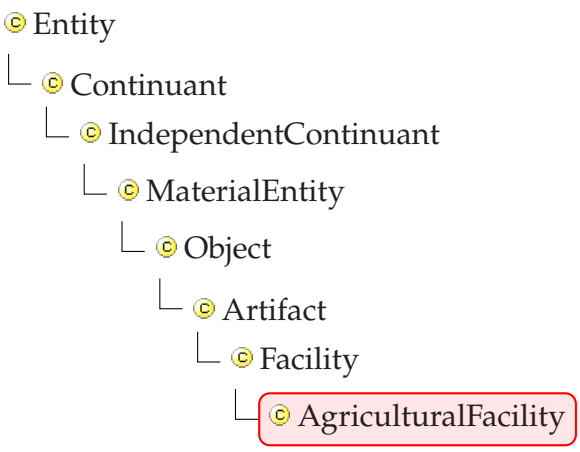
9.1.1 AgriculturalFacility

Definition
A Facility that is designed as a building or campus for agricultural processes with the aim of cultivating animals, plants, or fungi for food, fiber, biofuel, medicinal plants, or other products to sustain and enhance human life.

Annotations

- **Label:** Agricultural Facility
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/FacilityOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/AgriculturalFacility

Hierarchy



Direct Super Types

- Facility

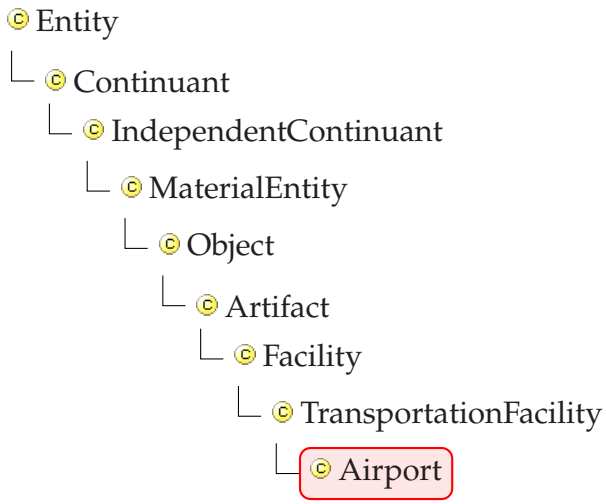
9.1.2 Airport

Definition
A Transportation Facility that is designed for launching, receiving, and housing Aircraft.

Annotations

- **Label:** Airport
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/FacilityOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/Airport

Hierarchy



Direct Super Types

- TransportationFacility

9.1.3 CommunicationsFacility

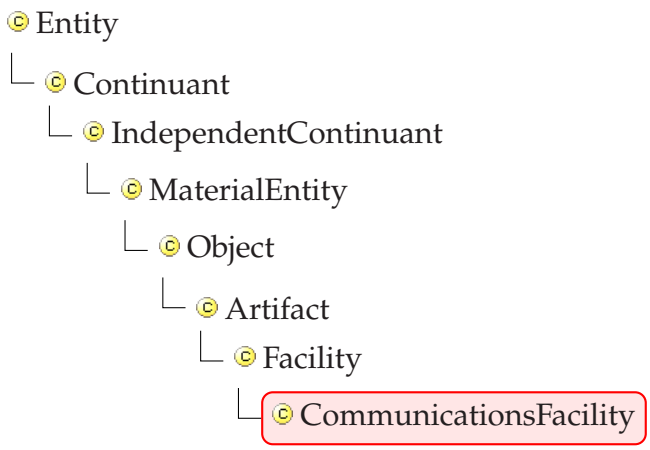
Definition
A Facility that is the bearer of functions realized in processes of receiving or transmitting information.

Annotations

- **Label:** Communications Facility

- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/FacilityOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/CommunicationsFacility

Hierarchy



Direct Super Types

- Facility

Direct Sub Types

- CallCenter

9.1.4 Factory

Definition
A Facility that is designed for manufacturing or refining material products.

Annotations

- **Label:** Factory
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/FacilityOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/Factory

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - MaterialEntity
        - Object
          - Artifact
            - Facility
              - Factory

Direct Super Types

- Facility

9.1.5 HealthcareFacility

Definition
A Facility that is designed for the diagnosis, treatment, and prevention of disease.

Annotations

- **Label:** Healthcare Facility
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/FacilityOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/HealthcareFacility

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - MaterialEntity
        - Object
          - Artifact
            - Facility
              - HealthcareFacility

Direct Super Types

- Facility

Direct Sub Types

- Hospital

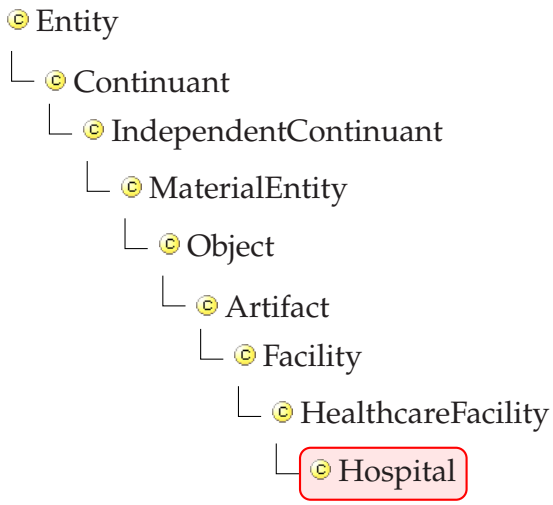
9.1.6 Hospital

Definition
A Healthcare Facility that is designed to provide patient treatment with specialized staff and equipment.

Annotations

- **Label:** Hospital
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/FacilityOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/Hospital

Hierarchy



Direct Super Types

- HealthcareFacility

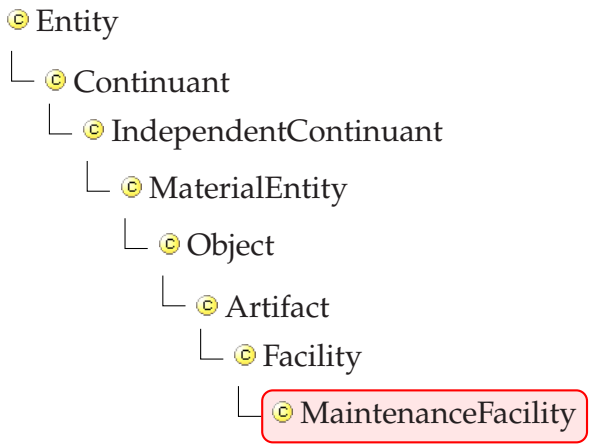
9.1.7 MaintenanceFacility

Definition
A Facility that is designed to be used to perform actions to maintain or improve the state of some property or equipment.

Annotations

- **Label:** Maintenance Facility
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/FacilityOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/MaintenanceFacility

Hierarchy



Direct Super Types

- Facility

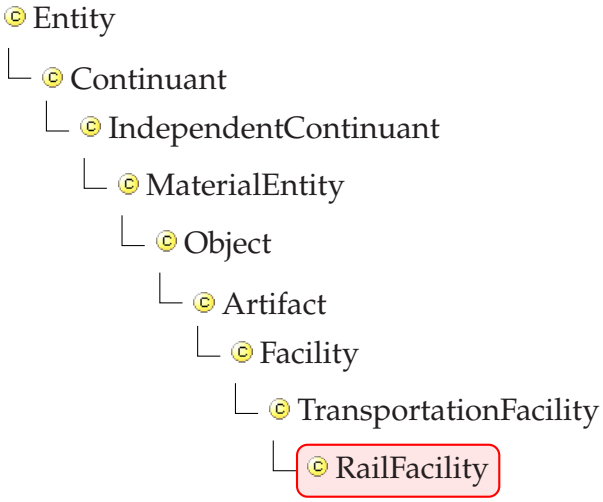
9.1.8 RailFacility

Definition
A Transportation Facility that is designed for transferring people or cargo to and from Trains.

Annotations

- **Label:** Rail Facility
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/FacilityOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/RailFacility

Hierarchy



Direct Super Types

- TransportationFacility

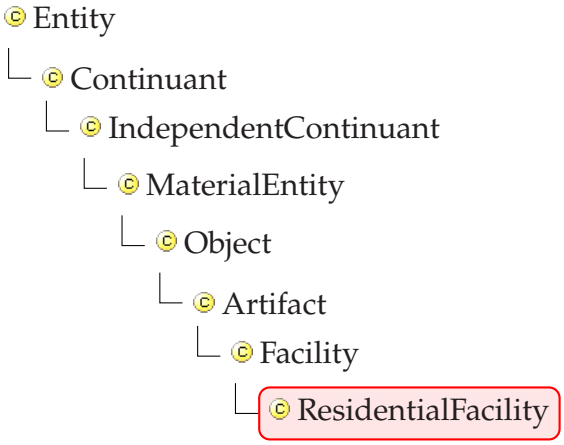
9.1.9 ResidentialFacility

Definition
A Facility that is designed to house one or more Persons.

Annotations

- **Label:** Residential Facility
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/FacilityOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/ResidentialFacility

Hierarchy



Direct Super Types

- Facility

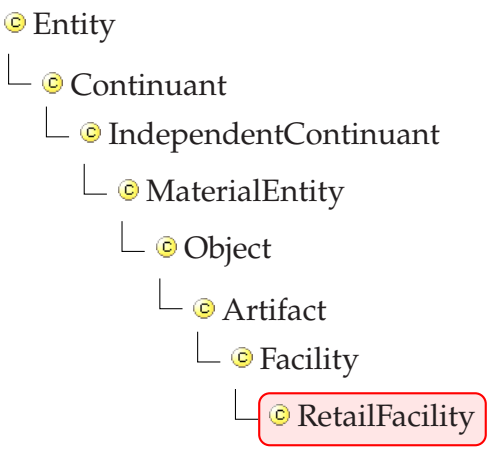
9.1.10 RetailFacility

Definition
A Facility that is designed for buying and selling goods and services, especially on a large scale.

Annotations

- **Label:** Commercial Facility
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/FacilityOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/RetailFacility

Hierarchy



Direct Super Types

- Facility

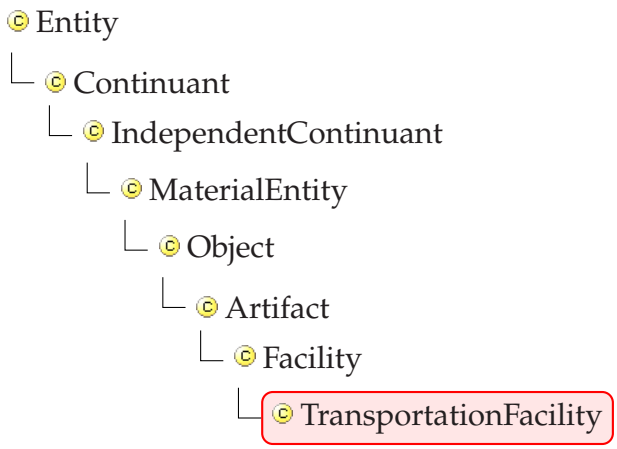
9.1.11 TransportationFacility

Definition
A Facility that is designed for commencing or concluding the transportation of transportation artifacts, or for housing transportation artifacts.

Annotations

- **Label:** Transportation Facility
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/FacilityOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/TransportationFacility

Hierarchy



Direct Super Types

- Facility

Direct Sub Types

- Airport
- RailFacility

10

Quality Ontology

This ontology is designed to represent a range of attributes of entities especially qualities, realizable entities, and process profiles.

10.1 Named Classes

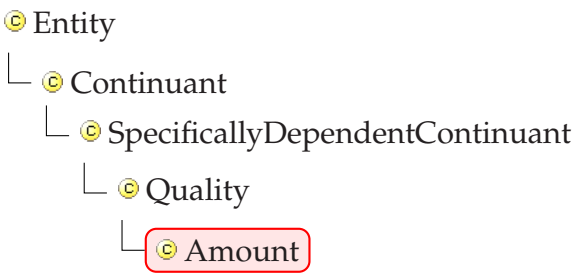
10.1.1 Amount

Definition
A Quality that inheres in a bearer in virtue of the total, aggregate or sum of a number of discrete items or material the entity contains as parts.

Annotations

- **Label:** Amount
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/QualityOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/Amount

Hierarchy



Direct Super Types

- Quality

10.1.2 Fatigability

Definition

A Realizable Entity that is realized when its bearer loses strength and tires quickly.

Annotations

- **Label:** Fatigability
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/QualityOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/Fatigability

Hierarchy

- Entity
  - Continuant
    - SpecificallyDependentContinuant
      - RealizableEntity
        - Fatigability

Direct Super Types

- RealizableEntity

Figures

- Figure 2.7

10.1.3 Hardness

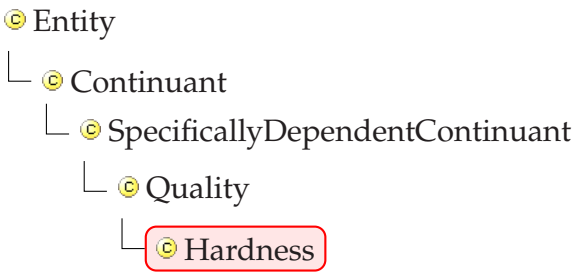
Definition

A Quality that inheres in a bearer in virtue of the degree to which it can be turned, bowed, or twisted without breaking.

Annotations

- **Label:** Hardness
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/QualityOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/Hardness

Hierarchy



Direct Super Types

- Quality

10.1.4 Strength

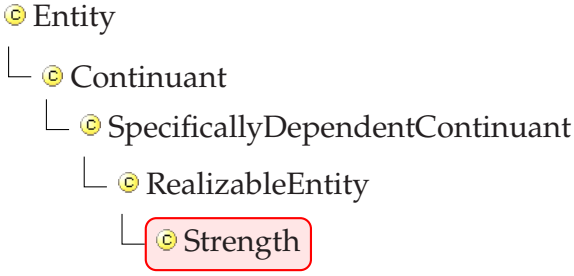
Strength is intended to be understood broadly here. Physical strength is only one type of Strength. Other subtypes of Strength may include military strength, psychological strength, emotional strength, political strength, technological strength, and so on.

Definition
A Realizable Entity that is realized when its bearer exerts or resists some power, influence, or force.

Annotations

- **Label:** Strength
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/QualityOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/Strength

Hierarchy



Direct Super Types

- RealizableEntity

Figures

- Figure 2.7

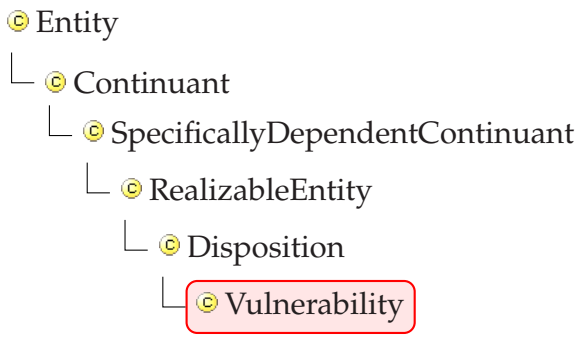
10.1.5 Vulnerability

Definition
A Disposition that inheres in a bearer in virtue of its being susceptible to having its otherwise reliable participation in processes of a certain type disrupted by a process of another type.

Annotations

- **Label:** Vulnerability
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Mid/QualityOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/Vulnerability

Hierarchy



Direct Super Types

- Disposition

Direct Sub Types

- CyberVulnerability
- ElectromagneticPulseVulnerability

Figures

- Figure 2.7
- Figure 4.2

11

Cyber Ontology

The Cyber Ontology is designed to serve as a domain-level reference for representing entities relevant to the digitization, manipulation, and transfer of information using telecommunication networks, especially as they pertain to activities in cyberspace. Examples include: information processing artifacts and their functions, networks and their components, software, protocols and standards, users and their permissions, data transformation and encoding, cyber attacks and their objectives.

11.1 Named Classes

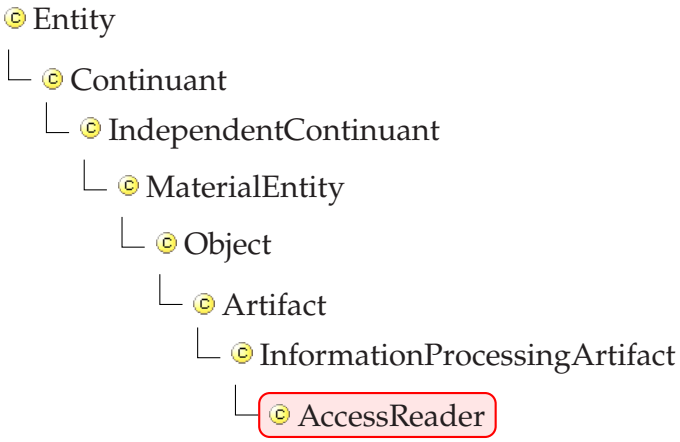
11.1.1 AccessReader

Definition
An Information Processing Artifact that is designed to process whether a prospective user has the creditials to access some resource.

Annotations

- **Label:** Access Reader
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/AccessReader

Hierarchy



Direct Super Types

- InformationProcessingArtifact

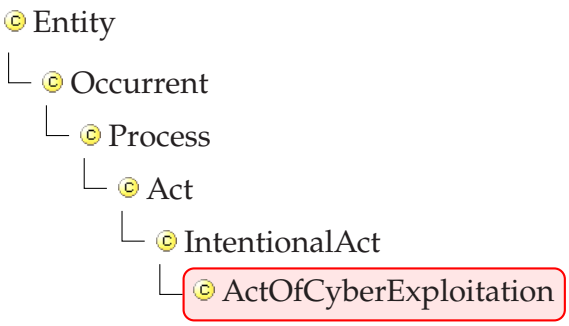
11.1.2 ActOfCyberExploitation

Definition
An Intentional Act that is part of a Cyber Attack wherein a Cyber Attacker uses a Cyber Exploit Artifact to realize a Cyber Vulnerability.

Annotations

- **Label:** Act of Cyber Exploitation
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/ActOfCyberExploitation

Hierarchy



Direct Super Types

- IntentionalAct

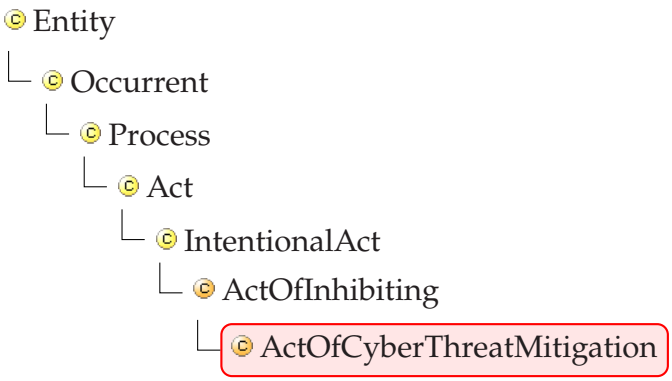
11.1.3 ActOfCyberThreatMitigation

Definition
An Intentional Act which inhibits a Cyber Attack.

Annotations

- **Label:** Act of Cyber Threat Mitigation
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/ActOfCyberThreatMitigation

Hierarchy



Direct Super Types

- ActOfInhibiting

Equivalent Classes

- (ActOfInhibiting ∩ ∃ inhibits CyberAttack)

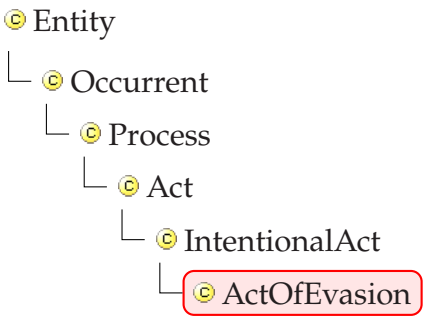
11.1.4 ActOfEvasion

Definition
An Intentional Act of attempting to avoid an entity.

Annotations

- **Label:** Act of Evasion
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/ActOfEvasion

Hierarchy



Direct Super Types

- IntentionalAct

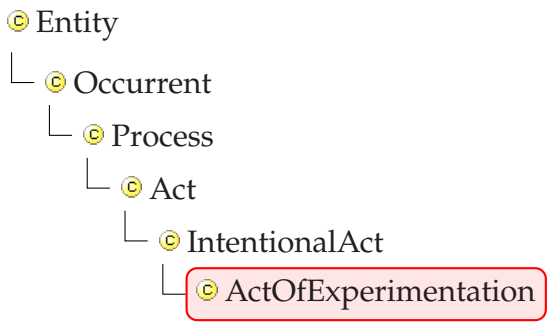
11.1.5 ActOfExperimentation

Definition
An Intentional Act wherein an Agent tests new ideas, methods, or activities, in an attempt to discover new information or knowledge.

Annotations

- **Label:** Act of Experimentation
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/ActOfExperimentation

Hierarchy



Direct Super Types

- IntentionalAct

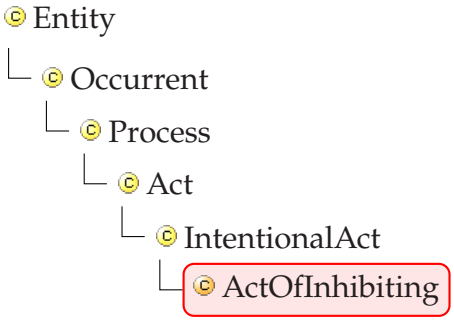
11.1.6 ActOfInhibiting

Definition
An Intentional Act that inhibits some Process.

Annotations

- **Label:** Act of Inhibiting
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/ActOfInhibiting

Hierarchy



Direct Super Types

- IntentionalAct

Direct Sub Types

- ActOfCyberThreatMitigation

Equivalent Classes

- (IntentionalAct ∩ ∃ inhibits Process)

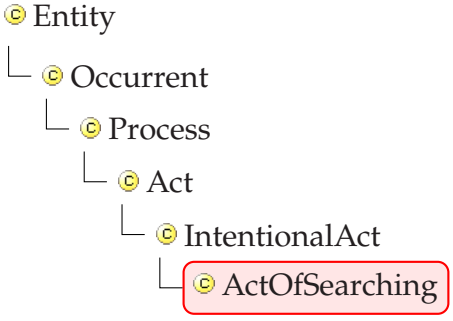
11.1.7 ActOfSearching

Definition
An Intentional Act of trying to find an entity.

Annotations

- **Label:** Act of Searching
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/ActOfSearching

Hierarchy



Direct Super Types

- IntentionalAct

11.1.8 Adware

Definition
A Computer Program that is designed to generate revenue for its developer by automatically generating online advertisements in the user interface of the software or on a screen presented to the user during the installation process.

Annotations

- **Label:** Adware
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/Adware

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - MaterialEntity
        - Object
          - Artifact
            - InformationProcessingArtifact
              - ComputerProgram
                - Adware

Direct Super Types

- ComputerProgram

Direct Sub Types

- MaliciousAdware

11.1.9 AggregationFunction

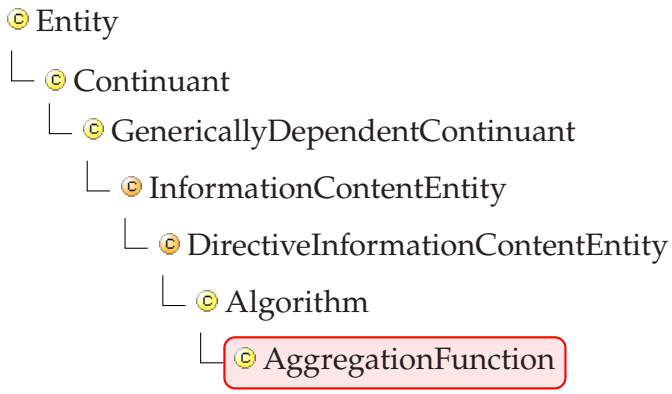
Definition
An Algorithm in which the values of multiple rows are grouped together to form a

single value of more significant meaning.

Annotations

- **Label:** Aggregation Function
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/AggregationFunction

Hierarchy



Direct Super Types

- Algorithm

11.1.10 AggregationProcess

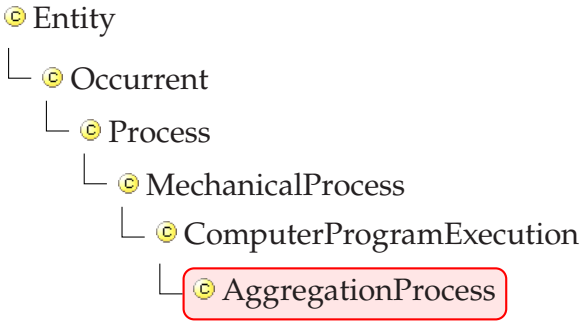
Definition

A Computer Program Execution in which the values of multiple rows are grouped together to form a single value of more significant meaning.

Annotations

- **Label:** Aggregation Process
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/AggregationProcess

Hierarchy



Direct Super Types

- ComputerProgramExecution

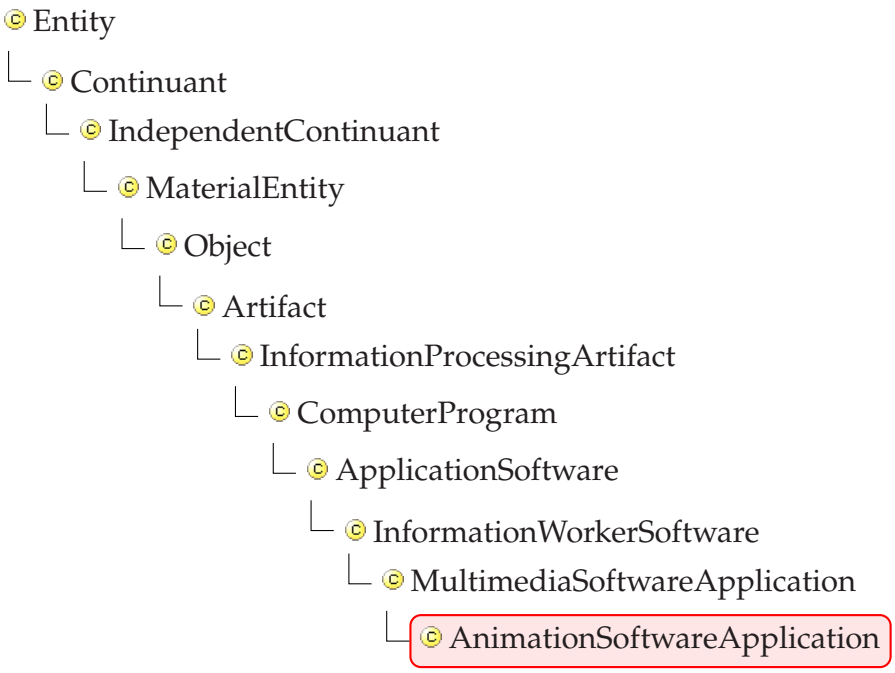
11.1.11 AnimationSoftwareApplication

Definition
A Multimedia Software Application that is designed to enable a user to create and edit animations.

Annotations

- **Label:** Animation Software Application
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/AnimationSoftwareApplication

Hierarchy



Direct Super Types

- MultimediaSoftwareApplication

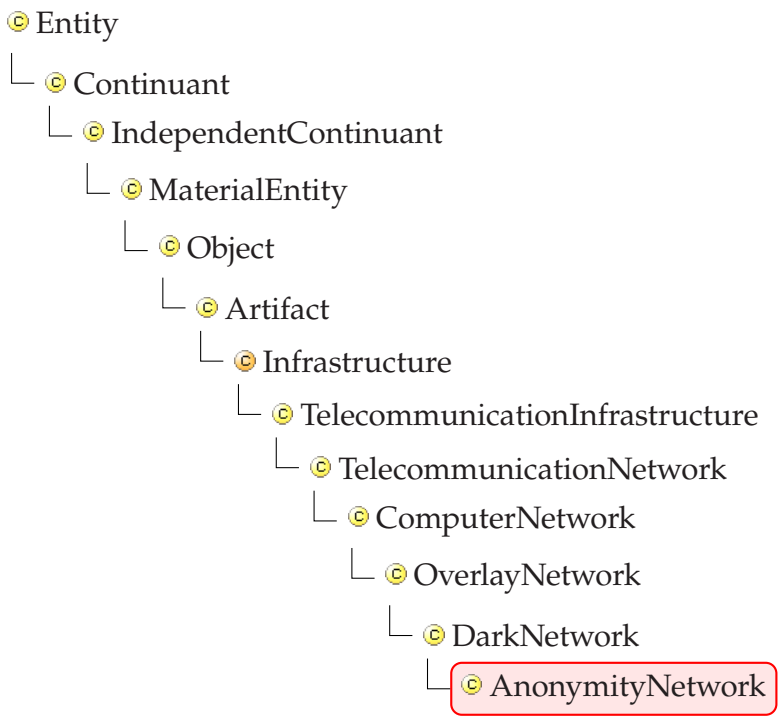
11.1.12 AnonymityNetwork

Definition
A Dark Network that enables users to access the Internet while blocking any tracking or tracing of their identity.

Annotations

- **Label:** Anonymity Network
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/AnonymityNetwork

Hierarchy



Direct Super Types

- DarkNetwork

Direct Sub Types

- TorNetwork

11.1.13 Anonymization

Definition
A Computer Program Execution that encrypts or removes personally identifiable information from data sets in order to maintain the anonymity of the people described by the data.

Annotations

- **Label:** Anonymization
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/Anonymization

Hierarchy

- Entity
  - Occurrent
    - Process
      - MechanicalProcess
        - ComputerProgramExecution
          - Anonymization

Direct Super Types

- ComputerProgramExecution

11.1.14 Anonymizer

Definition
Application Software that is designed to conceal the identity of some client from some Computer Network.

Annotations

- **Label:** Anonymizer
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/Anonymizer

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - MaterialEntity
        - Object
          - Artifact
            - InformationProcessingArtifact
              - ComputerProgram
                - ApplicationSoftware
                  - Anonymizer

Direct Super Types

- ApplicationSoftware

11.1.15 AntivirusApplication

Definition
A Utility Program that is designed to prevent, detect, and remove malicious software.

Annotations

- **Label:** Antivirus Application
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/AntivirusApplication

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - MaterialEntity
        - Object
          - Artifact
            - InformationProcessingArtifact
              - ComputerProgram
                - SystemSoftware
                  - UtilityProgram
                    - AntivirusApplication

Direct Super Types

- UtilityProgram

11.1.16 ApplicationBinaryInterface

Definition
An Artifact Design that is a specification for how to enable a Computer Library and/or Operating System to interact with a Computer Program.

Annotations

- **Label:** Application Binary Interface
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/ApplicationBinaryInterface

Hierarchy

Direct Super Types

- ArtifactDesignContentEntity

11.1.17 ApplicationManager

Definition
A Utility Program that is designed to oversee the installation, patching, updating, and accessibility of software applications.

Annotations

- **Label:** Application Manager
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/ApplicationManager

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - MaterialEntity
        - Object
          - Artifact
            - InformationProcessingArtifact
              - ComputerProgram
                - SystemSoftware
                  - UtilityProgram
                    - ApplicationManager

Direct Super Types

- UtilityProgram

11.1.18 ApplicationProgrammingInterface

Annotations

- **Label:** Application Programming Interface
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/ApplicationProgrammingInterface

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - MaterialEntity
        - Object
          - Artifact
            - InformationBearingArtifact
              - ApplicationProgrammingInterface

Direct Super Types

- InformationBearingArtifact

11.1.19 ApplicationSoftware

Definition
A Computer Prgoram that is designed to execute a group of coordinated Computer Functions for the benefit of a user.

Annotations

- **Label:** Application Software
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/ApplicationSoftware

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - MaterialEntity
        - Object
          - Artifact
            - InformationProcessingArtifact
              - ComputerProgram
                - ApplicationSoftware

Direct Super Types

- ComputerProgram

Direct Sub Types

- Anonymizer
- ContentAccessSoftware
- InformationWorkerSoftware
- InternetBot
- RemoteAccessTool
- SimulationSoftware

- SoftwareEngineeringSoftware
- VulnerabilityScannerSoftware

11.1.20 Array

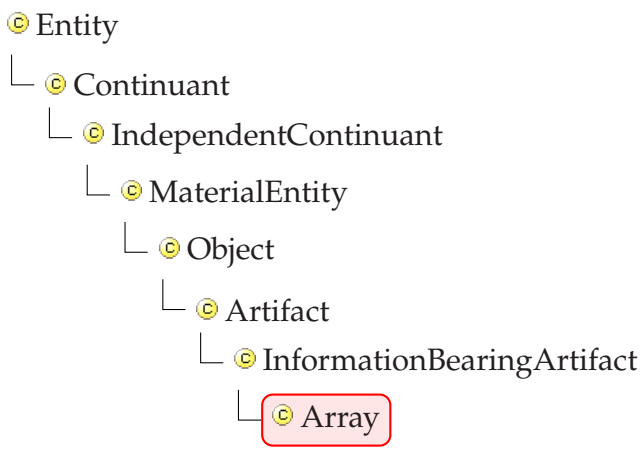
Definition

An Information Bearing Artifact that is the bearer of a finite ordered list of Information Content Entities.

Annotations

- **Label:** Array
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/Array

Hierarchy



Direct Super Types

- InformationBearingArtifact

Direct Sub Types

- Matrix
- Tuple

11.1.21 AudioEditingSoftwareApplication

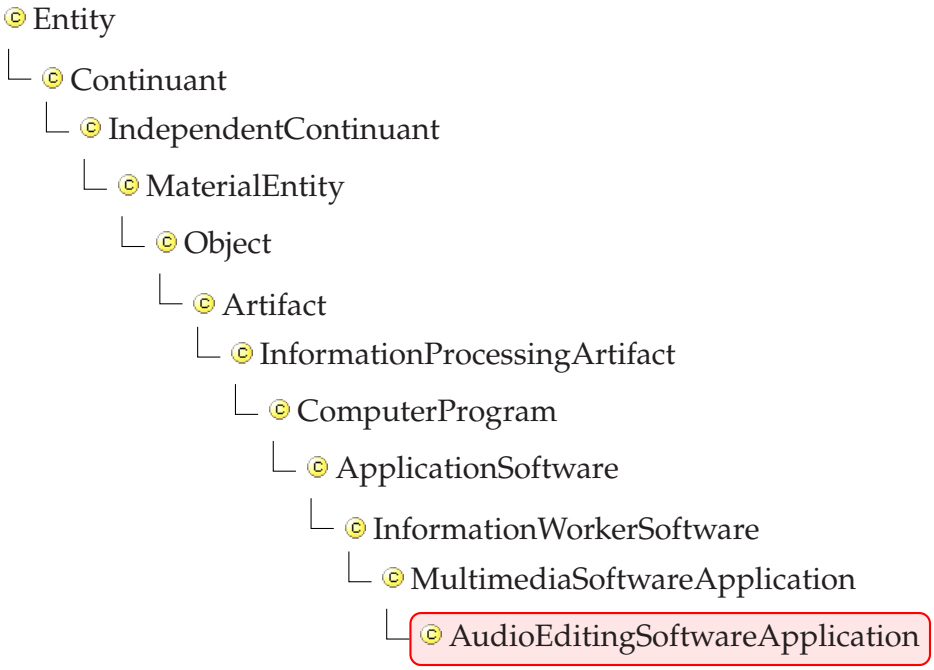
Definition

A Multimedia Software Application that is designed to enable a user to create and edit audio files.

Annotations

- **Label:** Audio Editing Software Application
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/AudioEditingSoftwareApplication

Hierarchy



Direct Super Types

- MultimediaSoftwareApplication

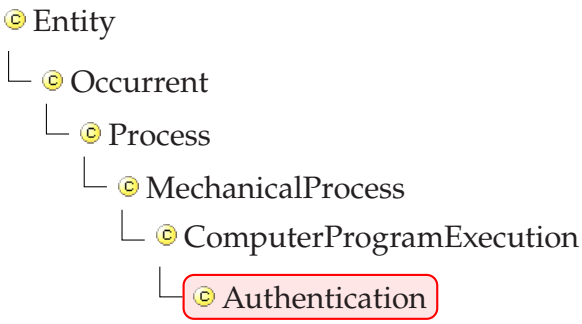
11.1.22 Authentication

Definition
A Computer Program Execution in which the identity of a user is verified.

Annotations

- **Label:** Authentication
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/Authentication

Hierarchy



Direct Super Types

- ComputerProgramExecution

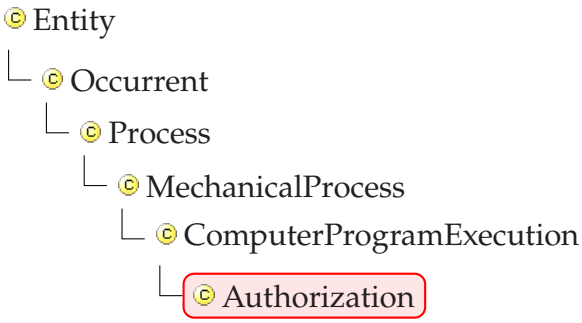
11.1.23 Authorization

Definition
A Computer Program Execution that bestows a user account with File Permissions.

Annotations

- **Label:** Authorization
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/Authorization

Hierarchy



Direct Super Types

- ComputerProgramExecution

11.1.24 BackdoorProgram

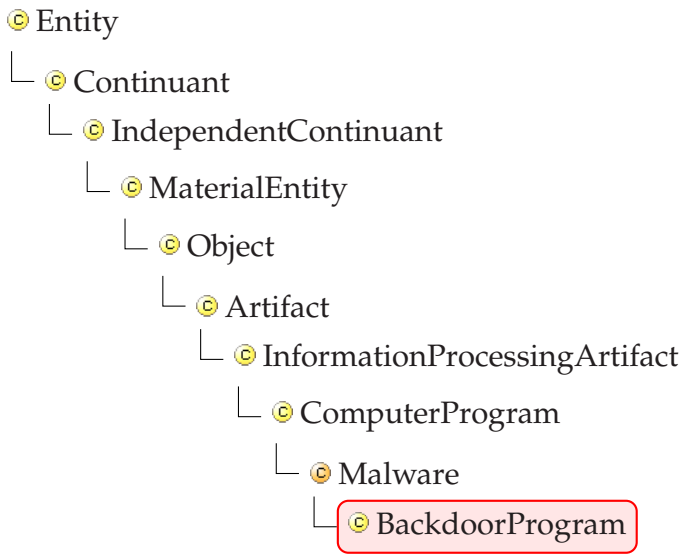
Definition

Malware that is designed to bypass normal authentication or encryption in a computer system in order to secure remote access to that system.

Annotations

- **Label:** Backdoor Program
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/BackdoorProgram

Hierarchy



Direct Super Types

- Malware

11.1.25 BackupFile

Definition

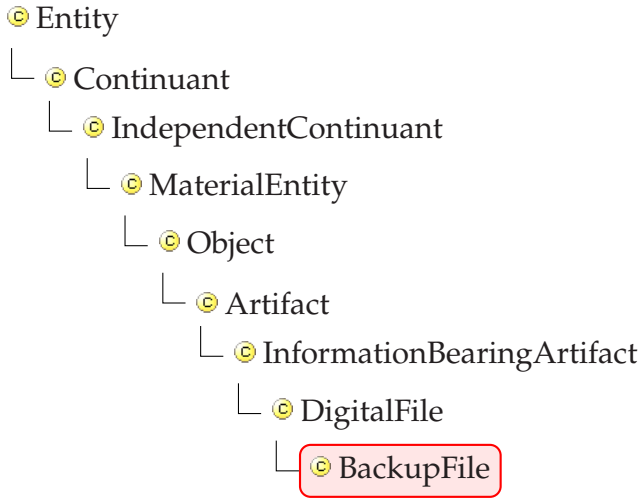
A Digital File that that is designed to preserve the content of the original digital file in the case of destruction of the original.

Annotations

- **Label:** Backup File
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology

- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/BackupFile

Hierarchy



Direct Super Types

- DigitalFile

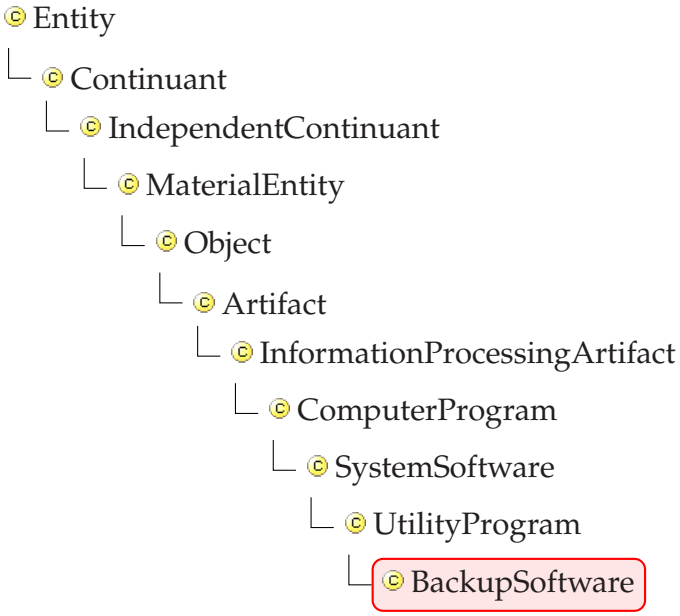
11.1.26 BackupSoftware

Definition
A Utility Program that is designed to supplementary, exact copies of Digital Files, Databases, or of all the data on a Computer, which can be accessed later to restore the original contents in the event of data loss.

Annotations

- **Label:** Backup Software
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/BackupSoftware

Hierarchy



Direct Super Types

- UtilityProgram

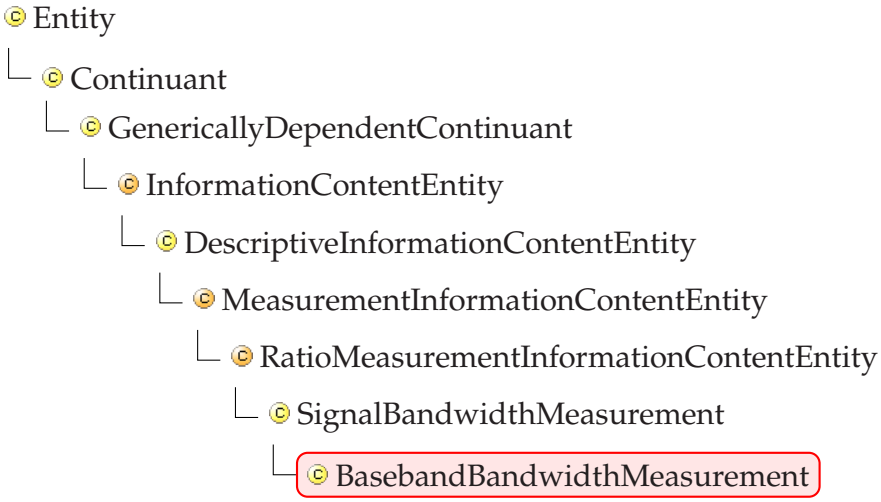
11.1.27 BasebandBandwidthMeasurement

Definition
A Signal Bandwidth Measurement that is a measurement of the range of continuous Frequencies between zero and some upper cutoff Frequency.

Annotations

- **Label:** Baseband Bandwidth Measurement
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/BasebandBandwidthMeasurement

Hierarchy



Direct Super Types

- SignalBandwidthMeasurement

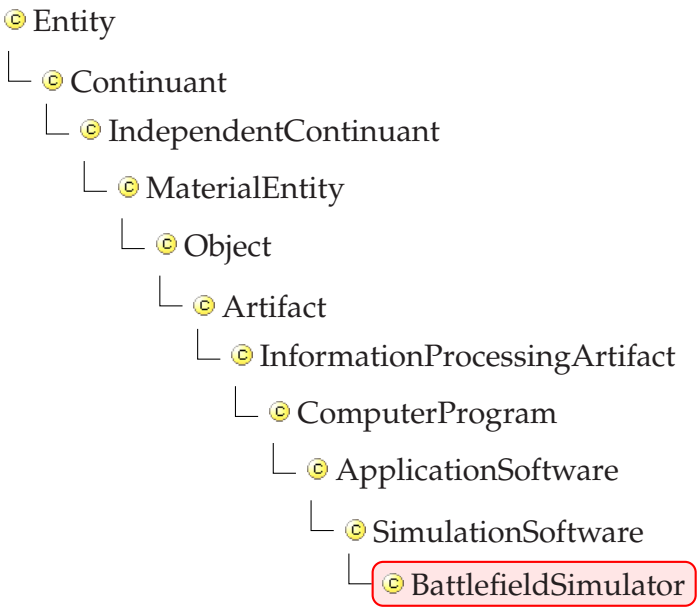
11.1.28 BattlefieldSimulator

Definition
Simulation Software that is designed to enable a user to model a battle.

Annotations

- **Label:** Battlefield Simulator
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/BattlefieldSimulator

Hierarchy



Direct Super Types

- SimulationSoftware

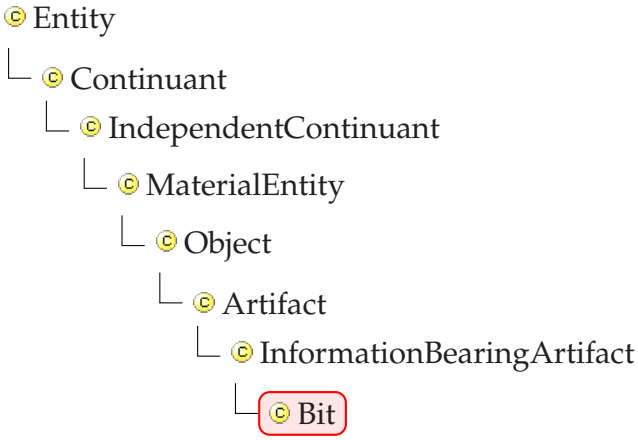
11.1.29 Bit

Definition
An Information Bearing Artifact that is the bearer of one of two values (exclusive) which can be concretized within a two-state device.

Annotations

- **Label:** Bit
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/Bit

Hierarchy



Direct Super Types

- InformationBearingArtifact

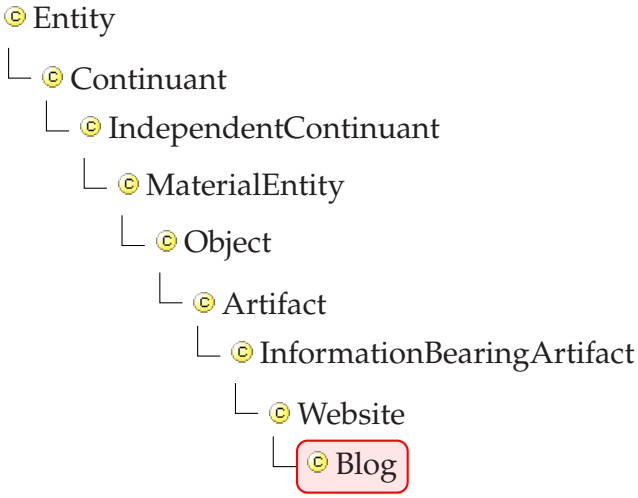
11.1.30 Blog

Definition
A Website that consists of discrete, often informal diary-style entries ("posts").

Annotations

- **Label:** Blog
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/Blog

Hierarchy



Direct Super Types

- Website

Direct Sub Types

- Microblog
- Vlog

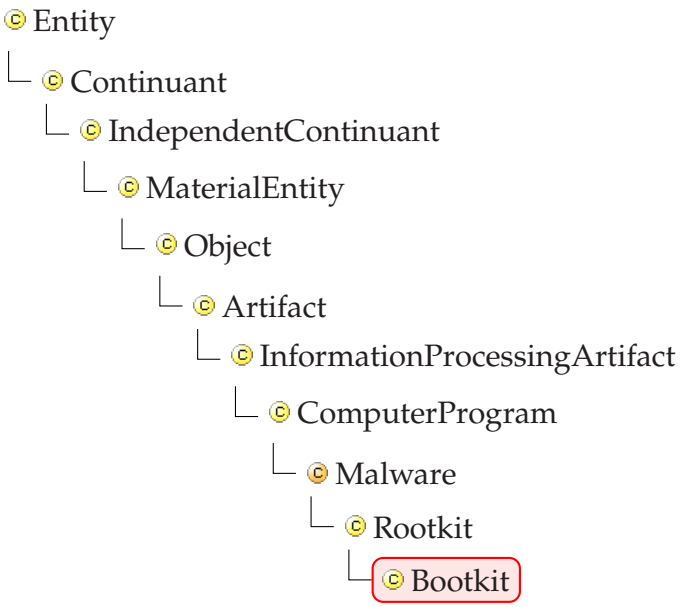
11.1.31 Bootkit

Definition
Rootkit that is designed to replace a Computer's legitimate boot loader.

Annotations

- **Label:** Bootkit
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/Bootkit

Hierarchy



Direct Super Types

- Rootkit

11.1.32 Botnet

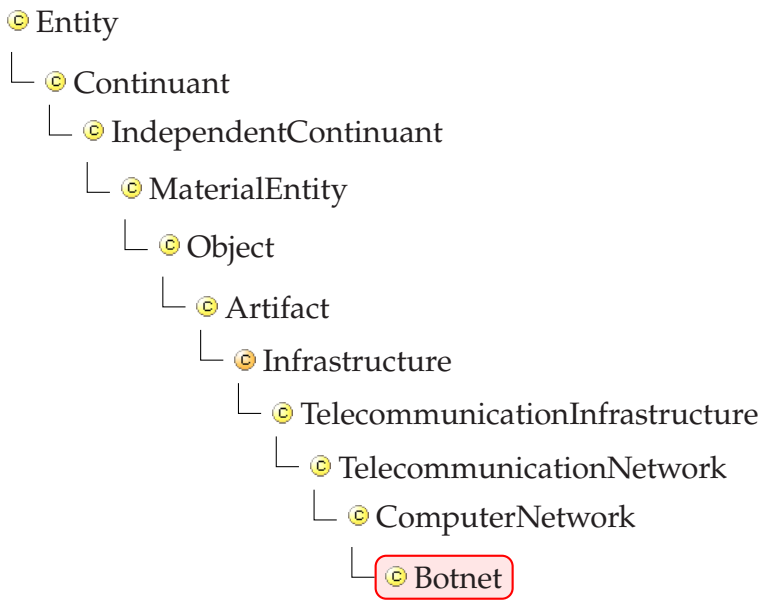
Definition

A Computer Network which is composed of two or more Internet-connected devices, each of which is running one or more Internet Bots.

Annotations

- **Label:** Botnet
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/Botnet

Hierarchy



Direct Super Types

- ComputerNetwork

11.1.33 BroadbandCommunicationArtifactFunction

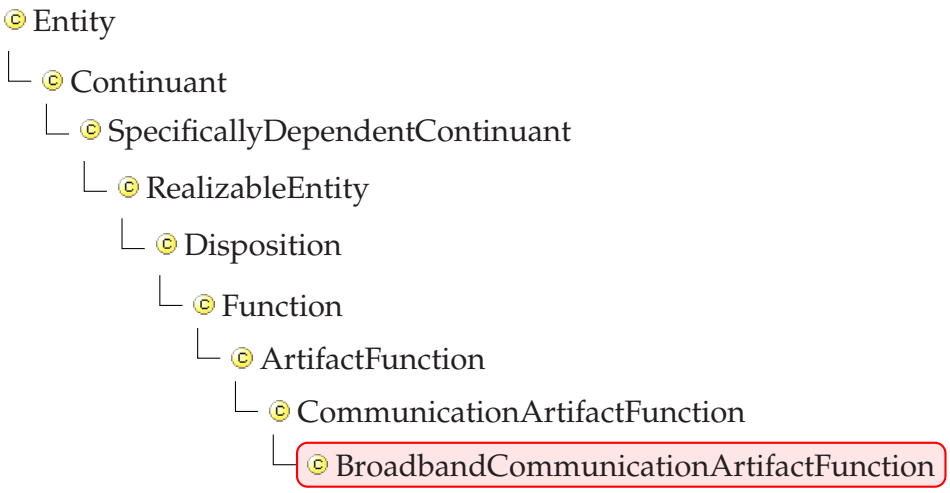
Definition

A Communication Artifact Function that is realized in relatively high Bit transfer rates.

Annotations

- **Label:** Broadband Communication Artifact Function
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/BroadbandCommunicationArtifactFunction

Hierarchy



Direct Super Types

- CommunicationArtifactFunction
- inheresIn TelecommunicationNetwork

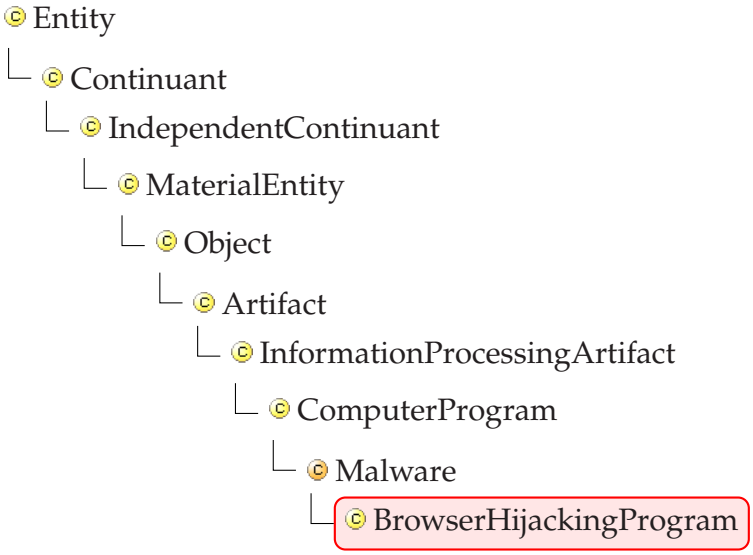
11.1.34 BrowserHijackingProgram

Definition
Malware that is designed to modify a Web Browser's settings without a user's permission in order to inject unwanted advertising into that Browser.

Annotations

- **Label:** Browser Hijacking Program
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/BrowserHijackingProgram

Hierarchy



Direct Super Types

- Malware

11.1.35 Byte

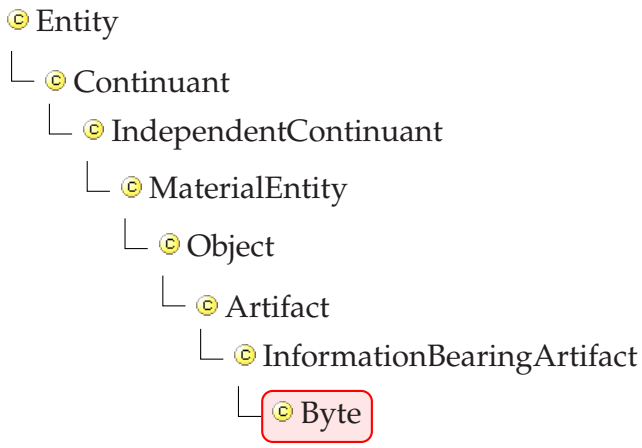
Bytes are almost ubiquitously understood as ordered collections of eight Bits, but there are exceptions where Bytes are understood as ordered collections of fewer than eight Bits.

Definition
An Information Bearing Artifact that consists of an ordered collection of eight or fewer Bits.

Annotations

- **Label:** Byte
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/Byte

Hierarchy



Direct Super Types

- InformationBearingArtifact

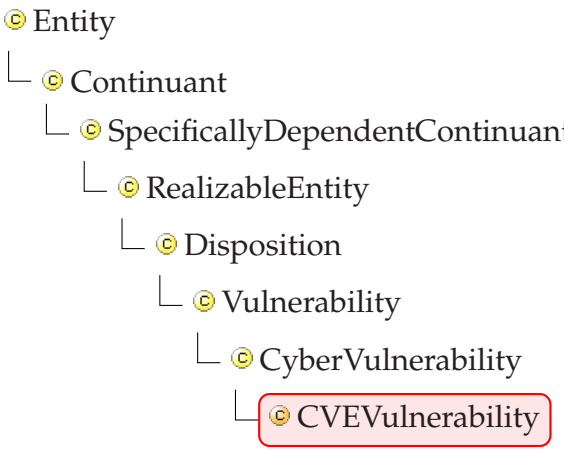
11.1.36 CVEVulnerability

Definition
A Cyber Vulnerability that inheres in an Information Processing Artifact prescribed by a known Computer Program Artifact Model.

Annotations

- **Label:** CVE Vulnerability
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/CVEVulnerability

Hierarchy



Direct Super Types

- CyberVulnerability

Equivalent Classes

- (CyberVulnerability ⊓ ∃ inheresIn (InformationProcessingArtifact ⊓ ∃ prescribedBy ComputerProgramArtifactModel))

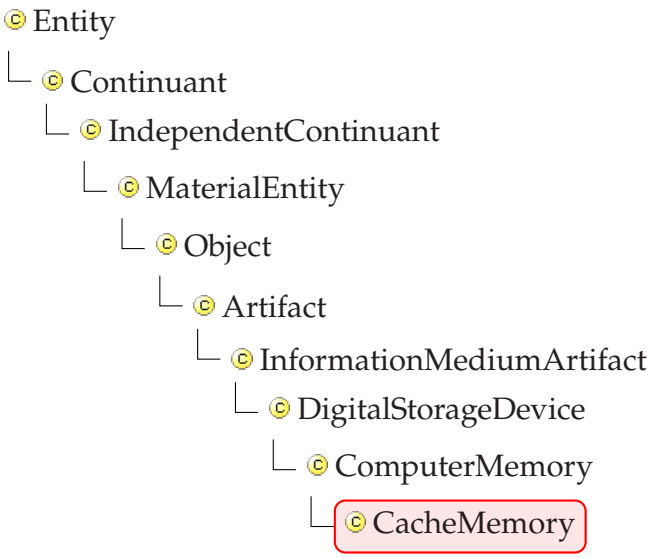
11.1.37 CacheMemory

Definition
Computer Memory that is fast, relatively small, not visible to software, is completely handled by the hardware, and stores the most recently used main memory data.

Annotations

- **Label:** Cache Memory
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/CacheMemory

Hierarchy



Direct Super Types

- ComputerMemory

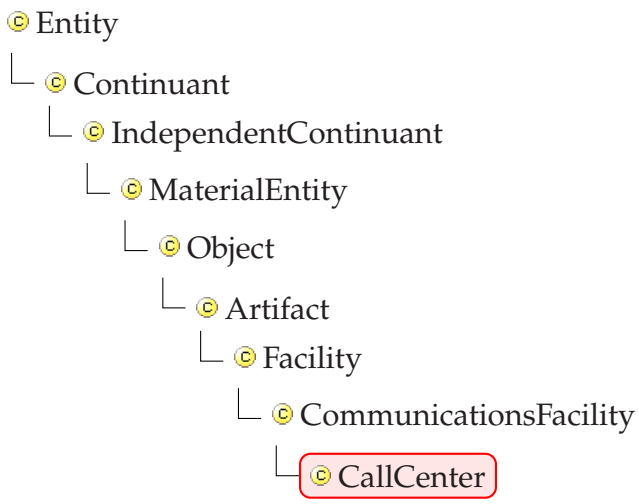
11.1.38 CallCenter

Definition
A Communications Facility that is designed to house Groups of Agents who respond to inquiries for an Organization.

Annotations

- **Label:** Call Center
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/CallCenter

Hierarchy



Direct Super Types

- CommunicationsFacility

11.1.39 CentralProcessingUnit

Definition
A Processing Unit that is designed to execute the basic arithmetic, logical, control, and input/output operations prescribed by some Computer Program.

Annotations

- **Label:** Central Processing Unit
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/CentralProcessingUnit

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - MaterialEntity
        - Object
          - Artifact
            - InformationProcessingArtifact
              - ProcessingUnit
                - CentralProcessingUnit

Direct Super Types

- ProcessingUnit

11.1.40 ChecksumMeasurement

Definition
A Ratio Measurement Information Content Entity that is a measurement of the number of bits in a transmission unit that is included with the unit so that the receiver can check to see whether the same number of bits arrived.

Annotations

- **Label:** Checksum Measurement
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/ChecksumMeasurement

Hierarchy

- Entity
  - Continuant
    - GenericallyDependentContinuant
      - InformationContentEntity
        - DescriptiveInformationContentEntity
          - MeasurementInformationContentEntity
            - RatioMeasurementInformationContentEntity
              - ChecksumMeasurement

Direct Super Types

- RatioMeasurementInformationContentEntity

11.1.41 ChildComputerProgramExecution

Definition
A Computer Program Execution that is started by some other Computer Program Execution.

Annotations

- **Label:** Child Computer Program Execution
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/ChildComputerProgramExecution

Hierarchy

- Entity
  - Occurrent
    - Process
      - MechanicalProcess
        - ComputerProgramExecution
          - ChildComputerProgramExecution

Direct Super Types

- ComputerProgramExecution

Direct Sub Types

- OrphanComputerProgramExecution
- ZombieComputerProgramExecution

Equivalent Classes

- (ComputerProgramExecution processStartedBy ComputerProgramExecution)

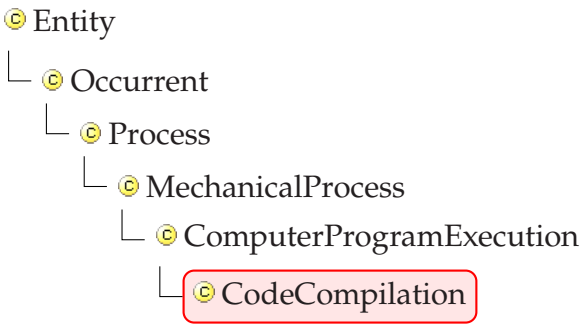
11.1.42 CodeCompilation

Definition
A Computer Program Execution in which some Information Bearing Entity that uses a Compiled Language is translated into some Information Bearing Entity that uses a Low-Level Programming Language.

Annotations

- **Label:** Code Compilation
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/CodeCompilation

Hierarchy



Direct Super Types

- ComputerProgramExecution
- hasCausalFactor CodeCompiler

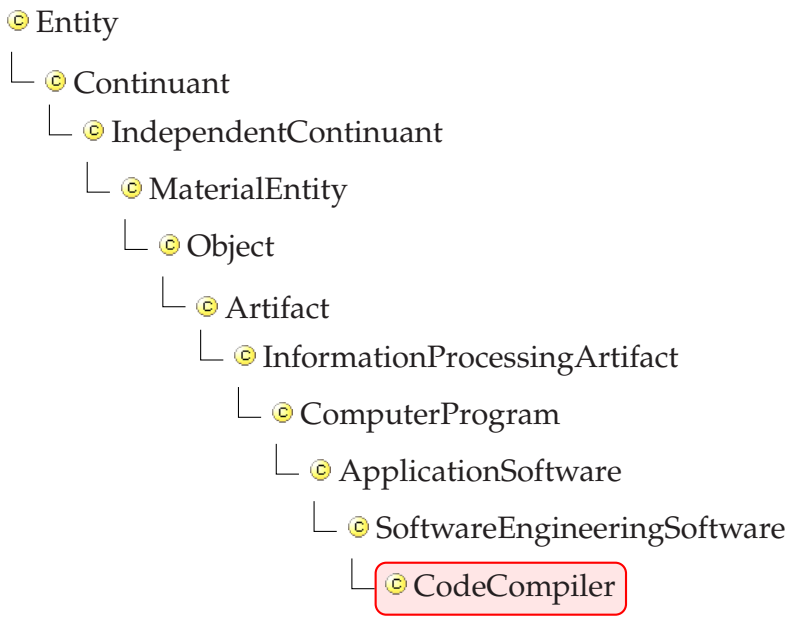
11.1.43 CodeCompiler

Definition
A Software Engineering Application that translates another Computer Program written in one Programming Language into another Programming Language, most often to create an Executable Program.

Annotations

- **Label:** Code Compiler
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/CodeCompiler

Hierarchy



Direct Super Types

- SoftwareEngineeringSoftware

11.1.44 CodeInterpreter

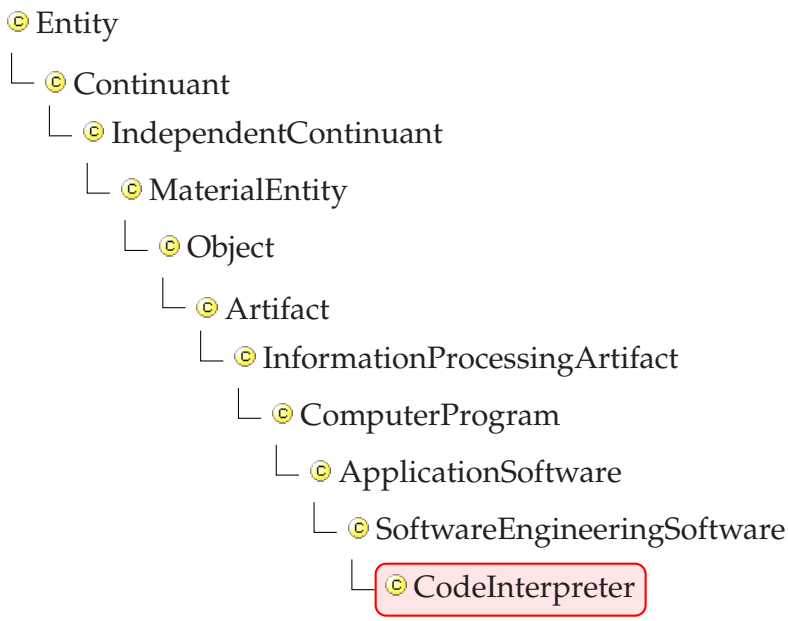
Definition
A Software Engineering Application that directly executes the instructions of some Executable Program without compiling those instructions into some Machine Language.

Annotations

- **Label:** Code Interpreter

- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/CodeInterpreter

Hierarchy



Direct Super Types

- SoftwareEngineeringSoftware

11.1.45 CompressedDataFormat

Definition
A File Format that prescribes a way of encoding information which uses fewer Bits than the original encoding of that information.

Annotations

- **Label:** Compressed Data Format
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/CompressedDataFormat

Hierarchy

- Entity
  - Continuant
    - GenericallyDependentContinuant
      - InformationContentEntity
        - DirectiveInformationContentEntity
          - FileFormat
            - CompressedDataFormat

Direct Super Types

- FileFormat

11.1.46 ComputerAggregate

Definition
An Object Aggregate that consists of Computers.

Annotations

- **Label:** Computer Aggregate
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/ComputerAggregate

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - MaterialEntity
        - ObjectAggregate
          - ComputerAggregate

Direct Super Types

- ObjectAggregate

11.1.47 ComputerComponent

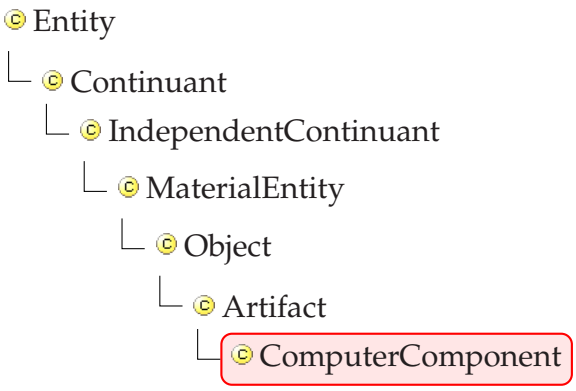
Definition

An Artifact designed to be a component of a Computer.

Annotations

- **Label:** Computer Component
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/ComputerComponent

Hierarchy



Direct Super Types

- Artifact

Direct Sub Types

- InputDevice
- OutputDevice

11.1.48 ComputerKeyboard

Definition

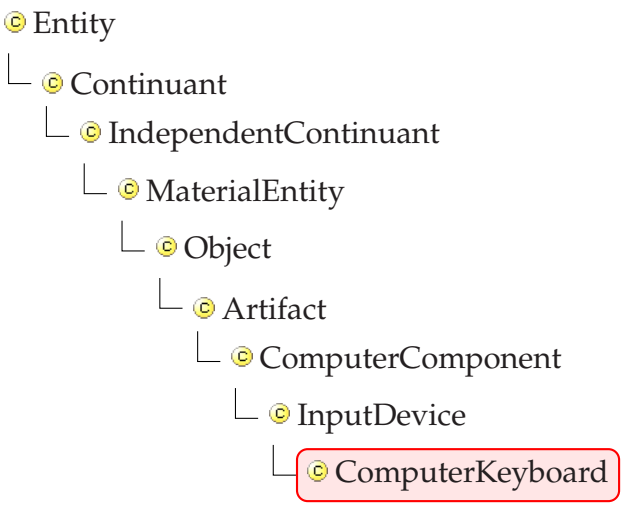
An Input Device designed to enable users to input text and control a Computer via a standardized arrangement of keys.

Annotations

- **Label:** Computer Keyboard
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology

- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/ComputerKeyboard

Hierarchy



Direct Super Types

- InputDevice

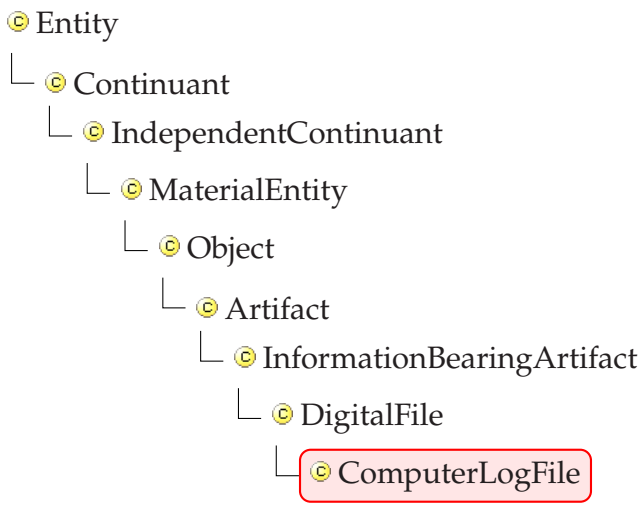
11.1.49 ComputerLogFile

Definition
An Information Bearing Artifact that bears information recording the activity of a device or process within some Computer.

Annotations

- **Label:** Computer Log File
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/ComputerLogFile

Hierarchy



Direct Super Types

- DigitalFile

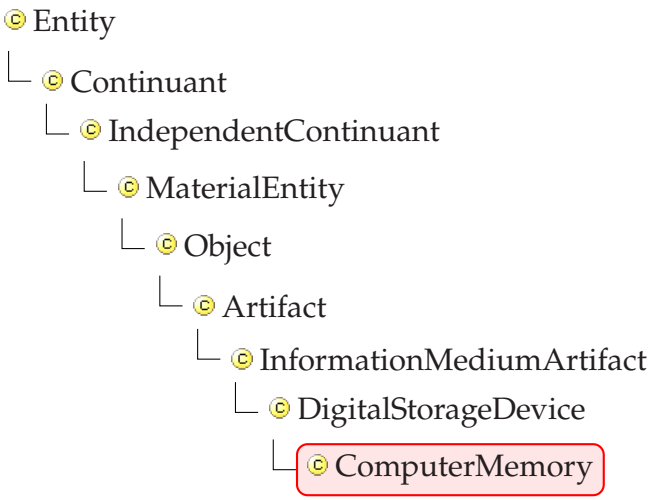
11.1.50 ComputerMemory

Definition
A Digital Storage Device that stores some Information Content Entity for immediate use in a Computer.

Annotations

- **Label:** Computer Memory
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/ComputerMemory

Hierarchy



Direct Super Types

- DigitalStorageDevice

Direct Sub Types

- CacheMemory
- RandomAccessMemory

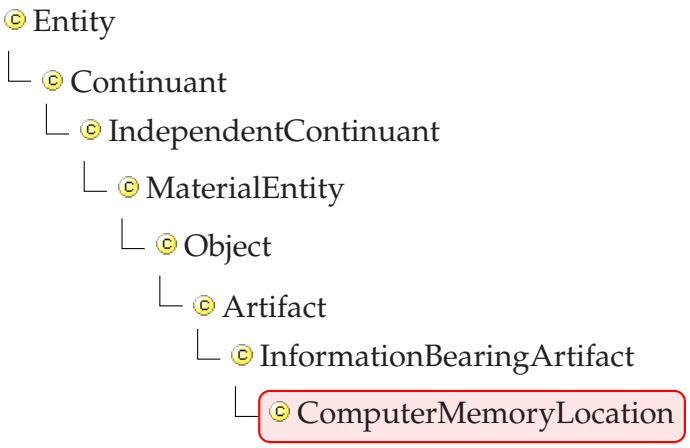
11.1.51 ComputerMemoryLocation

Definition
An Information Bearing Artifact that is part of some Computer Memory and bears some Information Content Entity.

Annotations

- **Label:** Computer Memory Location
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/ComputerMemoryLocation

Hierarchy



Direct Super Types

- InformationBearingArtifact

Direct Sub Types

- ComputerObject
- DataBuffer

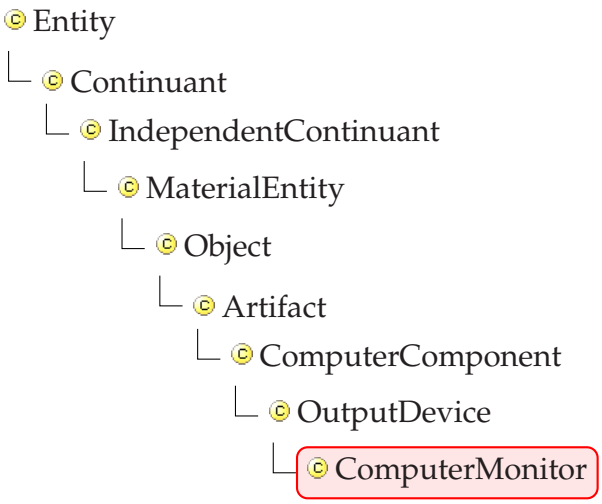
11.1.52 ComputerMonitor

Definition
An Output Device that displays information in pictorial form

Annotations

- **Label:** Computer Monitor
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/ComputerMonitor

Hierarchy



Direct Super Types

- OutputDevice

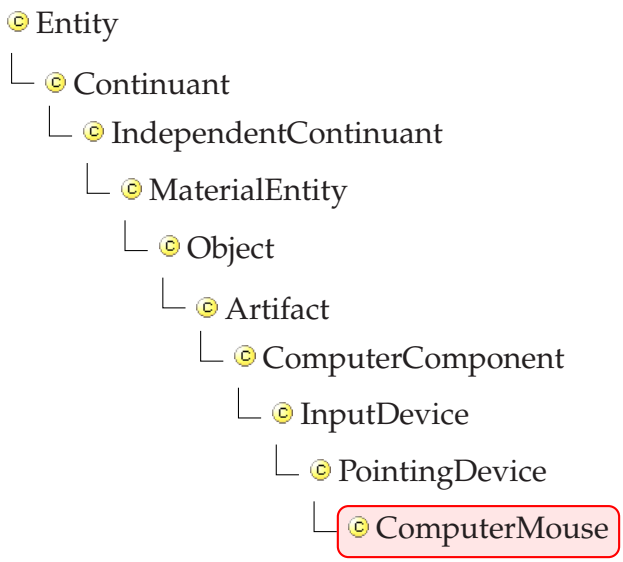
11.1.53 ComputerMouse

Definition
A Pointing Device that detects two-dimensional motion relative to a surface and typically translates this motion of a pointer on a display, which allows a smooth control of the graphical user interface of a computer.

Annotations

- **Label:** Computer Mouse
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/ComputerMouse

Hierarchy



Direct Super Types

- PointingDevice

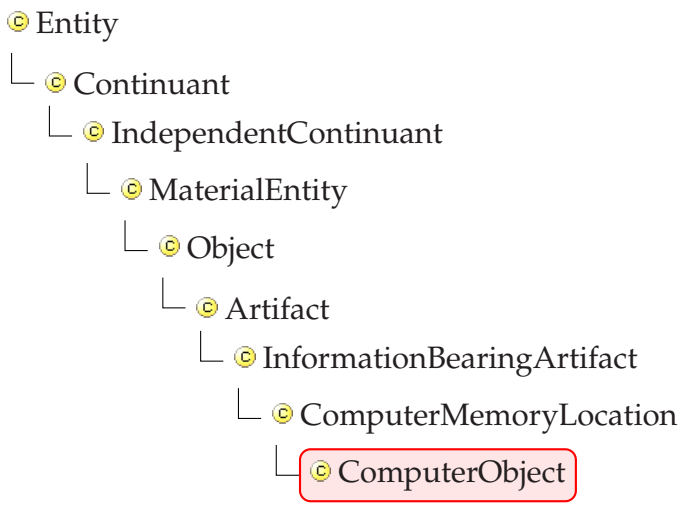
11.1.54 ComputerObject

Definition
A Computer Memory Location that consists of a variable, function, or data structure that can be manipulated by a Computer Program or Subroutine.

Annotations

- **Label:** Computer Object
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/ComputerObject

Hierarchy



Direct Super Types

- ComputerMemoryLocation

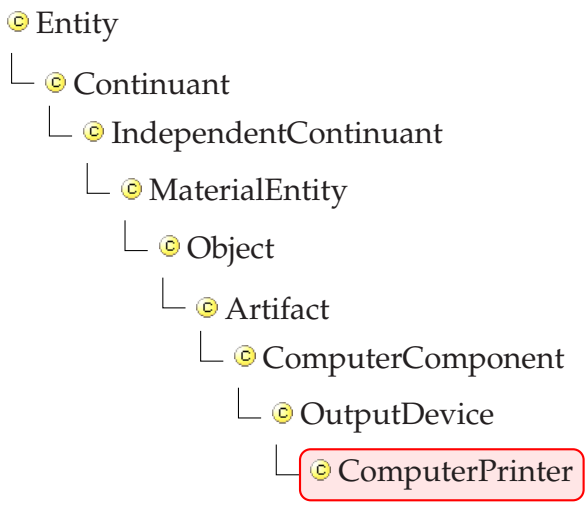
11.1.55 ComputerPrinter

Definition
An Output Device which makes a persistent representation of graphics or text, usually on paper.

Annotations

- **Label:** Computer Printer
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/ComputerPrinter

Hierarchy



Direct Super Types

- OutputDevice

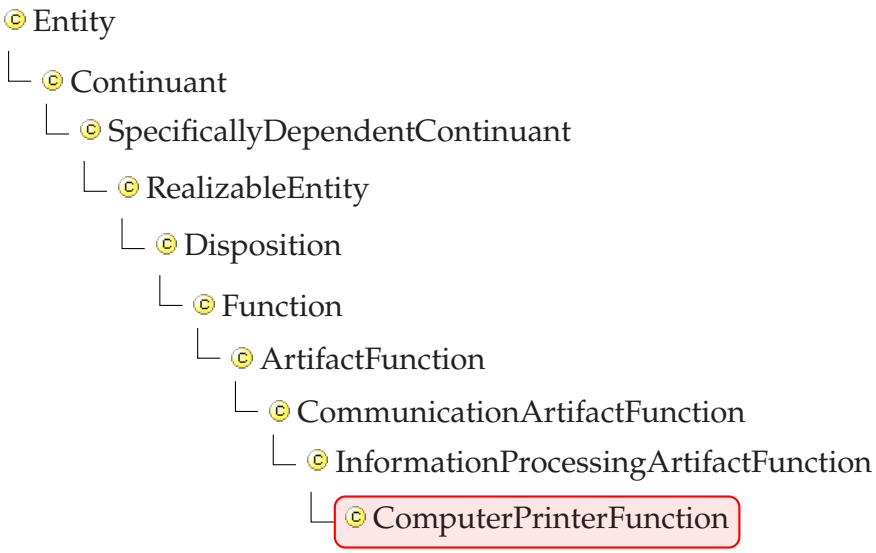
11.1.56 ComputerPrinterFunction

Definition
An Information Processing Artifact Function that when realized is in a process of transforming a Digital File into a persistent Document or Image.

Annotations

- **Label:** Computer Printer Function
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/ComputerPrinterFunction

Hierarchy



Direct Super Types

- InformationProcessingArtifactFunction

11.1.57 ComputerProgram

Definition
An Information Processing Artifact that consists of a collection of Computer Functions that are designed to be executed by a Processing Unit to perform a specific task.

Annotations

- **Label:** Computer Program
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/ComputerProgram

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - MaterialEntity
        - Object
          - Artifact
            - InformationProcessingArtifact
              - ComputerProgram

Direct Super Types

- InformationProcessingArtifact

Direct Sub Types

- Adware
- ApplicationSoftware
- Malware
- NetworkServer
- Spyware
- SystemSoftware

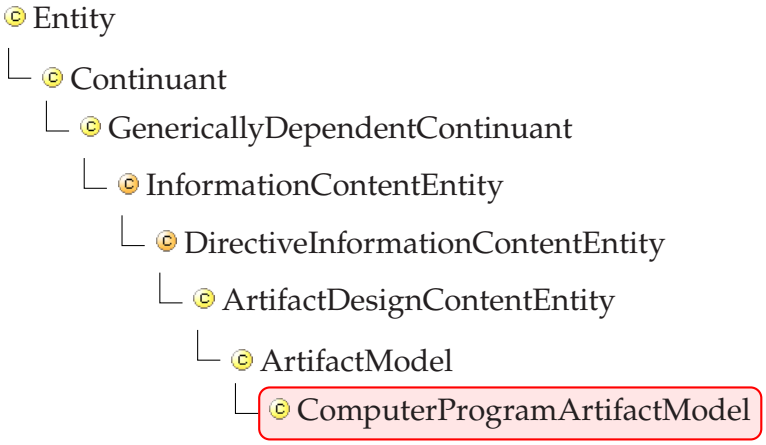
11.1.58 ComputerProgramArtifactModel

Definition
An Artifact Model that prescribes a Computer Program.

Annotations

- **Label:** Computer Program Artifact Model
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/ComputerProgramArtifactModel

Hierarchy



Direct Super Types

- ArtifactModel
- prescribes ComputerProgram

Direct Sub Types

- DatabaseSoftwareApplicationModel
- OperatingSystemSoftwareModel

11.1.59 ComputerProgramExecution

Definition
A Mechanical Process that is comprised of a sequence of simple operations performed by a Central Processing Unit or some Computer Program according to the instructions of some Algorithm.

Annotations

- **Label:** Computer Program Execution
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/ComputerProgramExecution

Hierarchy

- Entity
  - Occurrent
    - Process
      - MechanicalProcess
        - ComputerProgramExecution

Direct Super Types

- MechanicalProcess
- prescribedBy Algorithm

Direct Sub Types

- AggregationProcess
- Anonymization
- Authentication
- Authorization
- ChildComputerProgramExecution
- CodeCompilation
- DataTransfer
- DigitalFileProcess
- Encryption
- NetworkConnectionExecution
- ParentComputerProgramExecution
- RemoteAccess

11.1.60 ComputerSystem

Definition
An Object Aggregate that has a Computer and some Computer Peripheral Device as members.

Annotations

- **Label:** Computer System
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/ComputerSystem

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - MaterialEntity
        - ObjectAggregate
          - ComputerSystem

Direct Super Types

- ObjectAggregate

11.1.61 ComputerTablet

Definition

A Computer that is designed to be portable, has a touchscreen, and does not have a fixed hardware keyboard.

Annotations

- **Label:** Computer Tablet
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/ComputerTablet

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - MaterialEntity
        - Object
          - Artifact
            - InformationProcessingArtifact
              - Computer
                - ComputerTablet

Direct Super Types

- Computer

11.1.62 ComputerVirus

Definition
Malware that is designed to replicate itself by modifying existent Computer Programs and inserting its own code.

Annotations

- **Label:** Computer Virus
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/ComputerVirus

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - MaterialEntity
        - Object
          - Artifact
            - InformationProcessingArtifact
              - ComputerProgram
                - Malware
                - ComputerVirus

Direct Super Types

- Malware

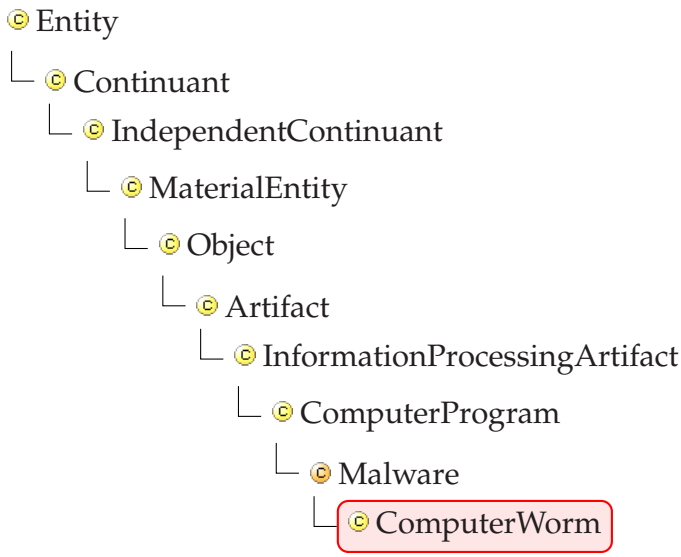
11.1.63 ComputerWorm

Definition
Malware that is designed to replicate itself in order to spread to other Computers.

Annotations

- **Label:** Computer Worm
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/ComputerWorm

Hierarchy



Direct Super Types

- Malware

11.1.64 ComputingBandwidthMeasurement

Definition
A Ratio Measurement Information Content Entity that is a measurement of the rate of Bit transfer over time.

Annotations

- **Label:** Computing Bandwidth Measurement
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/ComputingBandwidthMeasurement

Hierarchy

- Entity
  - Continuant
    - GenericallyDependentContinuant
      - InformationContentEntity
        - DescriptiveInformationContentEntity
          - MeasurementInformationContentEntity
            - RatioMeasurementInformationContentEntity
              - ComputingBandwidthMeasurement

Direct Super Types

- RatioMeasurementInformationContentEntity

11.1.65 Constraint

Definition
A Directive Information Content Entity that prescribes a limitation of an entity.

Annotations

- **Label:** Constraint
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/Constraint

Hierarchy

- Entity
  - Continuant
    - GenericallyDependentContinuant
      - InformationContentEntity
        - DirectiveInformationContentEntity
          - Constraint

Direct Super Types

- DirectiveInformationContentEntity

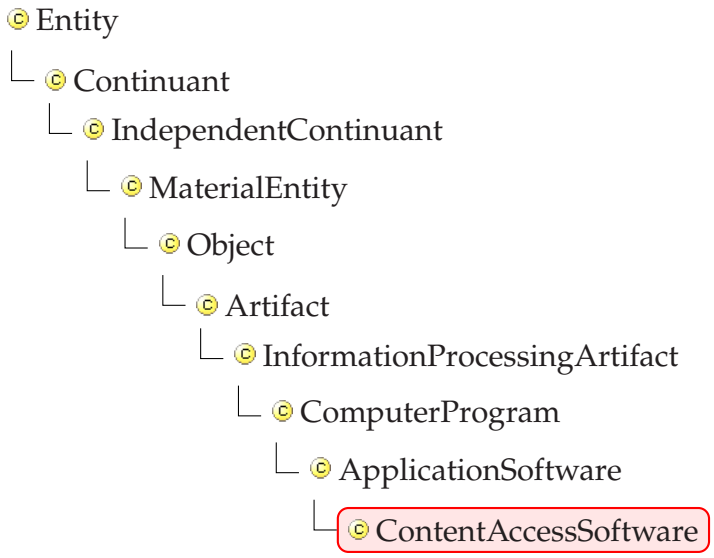
11.1.66 ContentAccessSoftware

Definition
Application Software that is designed to enable a user to access some information content without editing.

Annotations

- **Label:** Content Access Software
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/ContentAccessSoftware

Hierarchy



Direct Super Types

- ApplicationSoftware

Direct Sub Types

- WebBrowser

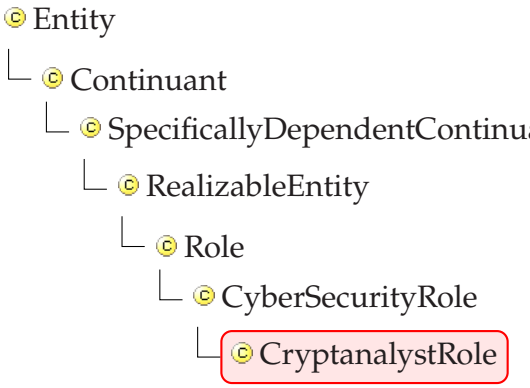
11.1.67 CryptanalystRole

Definition
A Cyber Security Role that inheres in an Agent by virtue of its responsibility to decipher secret codes and write codes that cannot be cracked by hackers

Annotations

- **Label:** Cryptanalyst Role
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/CryptanalystRole

Hierarchy



Direct Super Types

- CyberSecurityRole

11.1.68 CryptographerRole

Definition
A Cyber Security Role that inheres in an Agent by virtue of its responsibility to develop algorithms, ciphers and security systems to encrypt sensitive information and provide privacy for people and corporations.

Annotations

- **Label:** Cryptographer Role
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/CryptographerRole

Hierarchy

- Entity
  - Continuant
    - SpecificallyDependentContinuant
      - RealizableEntity
        - Role
          - CyberSecurityRole
            - CryptographerRole

Direct Super Types

- CyberSecurityRole

11.1.69 CyberAct

Definition
A Cyber Act is an Act that occurs through cyberspace.

Annotations

- **Label:** Cyber Act
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/CyberAct

Hierarchy

- Entity
  - Occurrent
    - Process
      - Act
        - CyberAct

Direct Super Types

- Act

Direct Sub Types

- CyberAttack

11.1.70 CyberAttack

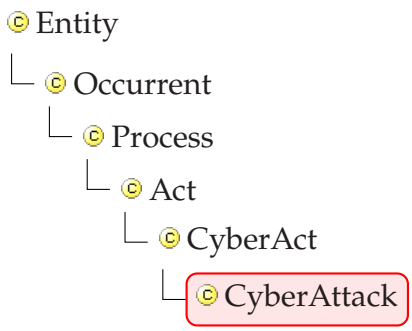
An act that is intended to caused harm and is wrongful against another without legal justification or excuse.

Definition
Cyber Attack is a Cyber Act that is malicious and directed at a portion of cyber space.

Annotations

- **Label:** Cyber Attack
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/CyberAttack

Hierarchy



Direct Super Types

- CyberAct

Direct Sub Types

- DataDestructionAttack
- DenialOfService
- Phishing

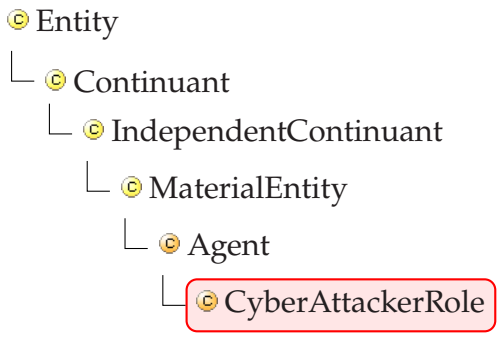
11.1.71 CyberAttackerRole

Definition
A Material Entity that is agent in a Cyber Attack.

Annotations

- **Label:** Cyber Attacker
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/CyberAttackerRole

Hierarchy



Direct Super Types

- Agent

Equivalent Classes

- agentIn CyberAttack

11.1.72 CyberDefenderRole

Definition

A Cyber Security Role that inheres in an Agent by virtue of its responsibility for preventing, detecting and providing timely responses to attacks or threats against computers or computer networks.

Annotations

- **Label:** Cyber Defender Role
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/CyberDefenderRole

Hierarchy

- Entity
  - Continuant
    - SpecificallyDependentContinuant
      - RealizableEntity
        - Role
          - CyberSecurityRole
            - CyberDefenderRole

Direct Super Types

- CyberSecurityRole

11.1.73 CyberExploit

Definition
An Artifact that is used by an Agent in a Cyber Attack to facilitate the realization of a Cyber Vulnerability.

Annotations

- **Label:** Cyber Exploit Artifact
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/CyberExploit

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - MaterialEntity
        - Object
          - Artifact
            - CyberExploit

Direct Super Types

- Artifact

Equivalent Classes

- ((InformationBearingArtifact ⊔ InformationProcessingArtifact) ⊓ ∃ isUsedBy (MaterialEntity ⊓ ∃ agentIn CyberAttack))

11.1.74 CyberObjectiveSpecification

Definition
An Objective that prescribes a projected state that some Agent intends to achieve in cyberspace.

Annotations

- **Label:** Cyber Objective Specification
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/CyberObjectiveSpecification

Hierarchy

- Entity
  - Continuant
    - GenericallyDependentContinuant
      - InformationContentEntity
        - DirectiveInformationContentEntity
          - Objective
            - CyberObjectiveSpecification

Direct Super Types

- Objective

11.1.75 CyberPlatform

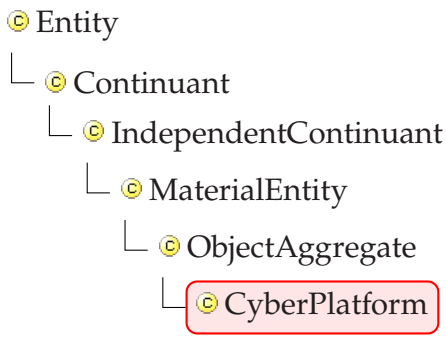
Definition
An Object Aggregate which consists of an operating system and underlying hardware determining the physical environment in which software executes.

Annotations

- **Label:** Cyber Platform

- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/CyberPlatform

Hierarchy



Direct Super Types

- ObjectAggregate

11.1.76 CyberSecurityAdministratorRole

Definition
A Cyber Security Role that inheres in an Agent by virtue of its responsibility to ensure the network's security, protect against unauthorized access, modification, or destruction, and troubleshoot any access problems.

Annotations

- **Label:** Cyber Security Administrator Role
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/CyberSecurityAdministratorRole

Hierarchy

- Entity
  - Continuant
    - SpecificallyDependentContinuant
      - RealizableEntity
        - Role
          - CyberSecurityRole
            - CyberSecurityAdministratorRole

Direct Super Types

- CyberSecurityRole

11.1.77 CyberSecurityAnalystRole

Definition
A Cyber Security Role that inheres in an Agent by virtue of its responsibility to design and implement security systems to protect a company or organization's computer networks from cyber attacks, and help set and maintain security standards.

Annotations

- **Label:** Cyber Security Analyst Role
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/CyberSecurityAnalystRole

Hierarchy

- Entity
  - Continuant
    - SpecificallyDependentContinuant
      - RealizableEntity
        - Role
          - CyberSecurityRole
            - CyberSecurityAnalystRole

Direct Super Types

- CyberSecurityRole

11.1.78 CyberSecurityArchitectRole

Definition
A Cyber Security Role that inheres in an Agent by virtue of its responsibility to design, build and oversee the implementation of network and computer security for an organization.

Annotations

- **Label:** Cyber Security Architect Role
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/CyberSecurityArchitectRole

Hierarchy

- Entity
  - Continuant
    - SpecificallyDependentContinuant
      - RealizableEntity
        - Role
          - CyberSecurityRole
            - CyberSecurityArchitectRole

Direct Super Types

- CyberSecurityRole

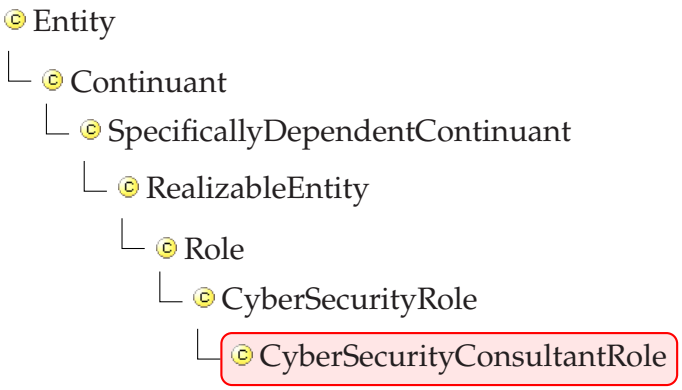
11.1.79 CyberSecurityConsultantRole

Definition
A Cyber Security Role that inheres in an Agent by virtue of its responsibility to design and implement the best security solutions for an organization's needs as well as talk to stakeholders, draw up budgets, supervise teams, and conduct research.

Annotations

- **Label:** Cyber Security Consultant Role
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/CyberSecurityConsultantRole

Hierarchy



Direct Super Types

- CyberSecurityRole

11.1.80 CyberSecurityEngineerRole

Definition
A Cyber Security Role that inheres in an Agent by virtue of its responsibility to help businesses by protecting their computer and networking systems from potential hackers and cyber-attacks.

Annotations

- **Label:** Cyber Security Engineer Role
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/CyberSecurityEngineerRole

Hierarchy

- Entity
  - Continuant
    - SpecificallyDependentContinuant
      - RealizableEntity
        - Role
          - CyberSecurityRole
            - **CyberSecurityEngineerRole**

Direct Super Types

- CyberSecurityRole

11.1.81 CyberSecurityProtectionPlan

Definition
A Plan that prescribes Acts which protect the cyber environment of a user or organization.

Annotations

- **Label:** Cyber Security Protection Plan
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/CyberSecurityProtectionPlan

Hierarchy

- Entity
  - Continuant
    - GenericallyDependentContinuant
      - InformationContentEntity
        - DirectiveInformationContentEntity
          - Plan
            - **CyberSecurityProtectionPlan**

Direct Super Types

- Plan

11.1.82 CyberSecurityRole

Definition

A Role that is realized in an Act wherein its bearer attempts to prevent and mitigate Cyber Attacks.

Annotations

- **Label:** Cyber Security Role
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/CyberSecurityRole

Hierarchy

- Entity
  - Continuant
    - SpecificallyDependentContinuant
      - RealizableEntity
        - Role
          - CyberSecurityRole

Direct Super Types

- Role

Direct Sub Types

- CryptanalystRole
- CryptographerRole
- CyberDefenderRole
- CyberSecurityAdministratorRole
- CyberSecurityAnalystRole
- CyberSecurityArchitectRole
- CyberSecurityConsultantRole
- CyberSecurityEngineerRole
- CyberSecuritySoftwareDeveloperRole

11.1.83 CyberSecuritySoftwareDeveloperRole

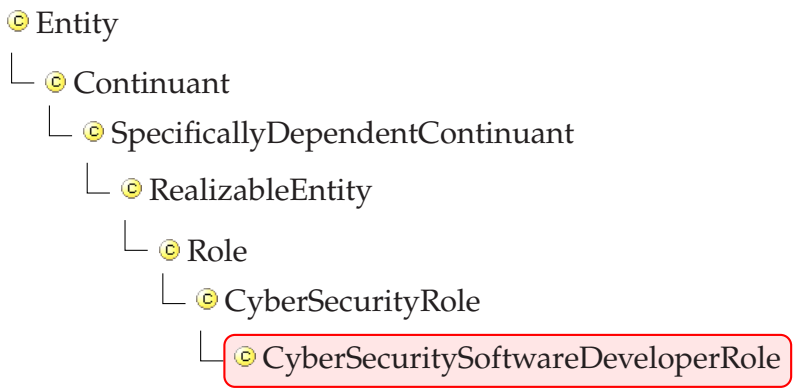
Definition

A Cyber Security Role that inheres in an Agent by virtue of its responsibility to develop security software and integrates security into applications software during the course of design and development.

Annotations

- **Label:** Cyber Security Software Developer Role
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/CyberSecuritySoftwareDeveloperRole

Hierarchy



Direct Super Types

- CyberSecurityRole

11.1.84 CyberThreatNominalMeasurement

Definition

A Nominal Measurement Information Content Entity that is about the potential impact of a Cyber Vulnerability when realized in a Cyber Attack.

Annotations

- **Label:** Cyber Threat Nominal Measurement
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/CyberThreatNominalMeasurement

Hierarchy

- Entity
  - Continuant
    - GenericallyDependentContinuant
      - InformationContentEntity
        - DescriptiveInformationContentEntity
          - MeasurementInformationContentEntity
            - NominalMeasurementInformationContentEntity
              - CyberThreatNominalMeasurement

Direct Super Types

- NominalMeasurementInformationContentEntity

11.1.85 CyberVulnerability

Definition
A Vulnerability that is realized by a Cyber Attack interfering with or destroying a device's ability to function normally.

Annotations

- **Label:** Cyber Vulnerability
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/CyberVulnerability

Hierarchy

- Entity
  - Continuant
    - SpecificallyDependentContinuant
      - RealizableEntity
        - Disposition
          - Vulnerability
            - CyberVulnerability

Direct Super Types

- Vulnerability
- (∃ realizedIn CyberAttack ⊓ ∀ realizedIn CyberAttack)

Direct Sub Types

- CVEVulnerability
- FirmwareVulnerability
- MemoryCorruption

11.1.86 DHCPServiceFunction

Definition
A Network Service Function that when realized is in a process of dynamically assigning an Internet Protocol Address and other network configuration parameters to devices on a Computer Network.

Annotations

- **Label:** DHCP Service Function
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/DHCPServiceFunction

Hierarchy

- Entity
  - Continuant
    - SpecificallyDependentContinuant
      - RealizableEntity
        - Disposition
          - Function
            - ArtifactFunction
              - CommunicationArtifactFunction
                - InformationProcessingArtifactFunction
                  - NetworkServiceFunction
                    - DHCPServiceFunction

Direct Super Types

- NetworkServiceFunction

11.1.87 DNSServiceFunction

Definition
A Network Service Function that when relized is in a process of translating Domain Names to the Internet Protocol Addresses needed for locating and identifying computer services and devices on a Computer Network.

Annotations

- **Label:** DNS Service Function
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/DNSServiceFunction

Hierarchy

- Entity
  - Continuant
    - SpecificallyDependentContinuant
      - RealizableEntity
        - Disposition
          - Function
            - ArtifactFunction
              - CommunicationArtifactFunction
                - InformationProcessingArtifactFunction
                  - NetworkServiceFunction
                    - DNSServiceFunction

Direct Super Types

- NetworkServiceFunction

11.1.88 DarkNetwork

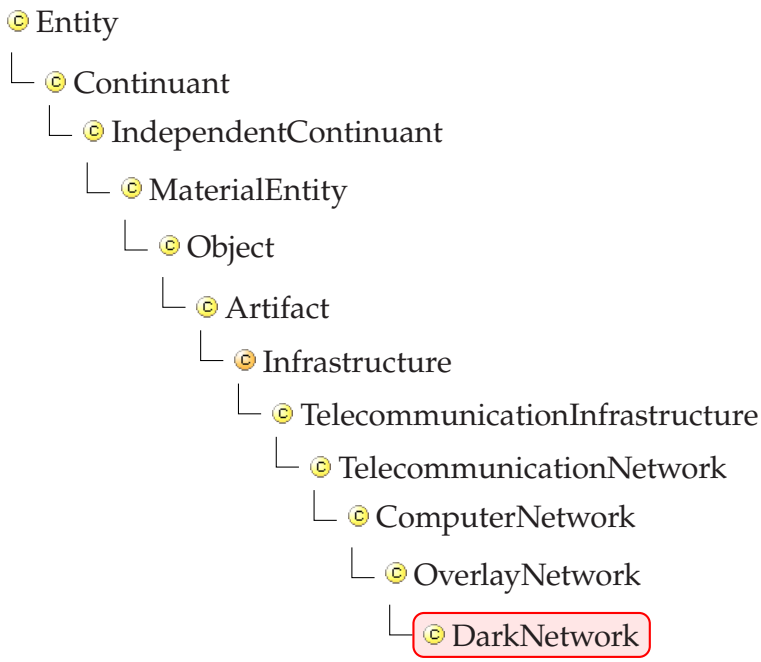
Definition
An Overlay Network that can be accessed only with specific software, configurations, or

authorization, often using non-standard communications protocols or ports.

Annotations

- **Label:** Dark Network
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/DarkNetwork

Hierarchy



Direct Super Types

- OverlayNetwork
- participatesIn Authentication

Direct Sub Types

- AnonymityNetwork

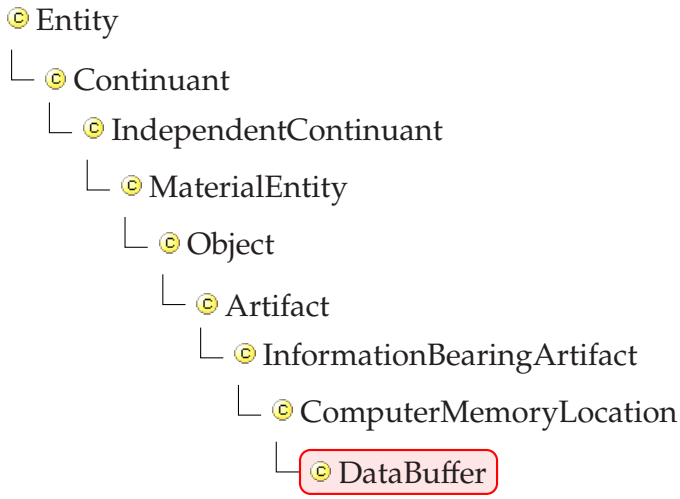
11.1.89 DataBuffer

Definition
A Computer Memory Location that is designed to temporarily store data while it is being moved from one place to another.

Annotations

- **Label:** Data Buffer
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/DataBuffer

Hierarchy



Direct Super Types

- ComputerMemoryLocation

Direct Sub Types

- DigitalClipboard

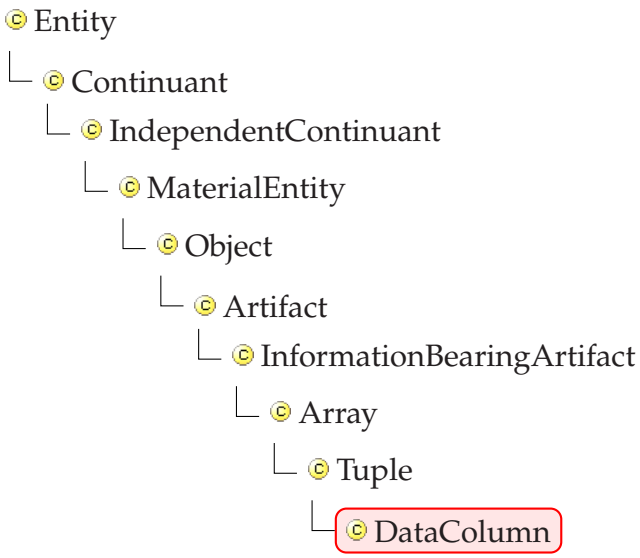
11.1.90 DataColumn

Definition
A Tuple that structures information vertically within a Matrix.

Annotations

- **Label:** Data Column
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/DataColumn

Hierarchy



Direct Super Types

- Tuple

11.1.91 DataDestructionAttack

Definition
A Cyber Attack that results in the modification of tapes, hard disks, and other forms of electronic media, such that the Information Content Entities encoded on them cannot be accessed, read, or used.

Annotations

- **Label:** Data Destruction Attack
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/DataDestructionAttack

Hierarchy

- Entity
  - Occurrent
    - Process
      - Act
        - CyberAct
          - CyberAttack
            - DataDestructionAttack

Direct Super Types

- CyberAttack

11.1.92 DataOffsetDesignator

Definition
A Ratio Measurement Content Entity that is a measurement of the size of an Information Header in number of Bits.

Annotations

- **Label:** Data Offset Measurement
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/DataOffsetDesignator

Hierarchy

- Entity
  - Continuant
    - GenericallyDependentContinuant
      - InformationContentEntity
        - DescriptiveInformationContentEntity
          - MeasurementInformationContentEntity
            - RatioMeasurementInformationContentEntity
              - DataOffsetDesignator

Direct Super Types

- RatioMeasurementInformationContentEntity

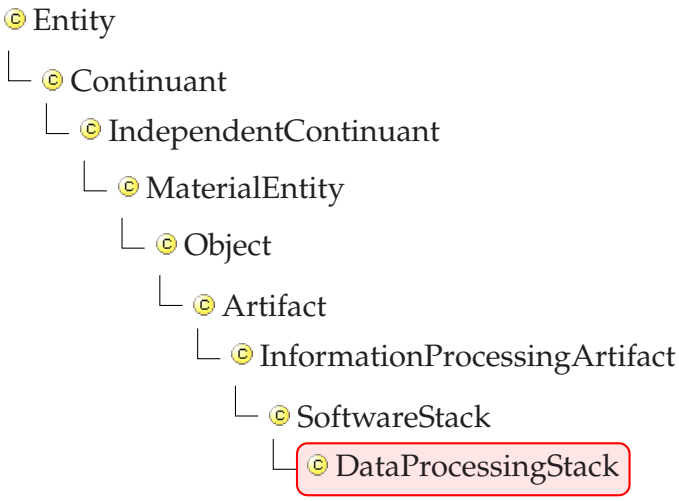
11.1.93 DataProcessingStack

Definition
A Software Stack that enables the validation, sorting, summation, aggregation, analysis, reporting, and classification of Information Content Entities.

Annotations

- **Label:** Data Processing Stack
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/DataProcessingStack

Hierarchy



Direct Super Types

- SoftwareStack

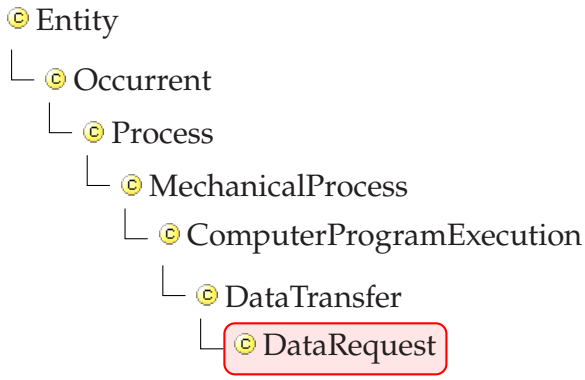
11.1.94 DataRequest

Definition
A Data Transfer in which a sender requests some data from the receiver of that request.

Annotations

- **Label:** Data Request
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/DataRequest

Hierarchy



Direct Super Types

- DataTransfer

11.1.95 DataRequestAcknowledgement

Definition
A Data Transfer in which the receiver of a Data Request sends an acknowledgment that the request has been received.

Annotations

- **Label:** Data Request Acknowledgement
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/DataRequestAcknowledgement

Hierarchy

- Entity
  - Occurrent
    - Process
      - MechanicalProcess
        - ComputerProgramExecution
          - DataTransfer
            - DataRequestAcknowledgement

Direct Super Types

- DataTransfer

11.1.96 DataRow

Definition
A Tuple that structures information horizontally within a Matrix.

Annotations

- **Label:** Data Row
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/DataRow

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - MaterialEntity
        - Object
          - Artifact
            - InformationBearingArtifact
              - Array
                - Tuple
                  - DataRow

Direct Super Types

- Tuple

11.1.97 DataSynchronizationUtility

Definition
A Utility Program that is designed to establish consistency among data from a source to a target data storage and vice versa, and the continuous harmonization of the data over time

Annotations

- **Label:** Data Synchronization Utility
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/DataSynchronizationUtility

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - MaterialEntity
        - Object
          - Artifact
            - InformationProcessingArtifact
              - ComputerProgram
                - SystemSoftware
                  - UtilityProgram
                    - DataSynchronizationUtility

Direct Super Types

- UtilityProgram

Direct Sub Types

- FileSynchronizationUtility
- VersionControlUtility

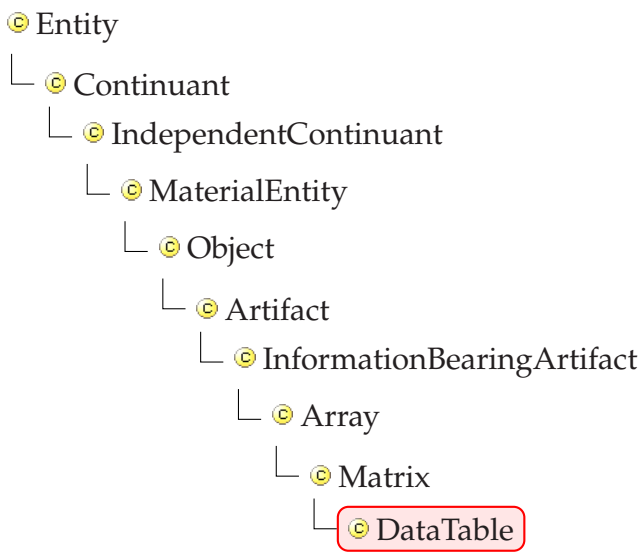
11.1.98 DataTable

Definition
A Matrix which consists of Data Rows and Data Columns.

Annotations

- **Label:** Data Table
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/DataTable

Hierarchy



Direct Super Types

- Matrix
- hasPart DataColumn

Direct Sub Types

- HashTable

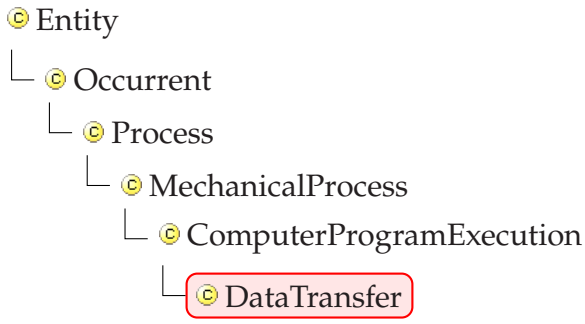
11.1.99 DataTransfer

Definition
A Computer Program Execution in which an Information Content Entity inhering in some Information Bearing Entity is sent to some other Information Bearing Entity, which now bears that Information Content Entity.

Annotations

- **Label:** Data Transfer
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/DataTransfer

Hierarchy



Direct Super Types

- ComputerProgramExecution

Direct Sub Types

- DataRequest
- DataRequestAcknowledgement
- FileTransfer
- PacketTransfer

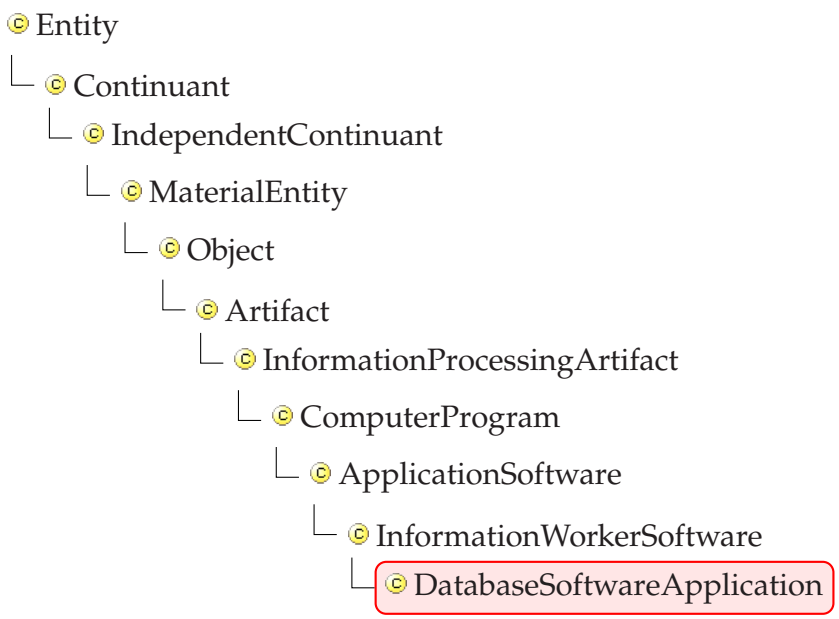
11.1.100 DatabaseSoftwareApplication

Definition
An Information Worker Software Application that is designed to enable a user to create, edit, and query a Database.

Annotations

- **Label:** Database Software Application
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/DatabaseSoftwareApplication

Hierarchy



Direct Super Types

- InformationWorkerSoftware

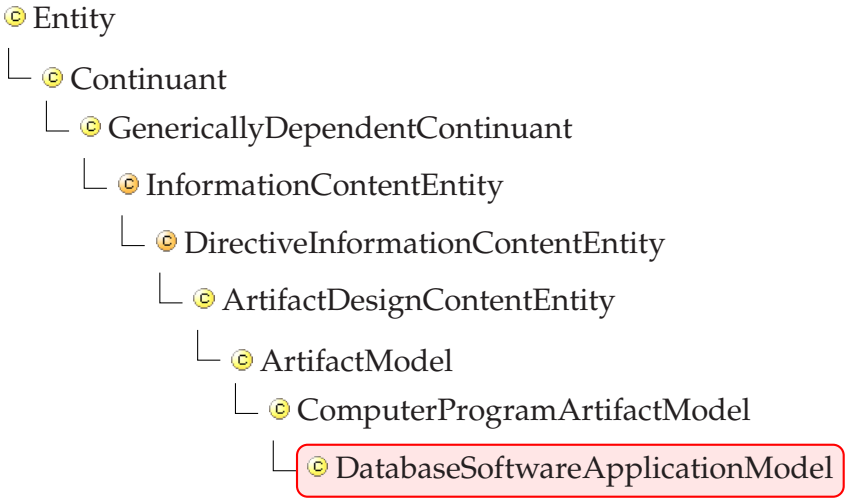
11.1.101 DatabaseSoftwareApplicationModel

Definition
A Computer Program Artifact Model that prescribes some Database Software Application.

Annotations

- **Label:** Database Software Application Model
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/DatabaseSoftwareApplicationModel

Hierarchy



Direct Super Types

- ComputerProgramArtifactModel
- prescribes DatabaseSoftwareApplication

Direct Sub Types

- GraphDatabaseSoftwareApplicationModel
- KeyValueDatabaseSoftwareApplicationModel
- MultiModelDatabaseSoftwareApplicationModel
- RelationalDatabaseSoftwareApplicationModel

11.1.102 DefaultStasis

Definition
A Stasis of Artifact Operationality in which an Artifact's functions are configured to some preselected settings.

Annotations

- **Label:** Default Stasis
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/DefaultStasis

Hierarchy

- Entity
  - Occurrent
    - Process
      - Stasis
        - StasisOfSpecificallyDependentContinuant
          - StasisOfRealizableEntity
            - StasisOfArtifactOperationality
              - DefaultStasis

Direct Super Types

- StasisOfArtifactOperationality

11.1.103 DenialOfService

Definition
A Cyber Attack in which some Agent seeks to make a machine or network resource unavailable to its intended users by temporarily or indefinitely disrupting services of a host connected to a Computer Network.

Annotations

- **Label:** Denial of Service
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/DenialOfService

Hierarchy

- Entity
  - Occurrent
    - Process
      - Act
        - CyberAct
          - CyberAttack
            - DenialOfService

Direct Super Types

- CyberAttack

Direct Sub Types

- SYNFlood

11.1.104 DesignationSpecification

Definition
A Directive Information Content Entity that prescribes how some entities should be designated.

Annotations

- **Label:** Designation Specification
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/DesignationSpecification

Hierarchy

- Entity
  - Continuant
    - GenericallyDependentContinuant
      - InformationContentEntity
        - DirectiveInformationContentEntity
          - DesignationSpecification

Direct Super Types

- DirectiveInformationContentEntity

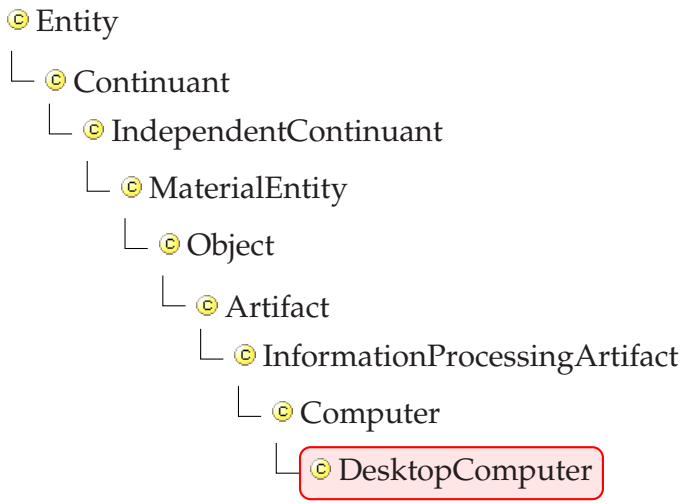
11.1.105 DesktopComputer

Definition
A Computer that is designed not to be portable.

Annotations

- **Label:** Desktop Computer
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/DesktopComputer

Hierarchy



Direct Super Types

- Computer

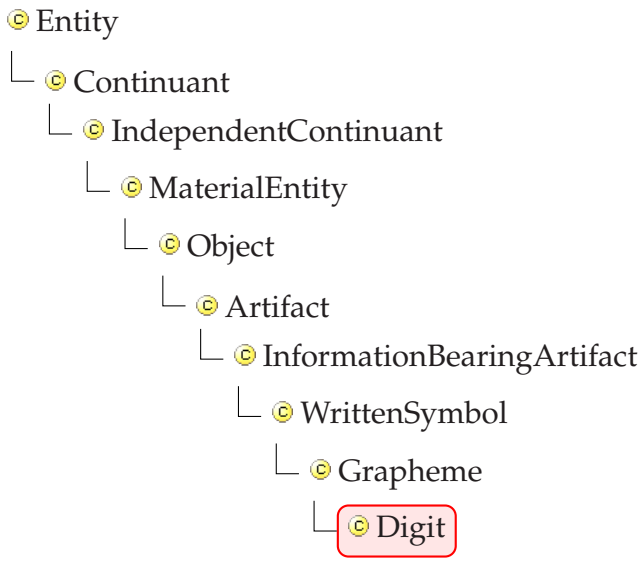
11.1.106 Digit

Definition
A Grapheme that is used either in isolation or combination to represent a number in positional numeral systems.

Annotations

- **Label:** Digit
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/Digit

Hierarchy



Direct Super Types

- Grapheme

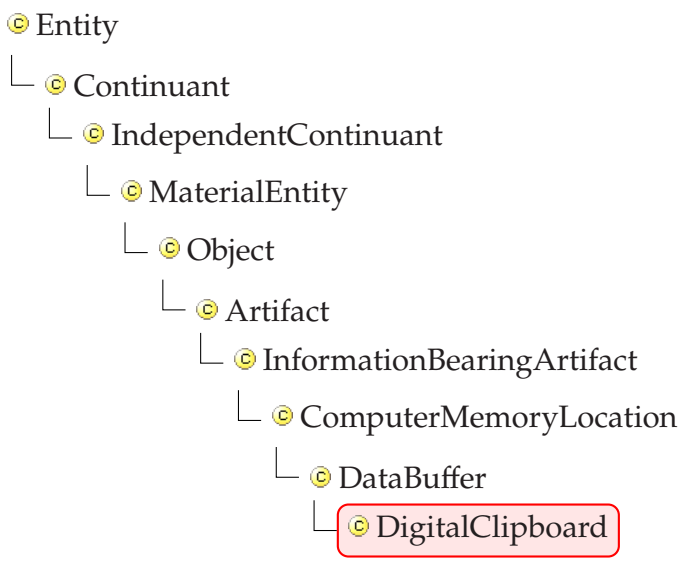
11.1.107 DigitalClipboard

Definition
A Data Buffer that is designed to temporarily store data which is being transferred between Documents or Software Applications.

Annotations

- **Label:** Digital Clipboard
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/DigitalClipboard

Hierarchy



Direct Super Types

- DataBuffer

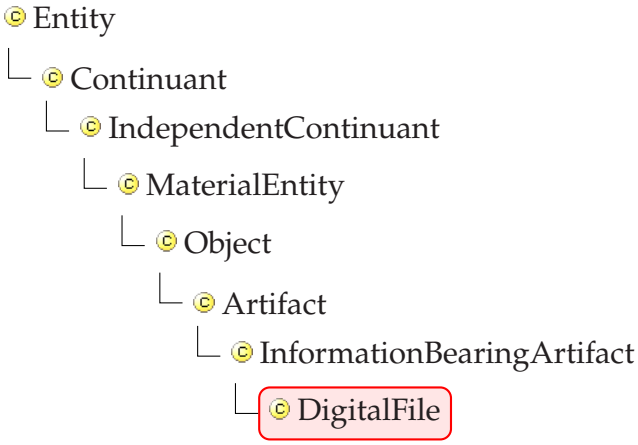
11.1.108 DigitalFile

Definition
An Information Bearing Artifact that consist of a one-dimensional array of bytes on a Digital Storage Device, and which is designed to be easily opened, read, changed, and closed by an Information Processing Artifact.

Annotations

- **Label:** Digital File
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/DigitalFile

Hierarchy



Direct Super Types

- InformationBearingArtifact
- locatedIn DigitalStorageDevice

Direct Sub Types

- BackupFile
- ComputerLogFile
- EncryptedFile
- ExecutableFile
- TextFile
- UserAccount
- WebPage

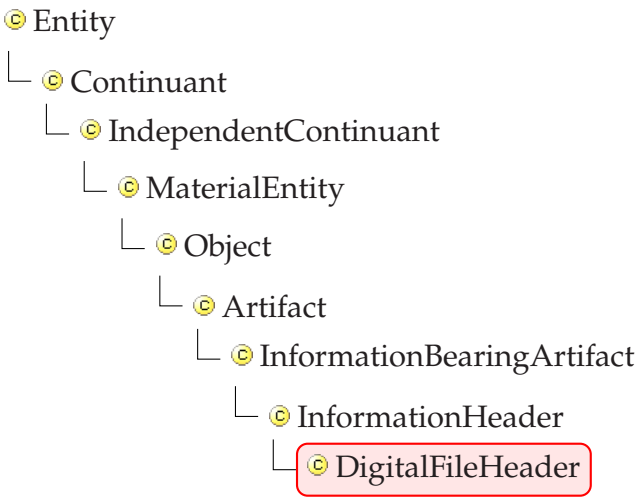
11.1.109 DigitalFileHeader

Definition
An Information Header that is part of a Digital File.

Annotations

- **Label:** Digital File Header
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/DigitalFileHeader

Hierarchy



Direct Super Types

- InformationHeader
- partOf DigitalFile

11.1.110 DigitalFileManagementFunction

Definition
An Information Processing Artifact Function that when realized is in a process of creating, accessing, and managing Digital Files.

Annotations

- **Label:** Digital File Management Function
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/DigitalFileManagementFunction

Hierarchy

- Entity
  - Continuant
    - SpecificallyDependentContinuant
      - RealizableEntity
        - Disposition
          - Function
            - ArtifactFunction
              - CommunicationArtifactFunction
                - InformationProcessingArtifactFunction
                - **DigitalFileManagementFunction**

Direct Super Types

- InformationProcessingArtifactFunction

11.1.111 DigitalFileProcess

Definition
A Computer Program Execution that opens, closes, reads, or writes a Digital File.

Annotations

- **Label:** Digital File Process
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/DigitalFileProcess

Hierarchy

- Entity
  - Occurrent
    - Process
      - MechanicalProcess
        - ComputerProgramExecution
          - **DigitalFileProcess**

Direct Super Types

- ComputerProgramExecution

Direct Sub Types

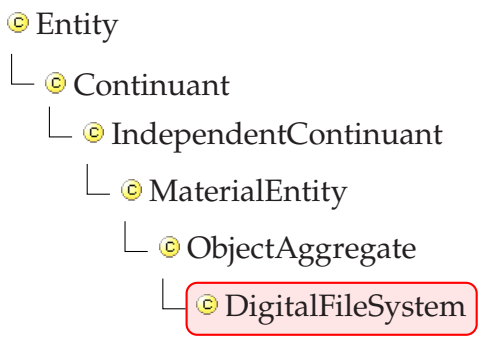
- FileAppending
- FileClosing
- FileOpening
- FileReading
- FileWriting

11.1.112 DigitalFileSystem

Annotations

- **Label:** Digital File System
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/DigitalFileSystem

Hierarchy



Direct Super Types

- ObjectAggregate

11.1.113 DigitalObject

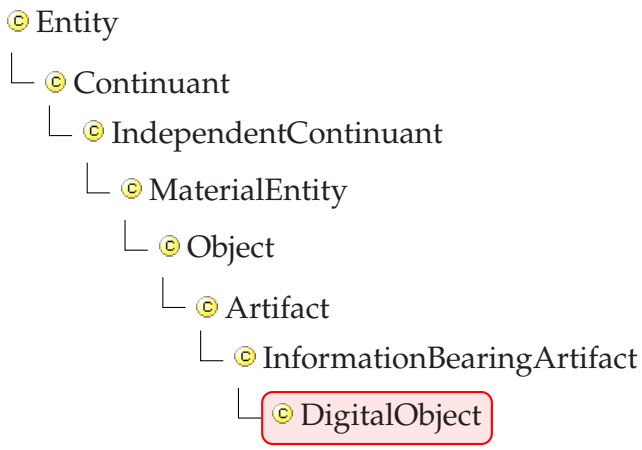
Definition
An Information Bearing Artifact that is designed to bear a collection of related values.

Annotations

- **Label:** Digital Object

- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/DigitalObject

Hierarchy



Direct Super Types

- InformationBearingArtifact

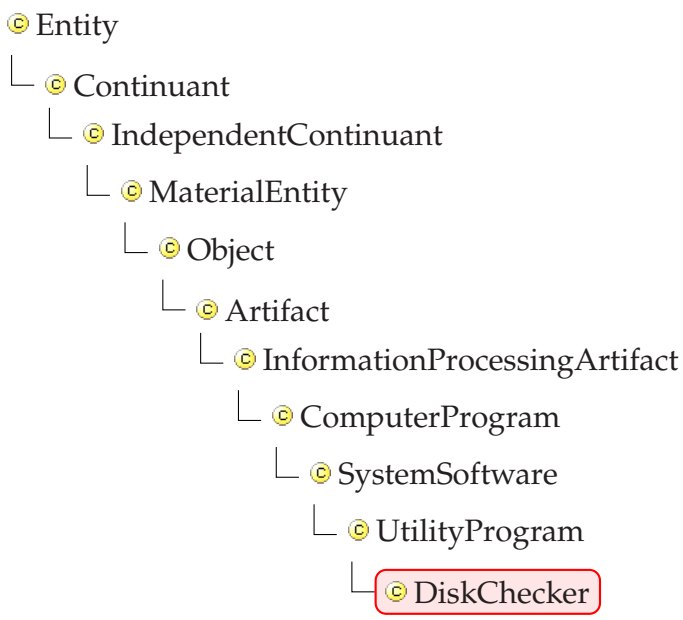
11.1.114 DiskChecker

Definition
A Utility Program that is designed to scan a Hard Disk Drive to file Digital Files that are corrupted in some way.

Annotations

- **Label:** Disk Checker
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/DiskChecker

Hierarchy



Direct Super Types

- UtilityProgram

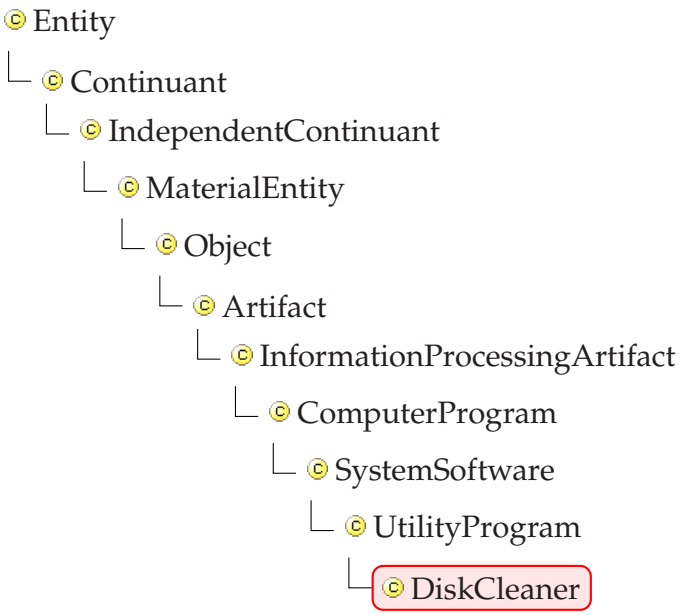
11.1.115 DiskCleaner

Definition
A Utility Program that is designed to find and delete potentially unnecessary or potentially unwanted Digital Files from a Hard Disk Drive.

Annotations

- **Label:** Disk Cleaner
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/DiskCleaner

Hierarchy



Direct Super Types

- UtilityProgram

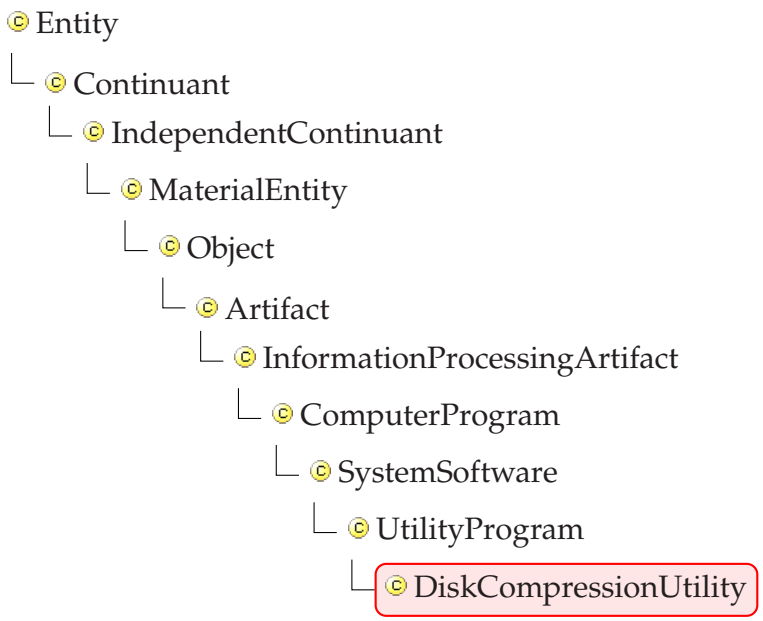
11.1.116 DiskCompressionUtility

Definition
A Utility Program that is designed to increases the amount of information that can be stored on a Hard Disk Drive.

Annotations

- **Label:** Disk Compression Utility
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/DiskCompressionUtility

Hierarchy



Direct Super Types

- UtilityProgram

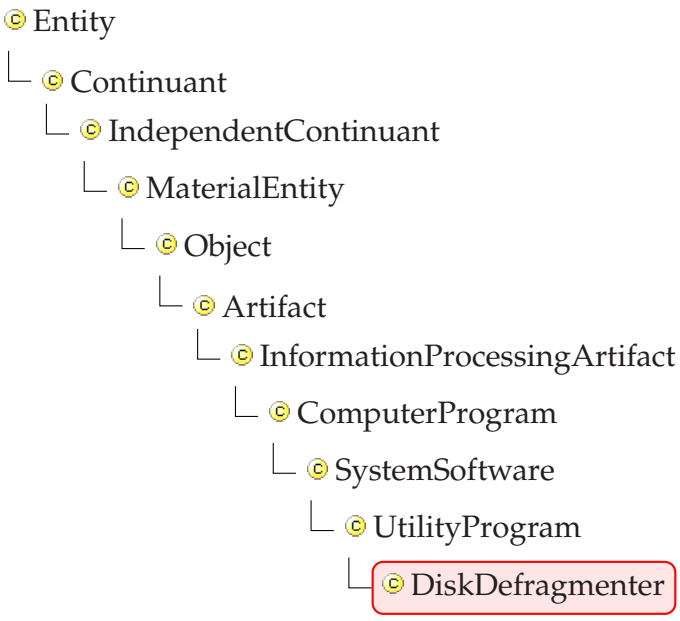
11.1.117 DiskDefragmenter

Definition
A Utility Program that is designed to reduce the extent to which Digital Files are stored non-contiguously on a Hard Disk Drive.

Annotations

- **Label:** Disk Defragmenter
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/DiskDefragmenter

Hierarchy



Direct Super Types

- UtilityProgram

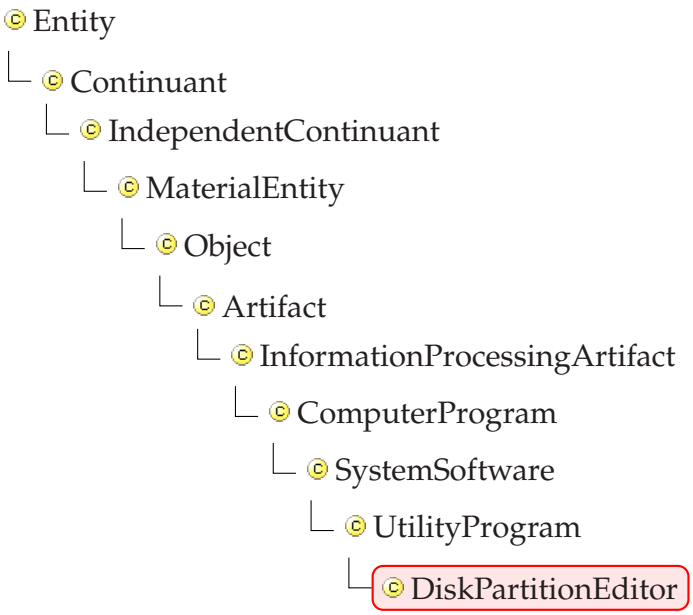
11.1.118 DiskPartitionEditor

Definition
A Utility Program that is designed to divide an individual Hard Disk Drive into multiple logical drives, each with its own Digital File System which can be mounted by the Operating System and treated as an individual drive.

Annotations

- **Label:** Disk Partition Editor
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/DiskPartitionEditor

Hierarchy



Direct Super Types

- UtilityProgram

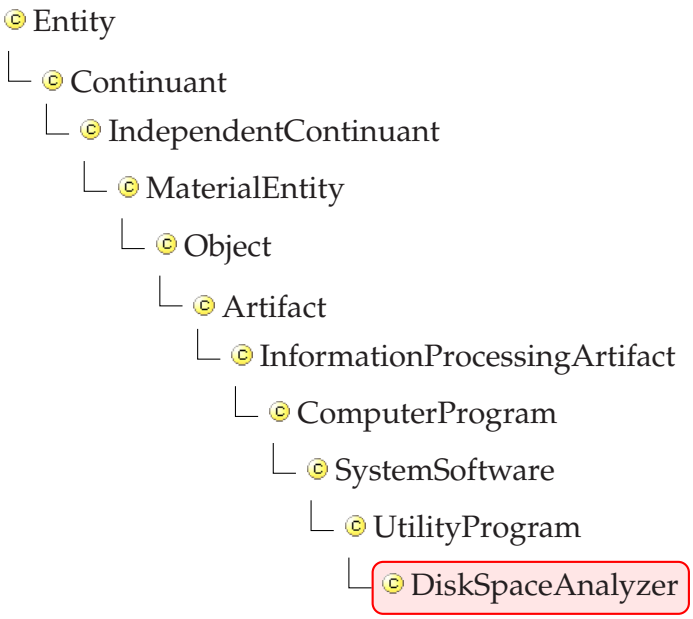
11.1.119 DiskSpaceAnalyzer

Definition
A Utility Program that is designed to visualize disk space usage by getting the size for each folder (including sub-folders) and files in a folder or drive.

Annotations

- **Label:** Disk Space Analyzer
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/DiskSpaceAnalyzer

Hierarchy



Direct Super Types

- UtilityProgram

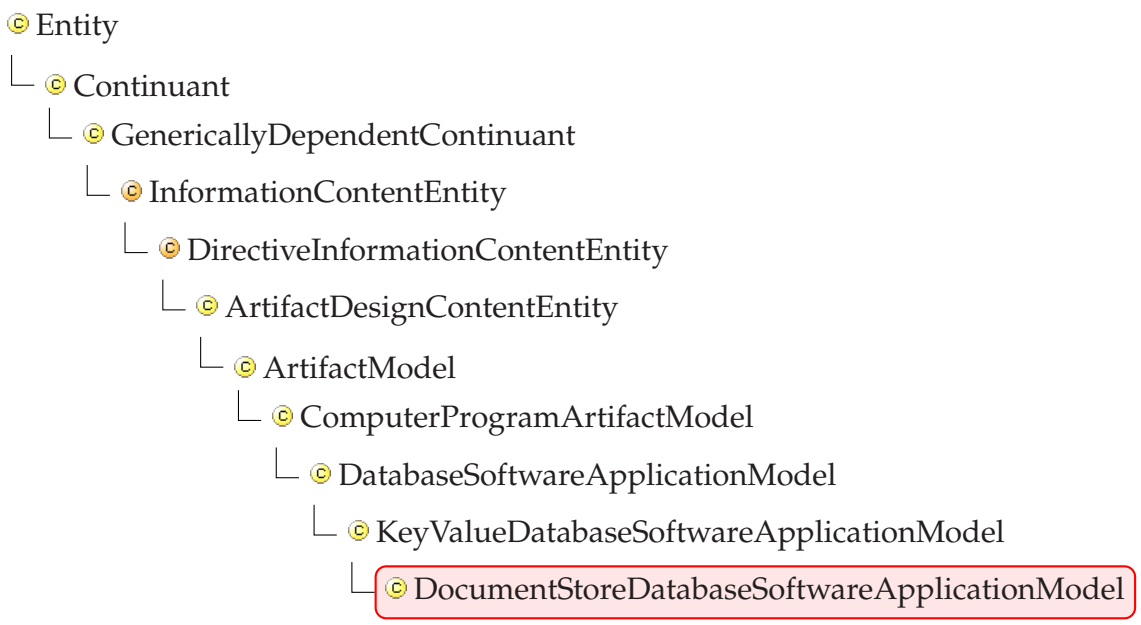
11.1.120 DocumentStoreDatabaseSoftwareApplicationModel

Definition
A Key-Value Database Software Application Model that prescribes some Database Software Application where the stored values are documents whose contents are accesible via the sructure of the document itself.

Annotations

- **Label:** Document Store Database Software Application Model
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/DocumentStoreDatabaseSoftwareApplicationModel

Hierarchy



Direct Super Types

- KeyValueDatabaseSoftwareApplicationModel

Direct Sub Types

- XMLDatabaseSoftwareApplicationModel

11.1.121 DomainName

A domain name might designate a personal computer, a server, a web site, or other web service. Generally, one of the purposes of a domain name is designate a computer resource while hiding the (less human friendly) IP address from end users.

Definition
A Code Identifier that designates a resource on a Computer Network according to the rules of the Domain Name System.

Annotations

- **Label:** Domain Name
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/DomainName

Hierarchy

- Entity
  - Continuant
    - GenericallyDependentContinuant
      - InformationContentEntity
        - DesignativeInformationContentEntity
          - NonNameIdentifier
            - CodeIdentifier
              - DomainName

Direct Super Types

- CodeIdentifier

11.1.122 DomainNameRegistrar

Definition
An Organization that manages the reservation of Internet Domain Names.

Annotations

- **Label:** Domain Name Registrar
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/DomainNameRegistrar

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - MaterialEntity
        - ObjectAggregate
          - GroupOfAgents
            - Organization
              - DomainNameRegistrar

Direct Super Types

- Organization

11.1.123 DomainWatchlist

Definition
A Watchlist which prescribes which Domain Names require close surveillance.

Annotations

- **Label:** Domain Watchlist
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/DomainWatchlist

Hierarchy

Direct Super Types

- Watchlist

11.1.124 DownloadingProcess

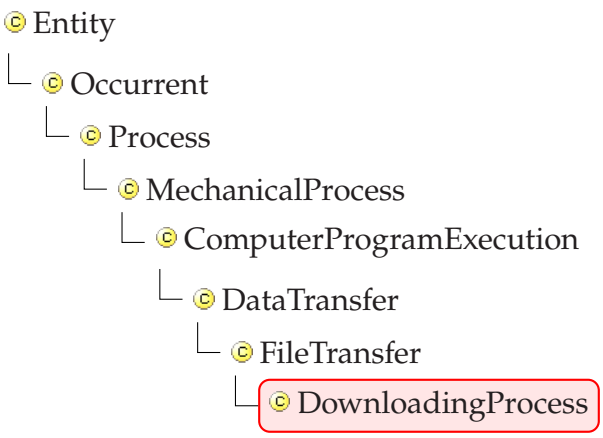
Definition
A File Transfer in which a Computer File is retrieved from some remote Computer and stored on some user's local Computer.

Annotations

- **Label:** Downloading Process
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology

- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/DownloadingProcess

Hierarchy



Direct Super Types

- FileTransfer

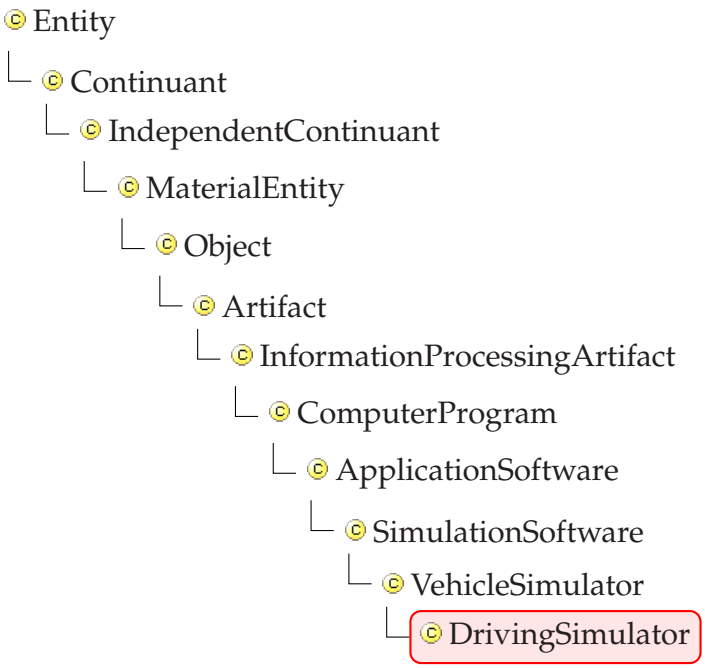
11.1.125 DrivingSimulator

Definition
A Vehicle Simulator that is designed to enable a user to model the process of driving an Automobile.

Annotations

- **Label:** Driving Simulator
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/DrivingSimulator

Hierarchy



Direct Super Types

- VehicleSimulator

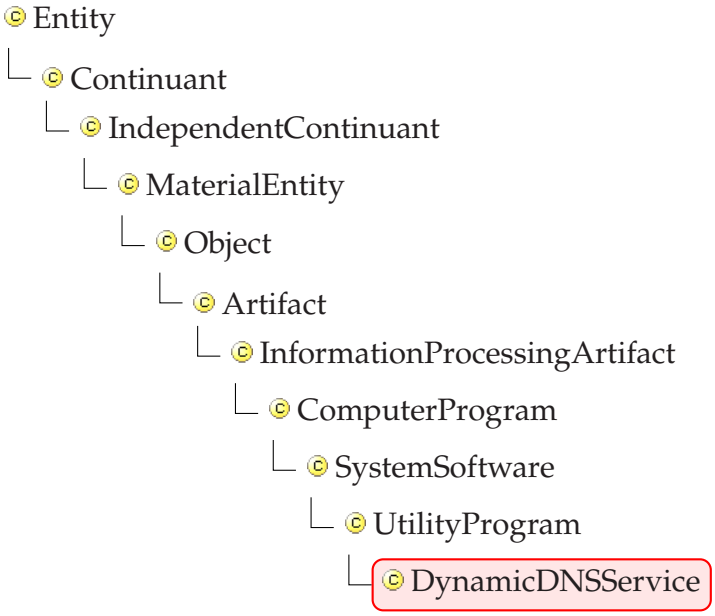
11.1.126 DynamicDNSService

Definition
A Utility Program that automatically updates a Domain Name in the Domain Name System with a new IP Address.

Annotations

- **Label:** Dynamic DNS Service
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/DynamicDNSService

Hierarchy



Direct Super Types

- UtilityProgram
- bearerOf NetworkServiceFunction

11.1.127 ElectromagneticPulseVulnerability

Definition
A Vulnerability that is realized by an Electromagnetic Pulse disrupting, damaging, or destroying one or more capabilities of an Artifact.

Annotations

- **Label:** Electromagnetic Pulse Vulnerability
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/ElectromagneticPulseVulnerability

Hierarchy

- Entity
  - Continuant
    - SpecificallyDependentContinuant
      - RealizableEntity
        - Disposition
          - Vulnerability
            - ElectromagneticPulseVulnerability

Direct Super Types

- Vulnerability
- realizedIn ElectromagneticPulse

11.1.128 EmailMessageHeader

Definition
An Information Header that is part of some Email Message.

Annotations

- **Label:** Email Message Header
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/EmailMessageHeader

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - MaterialEntity
        - Object
          - Artifact
            - InformationBearingArtifact
              - InformationHeader
                - EmailMessageHeader

Direct Super Types

- InformationHeader

11.1.129 EmailSoftwareApplication

Definition
An Information Worker Software Application that is designed to enable a user to compose, edit, send, and receive Email Messages.

Annotations

- **Label:** Email Software Application
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/EmailSoftwareApplication

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - MaterialEntity
        - Object
          - Artifact
            - InformationProcessingArtifact
              - ComputerProgram
                - ApplicationSoftware
                  - InformationWorkerSoftware
                    - EmailSoftwareApplication

Direct Super Types

- InformationWorkerSoftware

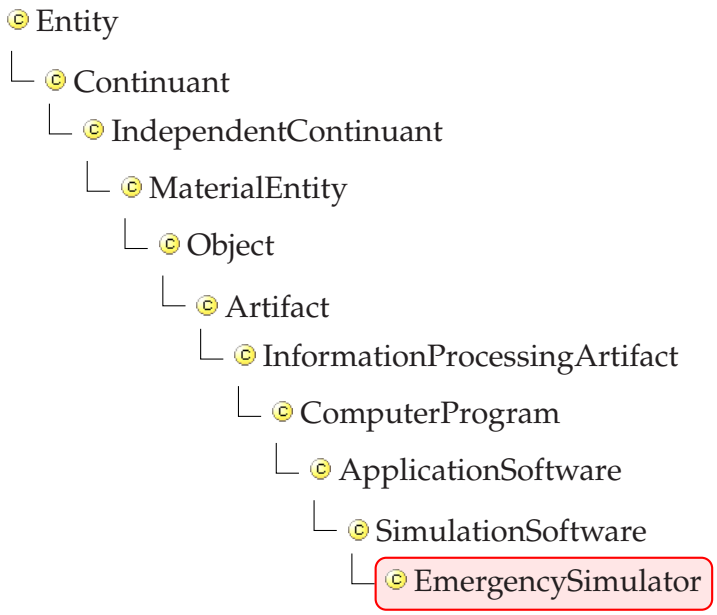
11.1.130 EmergencySimulator

Definition
Simulation Software that is designed to enable a user to model an emergency situation.

Annotations

- **Label:** Emergency Simulator
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/EmergencySimulator

Hierarchy



Direct Super Types

- SimulationSoftware

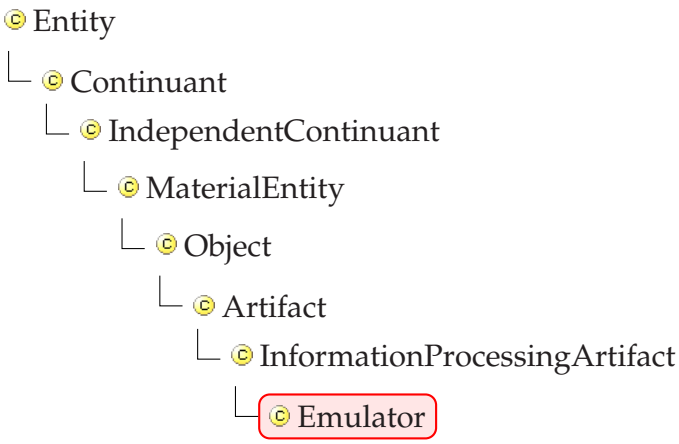
11.1.131 Emulator

Definition
An Information Processing Artifact that is designed to use some combination of hardware and software to simulate the behavior of another Information Processing Artifact.

Annotations

- **Label:** Emulator
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/Emulator

Hierarchy



Direct Super Types

- InformationProcessingArtifact

Direct Sub Types

- VirtualMachine

11.1.132 EncodingScheme

Definition
An Algorithm that prescribes how an Information Content Entity in one format can be converted into another format.

Annotations

- **Label:** Encoding Scheme
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/EncodingScheme

Hierarchy

- Entity
  - Continuant
    - GenericallyDependentContinuant
      - InformationContentEntity
        - DirectiveInformationContentEntity
          - Algorithm
            - EncodingScheme

Direct Super Types

- Algorithm

Direct Sub Types

- EncryptionAlgorithm

11.1.133 EncryptedFile

Definition
A Digital File that has been encoded using some Encryption Algorithm.

Annotations

- **Label:** Encrypted File
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/EncryptedFile

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - MaterialEntity
        - Object
          - Artifact
            - InformationBearingArtifact
              - DigitalFile
                - EncryptedFile

Direct Super Types

- DigitalFile

11.1.134 Encryption

Definition
A Computer Program Execution in which the content of an Information Bearing Entity is rendered unintelligible to unauthorized accessors.

Annotations

- **Label:** Encryption
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/Encryption

Hierarchy

- Entity
  - Occurrent
    - Process
      - MechanicalProcess
        - ComputerProgramExecution
          - Encryption

Direct Super Types

- ComputerProgramExecution

11.1.135 EncryptionAlgorithm

Definition
An Encoding Scheme that prescribes how an Information Content Entity in some intelligible format can be converted into a format in such a way that only authorizes parties can access it.

Annotations

- **Label:** Encryption Algorithm
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/EncryptionAlgorithm

Hierarchy

- Entity
  - Continuant
    - GenericallyDependentContinuant
      - InformationContentEntity
        - DirectiveInformationContentEntity
          - Algorithm
            - EncodingScheme
              - EncryptionAlgorithm

Direct Super Types

- EncodingScheme

11.1.136 ExecutableFile

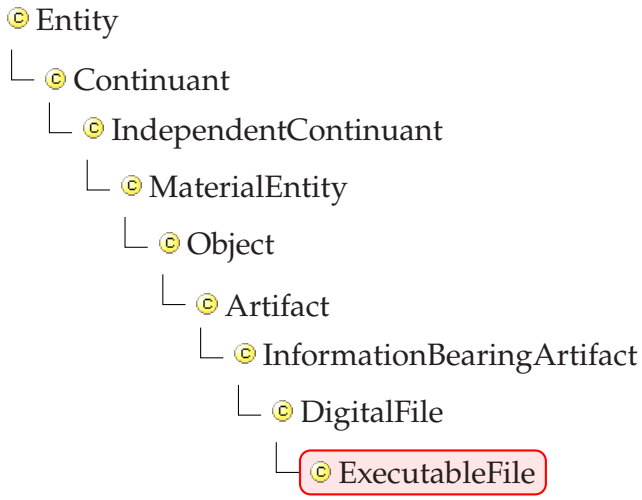
An executable file does not need to be parsed by a computer program in order to be meaningful (e.g., because it has been compiled).

Definition
A Digital File that can be directly executed by a Processing Unit.

Annotations

- **Label:** Executable File
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/ExecutableFile

Hierarchy



Direct Super Types

- DigitalFile

11.1.137 ExecuteFilePermission

Definition
A File Permission that prescribes the operating system to run program code for a user account.

Annotations

- **Label:** Execute File Permission
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/ExecuteFilePermission

Hierarchy

- Entity
  - Continuant
    - GenericallyDependentContinuant
      - InformationContentEntity
        - DirectiveInformationContentEntity
          - ActionRegulation
            - ActionPermission
              - FilePermission
                - ExecuteFilePermission

Direct Super Types

- FilePermission

11.1.138 FileAppending

Definition
A Digital File Process that adds content to an existing Digital File.

Annotations

- **Label:** File Appending
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/FileAppending

Hierarchy

- Entity
  - Occurrent
    - Process
      - MechanicalProcess
        - ComputerProgramExecution
          - DigitalFileProcess
            - FileAppending

Direct Super Types

- DigitalFileProcess

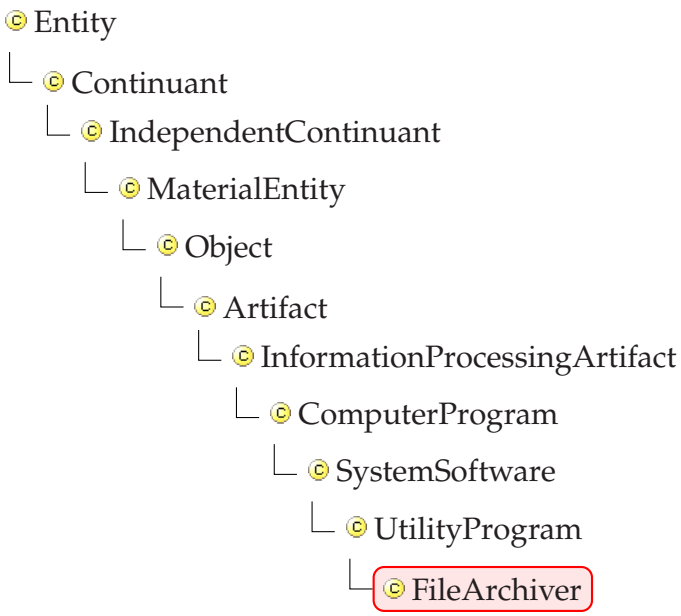
11.1.139 FileArchiver

Definition
A Utility Program that combines a number of files together into one archive file, or a series of archive files, for easier transportation or storage.

Annotations

- **Label:** File Archiver
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/FileArchiver

Hierarchy



Direct Super Types

- UtilityProgram

Direct Sub Types

- FileCompressor

11.1.140 FileClosing

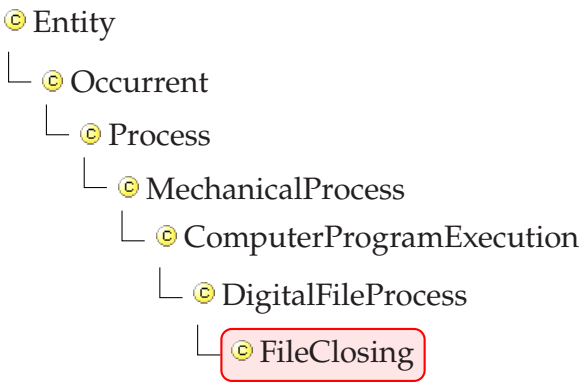
Definition

A Digital File Process that makes a Digital File unavailable for modification.

Annotations

- **Label:** File Closing
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/FileClosing

Hierarchy



Direct Super Types

- DigitalFileProcess

11.1.141 FileCompressor

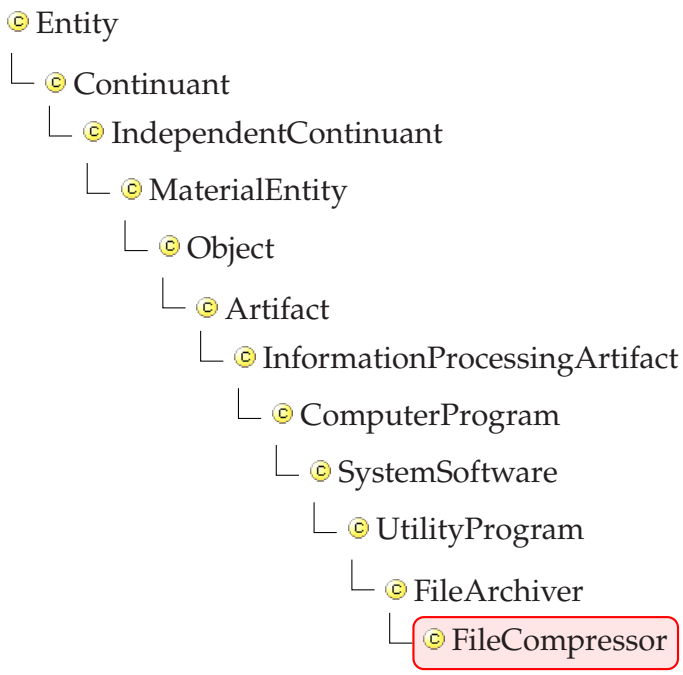
Definition

A File Archiver that is designed to encode the information in a Digital File in a way which uses fewer Bits than its original encoding.

Annotations

- **Label:** File Compressor
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/FileCompressor

Hierarchy



Direct Super Types

- FileArchiver

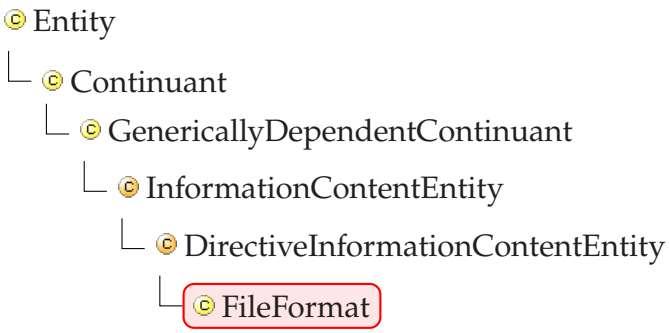
11.1.142 FileFormat

Definition
A Directive Information Content Entity that prescribes how Bits are used to encode some Information Content Entity in some Digital Storage Device.

Annotations

- **Label:** File Format
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/FileFormat

Hierarchy



Direct Super Types

- DirectiveInformationContentEntity

Direct Sub Types

- CompressedDataFormat

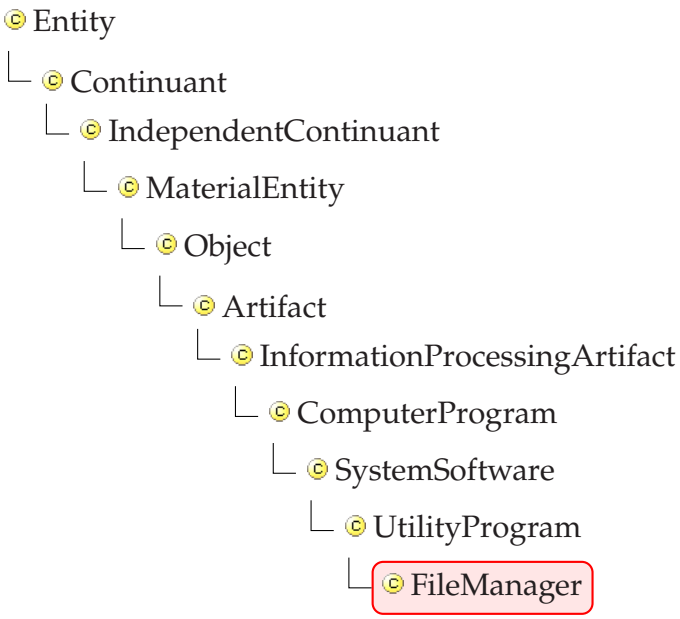
11.1.143 FileManager

Definition
A Utility Program that is designed to provide a user interface to manage Digital Files and File System Directories.

Annotations

- **Label:** File Manager
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/FileManager

Hierarchy



Direct Super Types

- UtilityProgram

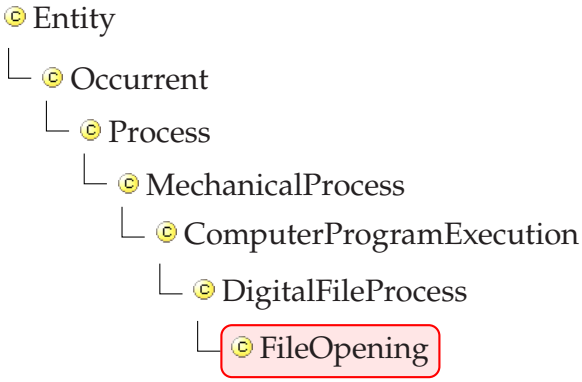
11.1.144 FileOpening

Definition
A Digital File Process that makes a Digital File available for modification.

Annotations

- **Label:** File Opening
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/FileOpening

Hierarchy



Direct Super Types

- DigitalFileProcess

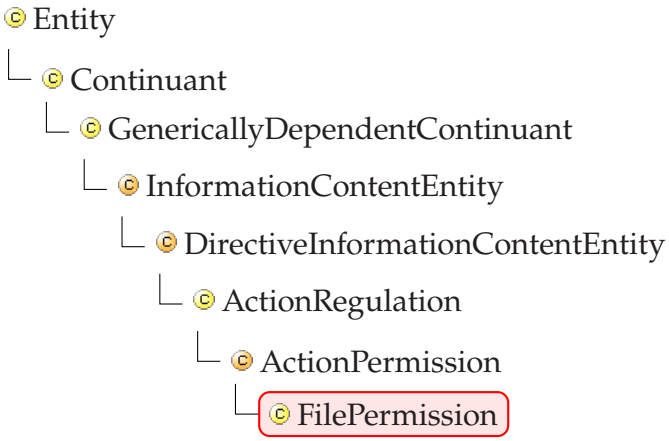
11.1.145 FilePermission

Definition
An Action Permission that prescribes the file system access of user accounts.

Annotations

- **Label:** File Permission
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/FilePermission

Hierarchy



Direct Super Types

- ActionPermission

Direct Sub Types

- ExecuteFilePermission
- ReadFilePermission
- WriteFilePermission

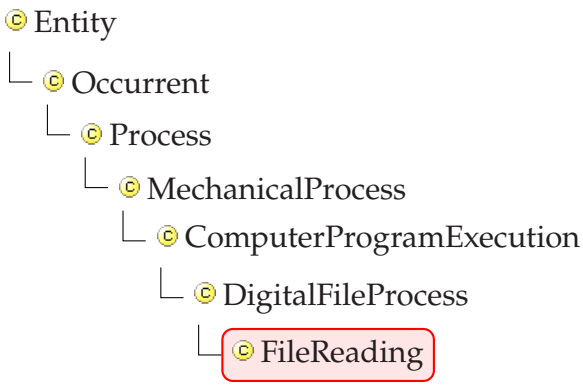
11.1.146 FileReading

Definition
A Digital File Process in which the content of a Digital File serves as input to an Information Processing Artifact.

Annotations

- **Label:** File Reading
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/FileReading

Hierarchy



Direct Super Types

- DigitalFileProcess

11.1.147 FileServer

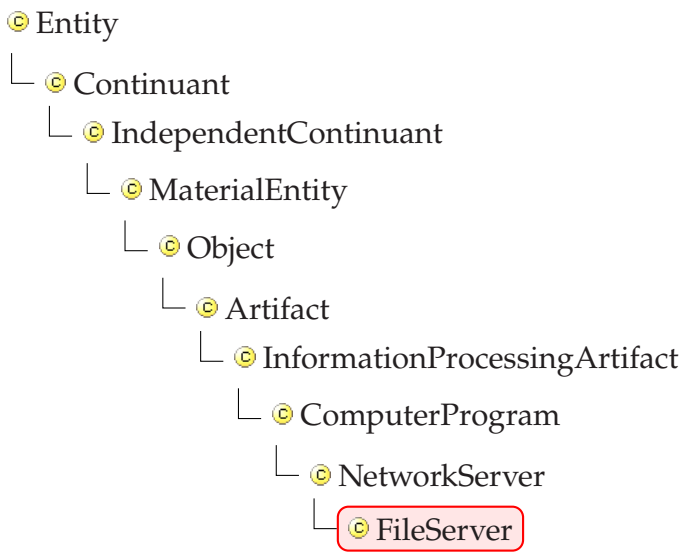
Definition
A Network Server that enables clients to access a Digital File Management Function.

Annotations

- **Label:** File Server
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology

- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/FileServer

Hierarchy



Direct Super Types

- NetworkServer

11.1.148 FileSynchronizationUtility

Definition
A Data Synchronization Utility that is designed to establish that Digital Files in two or more locations are updated in tandem.

Annotations

- **Label:** File Synchronization Utility
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/FileSynchronizationUtility

Hierarchy

Direct Super Types

- DataSynchronizationUtility

11.1.149 FileSystemDirectory

Definition
An Object Aggregate that consists of an aggregate of Digital Files within the context of a Digital File System.

Annotations

- **Label:** File System Directory
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/FileSystemDirectory

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - MaterialEntity
        - ObjectAggregate
          - FileSystemDirectory

Direct Super Types

- ObjectAggregate

Direct Sub Types

- RootDirectory

11.1.150 FileTransfer

Definition
A Data Transfer in which a Computer File is transmitted from one Computer to another.

Annotations

- **Label:** File Transfer
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/FileTransfer

Hierarchy

- Entity
  - Occurrent
    - Process
      - MechanicalProcess
        - ComputerProgramExecution
          - DataTransfer
            - FileTransfer

Direct Super Types

- DataTransfer

Direct Sub Types

- DownloadingProcess
- UploadingProcess

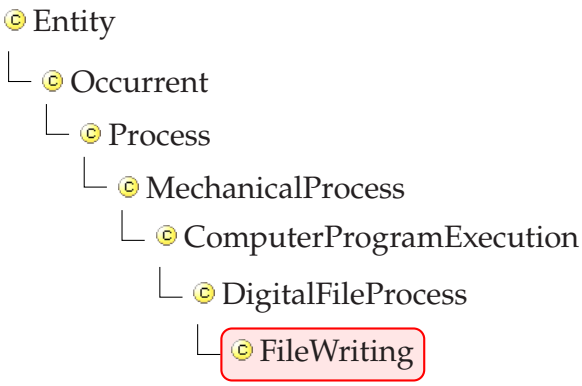
11.1.151 FileWriting

Definition
A Digital File Process that outputs information to a new Digital File.

Annotations

- **Label:** File Writing
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/FileWriting

Hierarchy



Direct Super Types

- DigitalFileProcess

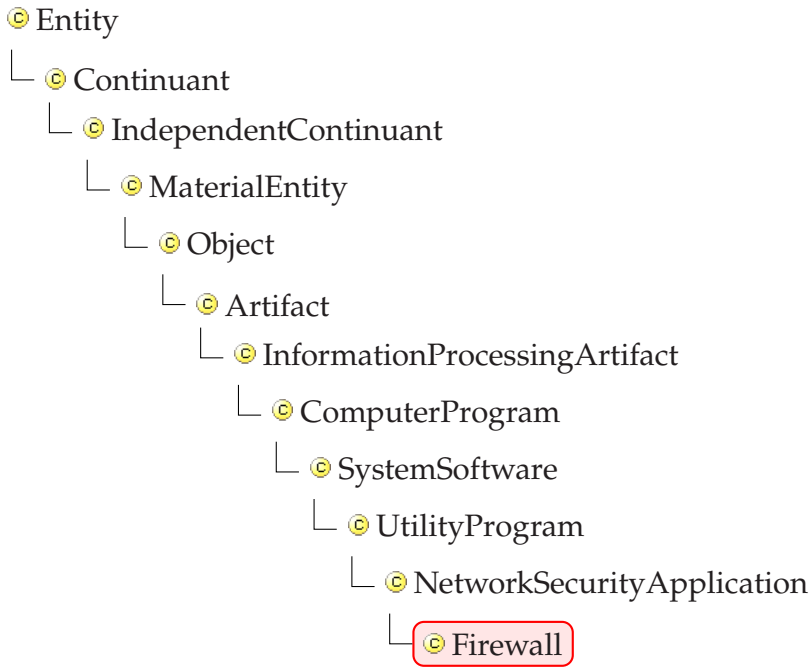
11.1.152 Firewall

Definition
A Network Security Application that uses defined rules to allow or block traffic between a trusted internal Computer Network and an untrusted outside Computer Network.

Annotations

- **Label:** Firewall
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/Firewall

Hierarchy



Direct Super Types

- NetworkSecurityApplication

Direct Sub Types

- ProxyFirewall
- StatefulInspectionFirewall
- UnifiedThreatManagementFirewall

11.1.153 Firmware

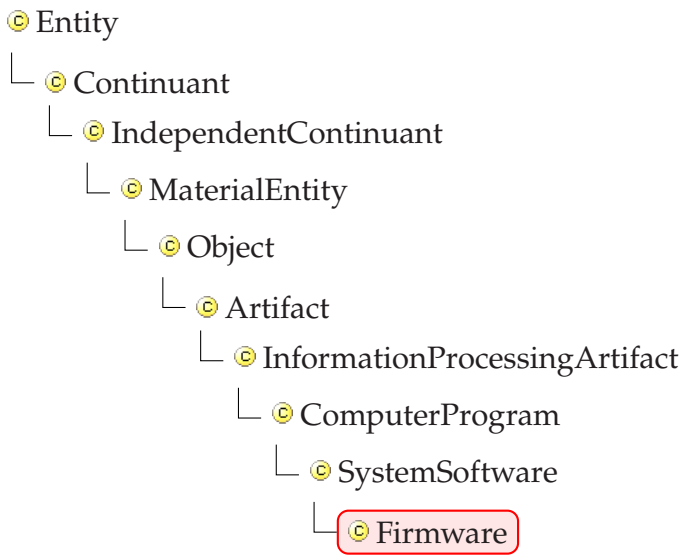
Definition
A System Software that enables low-level control for components of an Information Processing Artifact.

Annotations

- **Label:** Firmware

- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/Firmware

Hierarchy



Direct Super Types

- SystemSoftware

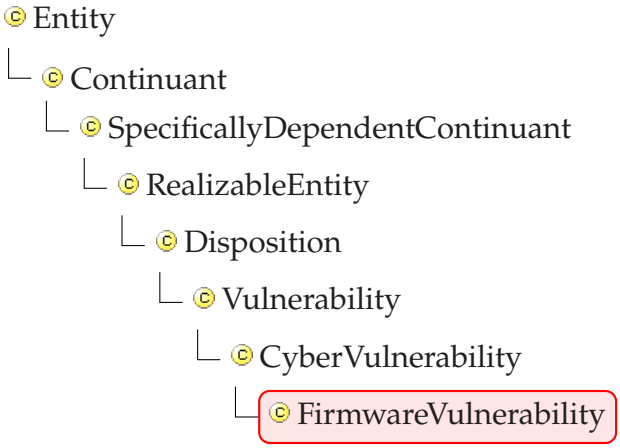
11.1.154 FirmwareVulnerability

Definition
A Cyber Vulnerability realized by a Cyber Attack that prevents an Information Processing Artifact's firmware from functioning properly.

Annotations

- **Label:** Firmware Vulnerability
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/FirmwareVulnerability

Hierarchy



Direct Super Types

- CyberVulnerability

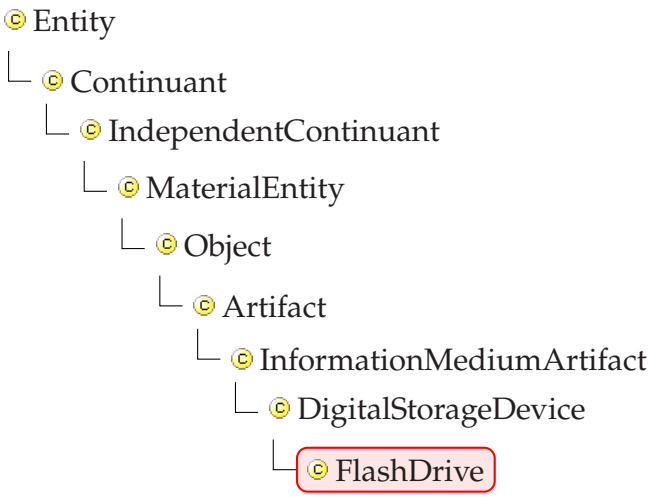
11.1.155 FlashDrive

Definition
A Digital Storage Device that is designed to store information using flash memory, have an integrated USB interface, and be removable and rewritable.

Annotations

- **Label:** Flash Drive
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/FlashDrive

Hierarchy



Direct Super Types

- DigitalStorageDevice

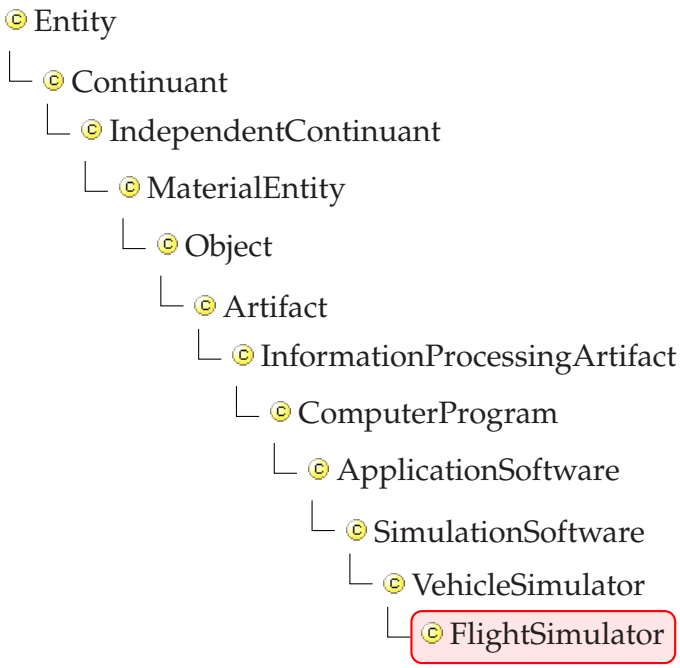
11.1.156 FlightSimulator

Definition
A Vehicle Simulator that is designed to enable a user to model the process of flying an Aircraft or Spacecraft.

Annotations

- **Label:** Flight Simulator
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/FlightSimulator

Hierarchy



Direct Super Types

- VehicleSimulator

11.1.157 FlowControlDirective

Definition
A Directive Information Content Entity that prescribes the rate of data transmission between two nodes to prevent a fast sender from overwhelming a slow receiver.

Annotations

- **Label:** Flow Control Directive
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/FlowControlDirective

Hierarchy

- Entity
  - Continuant
    - GenericallyDependentContinuant
      - InformationContentEntity
        - DirectiveInformationContentEntity
          - FlowControlDirective

Direct Super Types

- DirectiveInformationContentEntity

Direct Sub Types

- WindowSizeDirective

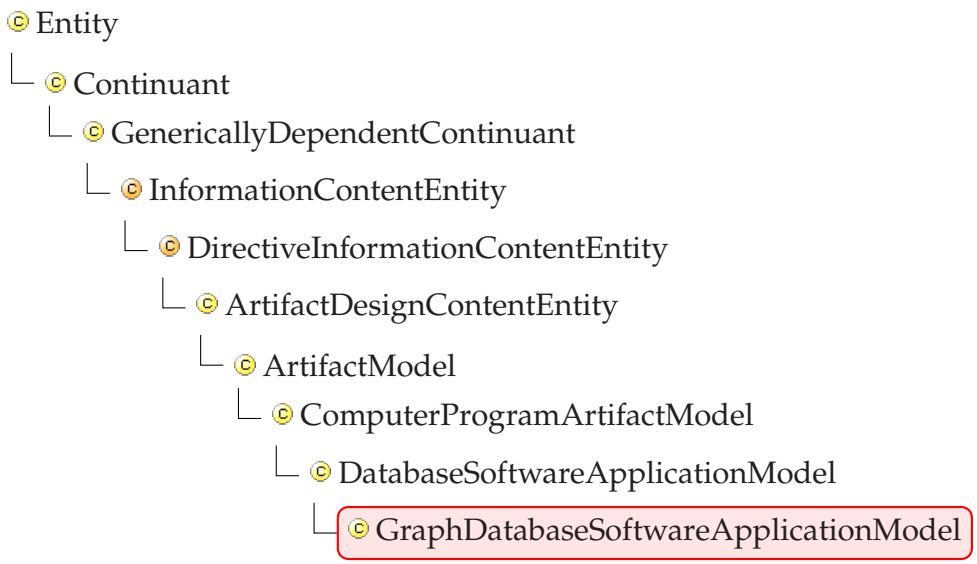
11.1.158 GraphDatabaseSoftwareApplicationModel

Definition
A Database Software Application Model that prescribes a Database Software Application where the data is stored as sets of nodes, or vertices, linked via edges, or relationships.

Annotations

- **Label:** Graph Database Software Application Model
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/GraphDatabaseSoftwareApplicationModel

Hierarchy



Direct Super Types

- DatabaseSoftwareApplicationModel

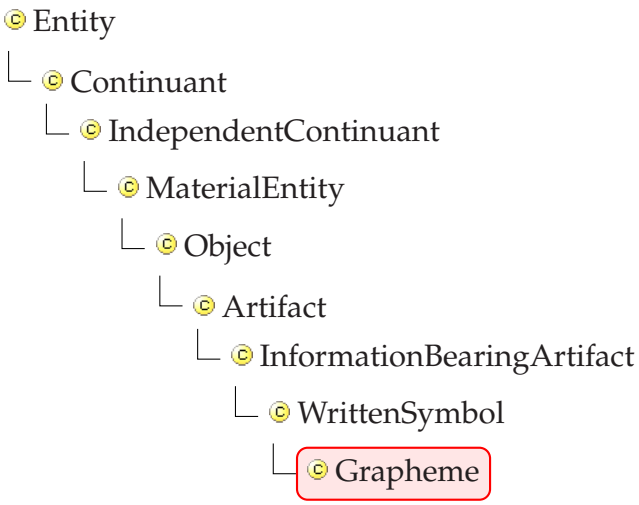
11.1.159 Grapheme

Definition
A Written Symbol that is the smallest unit of a writing system of any given language.

Annotations

- **Label:** Grapheme
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/Grapheme

Hierarchy



Direct Super Types

- WrittenSymbol

Direct Sub Types

- Digit
- Letter

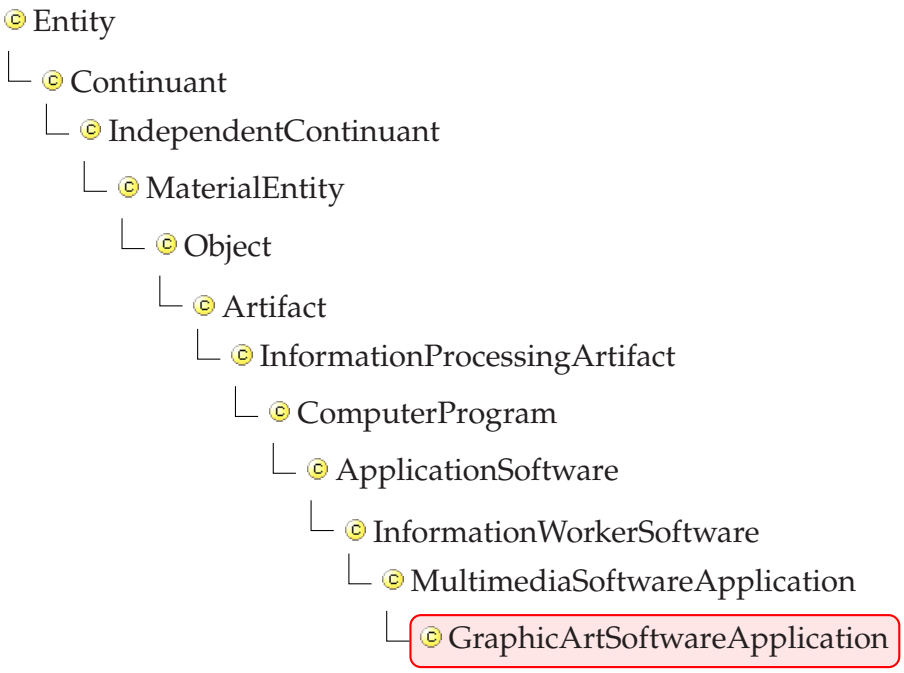
11.1.160 GraphicArtSoftwareApplication

Definition
A Multimedia Software Application that is designed to enable a user to create and edit graphic files.

Annotations

- **Label:** Graphic Art Software Application
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/GraphicArtSoftwareApplication

Hierarchy



Direct Super Types

- MultimediaSoftwareApplication

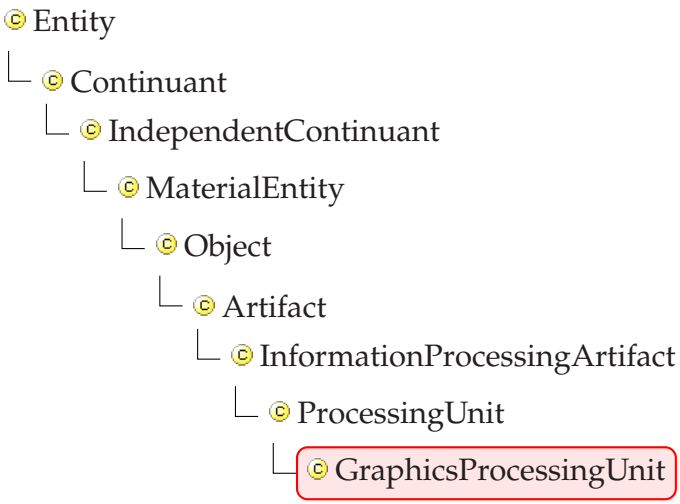
11.1.161 GraphicsProcessingUnit

Definition
A Processing Unit that is designed to accelerate the execution of some Computer Program pertaining to the display of some Image on a Screen.

Annotations

- **Label:** Graphics Processing Unit
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/GraphicsProcessingUnit

Hierarchy



Direct Super Types

- ProcessingUnit

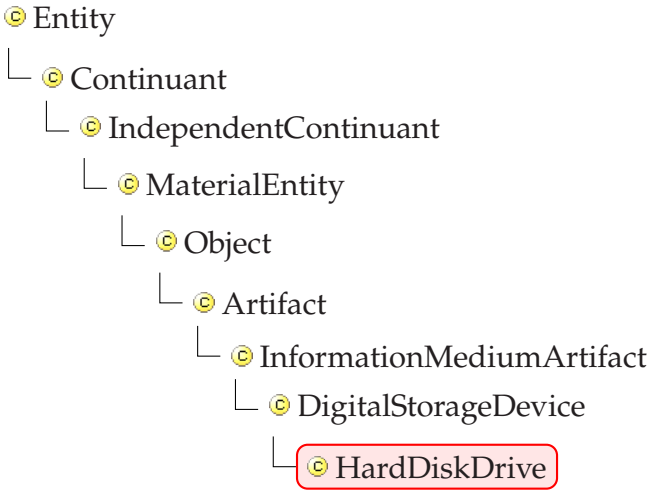
11.1.162 HardDiskDrive

Definition
A Digital Storage Device that is designed to provide long-term storage and retrieval of digital information using one or more rigid rapidly rotating disks coated with magnetic material.

Annotations

- **Label:** Hard Disk Drive
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/HardDiskDrive

Hierarchy



Direct Super Types

- DigitalStorageDevice

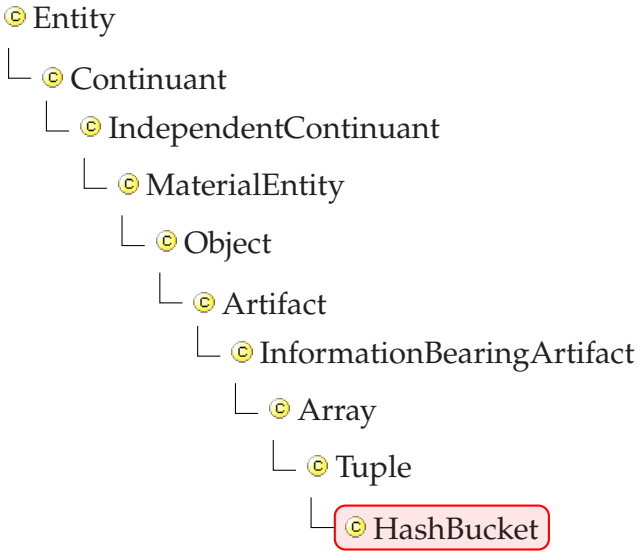
11.1.163 HashBucket

Definition
A Tuple that partitions Key-Value Pairs in a Hash Table.

Annotations

- **Label:** Hash Bucket
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/HashBucket

Hierarchy



Direct Super Types

- Tuple

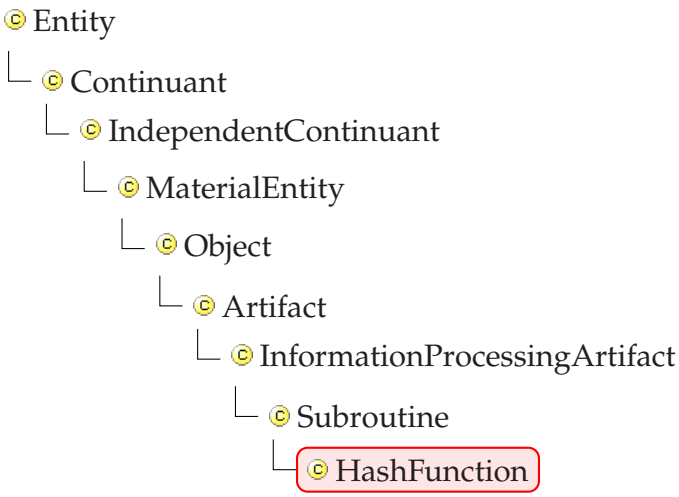
11.1.164 HashFunction

Definition
A Subroutine that has some variable as input and which outputs a fixed-length string or number.

Annotations

- **Label:** Hash Function
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/HashFunction

Hierarchy



Direct Super Types

- Subroutine

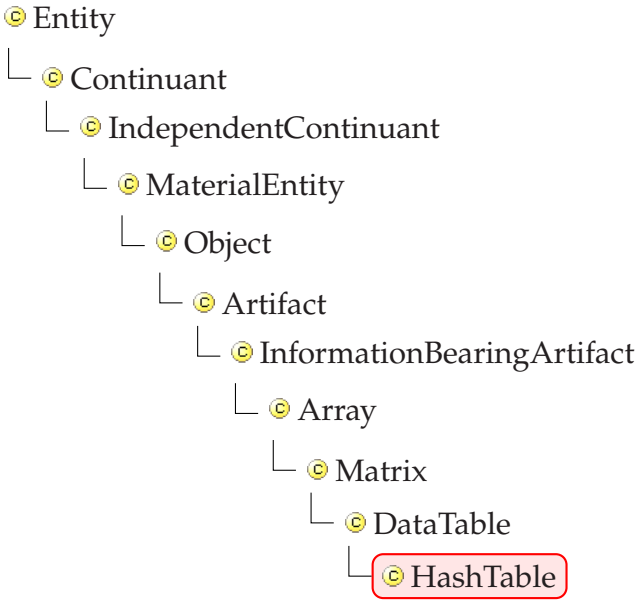
11.1.165 HashTable

Definition
A Matrix that uses a Hash Function to efficiently store non-contiguous Key-Value Pairs in Hash Buckets.

Annotations

- **Label:** Hash Table
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/HashTable

Hierarchy



Direct Super Types

- DataTable

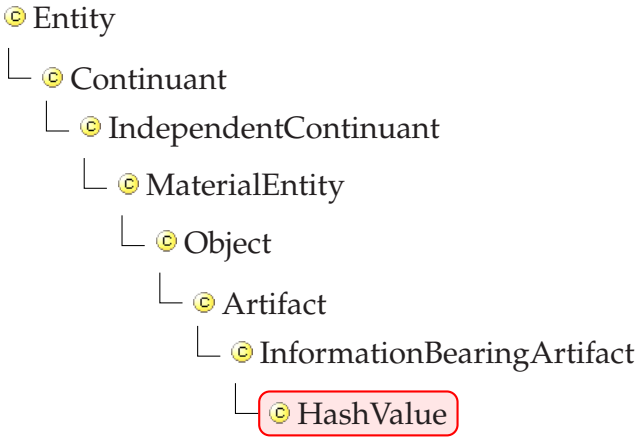
11.1.166 HashValue

Definition
An Information Bearing Artifact that is the output of a Hash Function.

Annotations

- **Label:** Hash Value
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/HashValue

Hierarchy



Direct Super Types

- InformationBearingArtifact

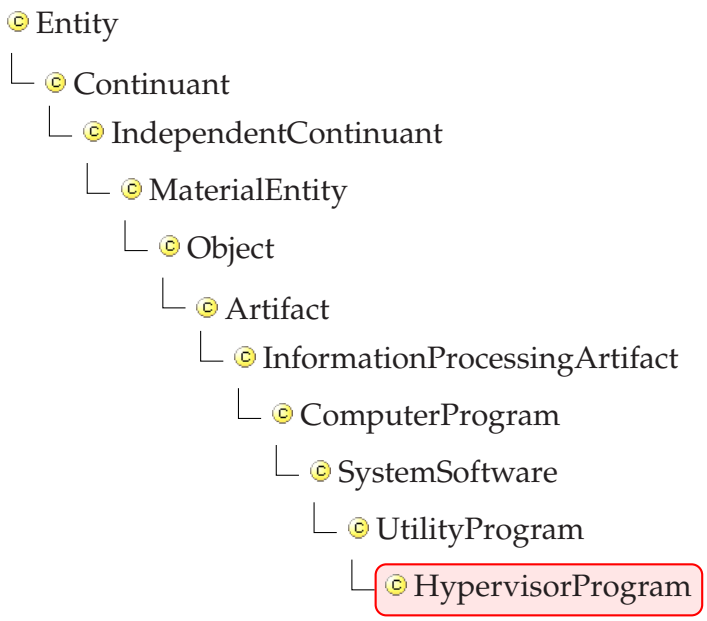
11.1.167 HypervisorProgram

Definition
An Utility Program that creates and runs Virtual Machines.

Annotations

- **Label:** Hypervisor Program
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/HypervisorProgram

Hierarchy



Direct Super Types

- UtilityProgram

11.1.168 ImageScanner

Definition
An Imaging Instrument that optically scans an image, document, or object, and converts it to a digital image.

Annotations

- **Label:** Image Scanner
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/ImageScanner

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - MaterialEntity
        - Object
          - Artifact
            - ImagingInstrument
              - ImageScanner

Direct Super Types

- ImagingInstrument

11.1.169 InformationAggregateSpecification

Definition
A Directive Information Content Entity that prescribes some ordering (sequence, arrangement) of Information Content Entities.

Annotations

- **Label:** Information Aggregate Specification
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/InformationAggregateSpecification

Hierarchy

- Entity
  - Continuant
    - GenericallyDependentContinuant
      - InformationContentEntity
        - DirectiveInformationContentEntity
          - InformationAggregateSpecification

Direct Super Types

- DirectiveInformationContentEntity

11.1.170 InformationHeader

Definition
An Information Bearing Artifact that bears supplementary information describing the contents of the some other information bearer.

Annotations

- **Label:** Information Header
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/InformationHeader

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - MaterialEntity
        - Object
          - Artifact
            - InformationBearingArtifact
              - InformationHeader

Direct Super Types

- InformationBearingArtifact

Direct Sub Types

- DigitalFileHeader
- EmailMessageHeader
- PacketHeader

11.1.171 InformationProcessingArtifactFunction

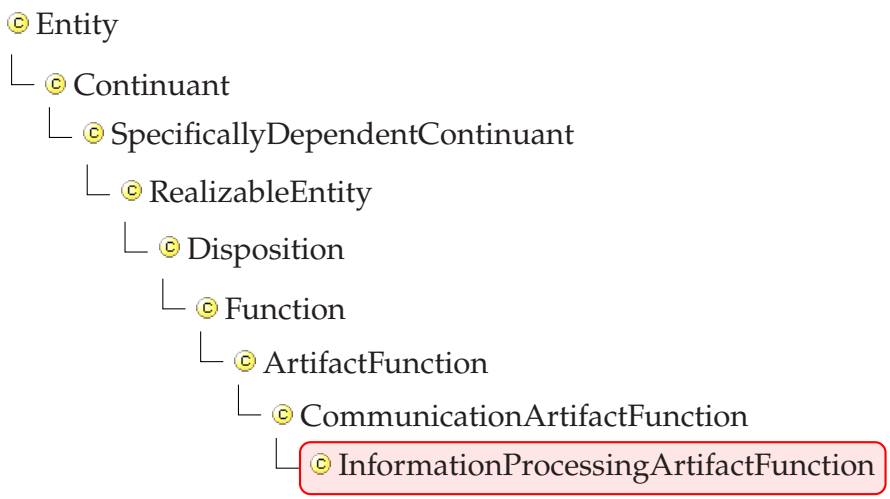
Definition

A Communication Artifact Function that inheres in some Information Processing Artifact.

Annotations

- **Label:** Information Processing Artifact Function
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/InformationProcessingArtifactFunction

Hierarchy



Direct Super Types

- CommunicationArtifactFunction

Direct Sub Types

- ComputerPrinterFunction
- DigitalFileManagementFunction
- NetworkServiceFunction

11.1.172 InformationTransferProtocol

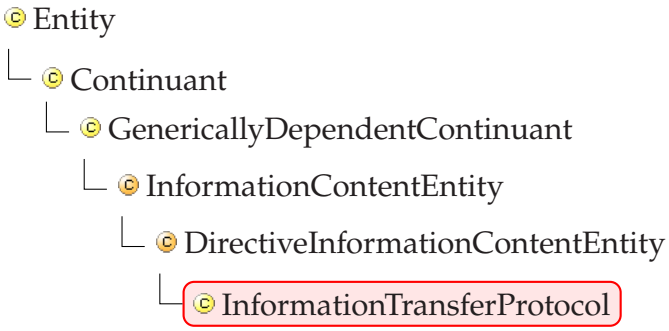
Definition

A Directive Information Content Entity that prescribes the format in which some Information Content Entity should be transferred between two Computers or other devices.

Annotations

- **Label:** Information Transfer Protocol
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/InformationTransferProtocol

Hierarchy



Direct Super Types

- DirectiveInformationContentEntity

11.1.173 InformationWorkerSoftware

Definition
Application Software that is designed to enable users to create and manage Information Bearing Artifacts.

Annotations

- **Label:** Information Worker Software
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/InformationWorkerSoftware

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - MaterialEntity
        - Object
          - Artifact
            - InformationProcessingArtifact
              - ComputerProgram
                - ApplicationSoftware
                  - InformationWorkerSoftware

Direct Super Types

- ApplicationSoftware

Direct Sub Types

- DatabaseSoftwareApplication
- EmailSoftwareApplication
- MultimediaSoftwareApplication
- NoteManagementSoftwareApplication
- OntologyEditingSoftwareApplication
- PresentationSoftwareApplication
- SpreadsheetSoftwareApplication
- TextEditorSoftwareApplication
- WordProcessingSoftwareApplication

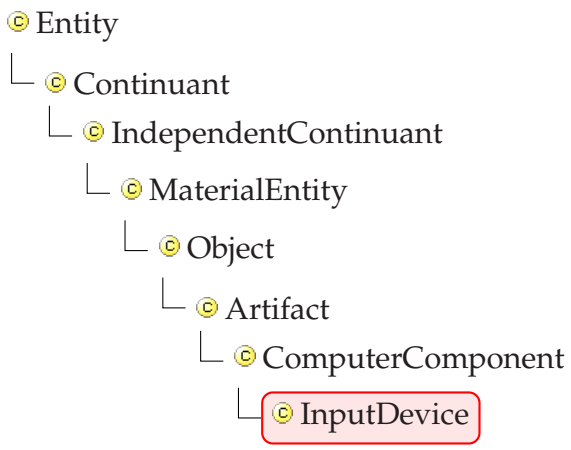
11.1.174 InputDevice

Definition
A Computer Component used to provide data and control signals to an Information Processing Artifact

Annotations

- **Label:** Input Device
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/InputDevice

Hierarchy



Direct Super Types

- ComputerComponent

Direct Sub Types

- ComputerKeyboard
- PointingDevice

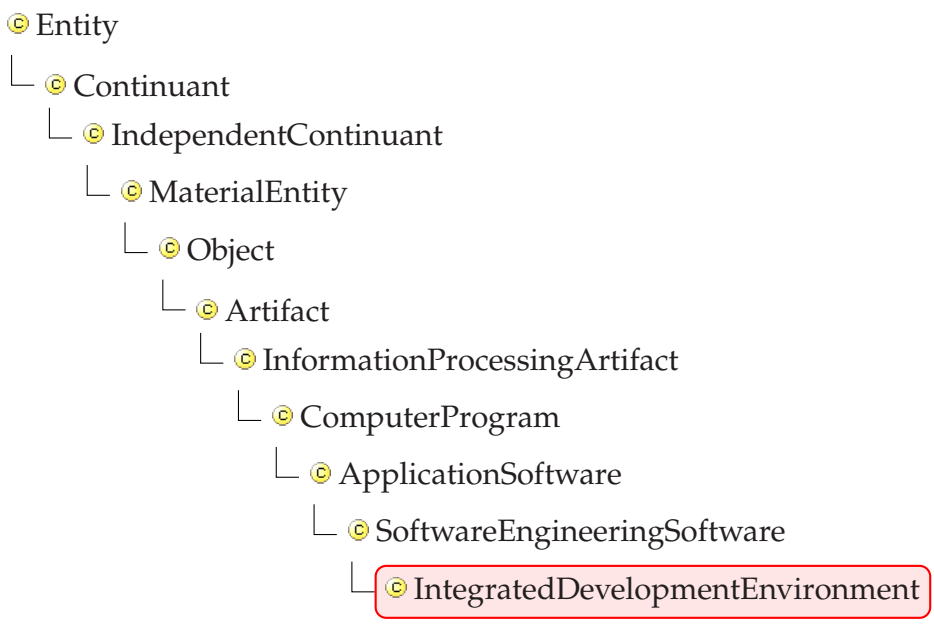
11.1.175 IntegratedDevelopmentEnvironment

Definition
Software Engineering Sotware that is designed to facilitate authoring, modifying, compiling, deploying and debugging software.

Annotations

- **Label:** Integrated Development Environment
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/IntegratedDevelopmentEnvironment

Hierarchy



Direct Super Types

- SoftwareEngineeringSoftware

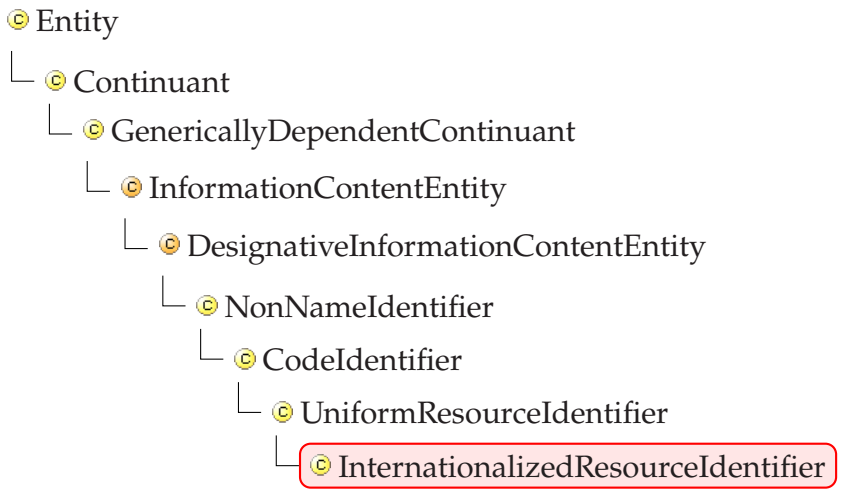
11.1.176 InternationalizedResourceIdentifier

Definition
A Uniform Resource Identifier that may contain characters from the Universal Character Set (Unicode/ISO 10646).

Annotations

- **Label:** Internationalized Resource Identifier
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/InternationalizedResourceIdentifier

Hierarchy



Direct Super Types

- UniformResourceIdentifier

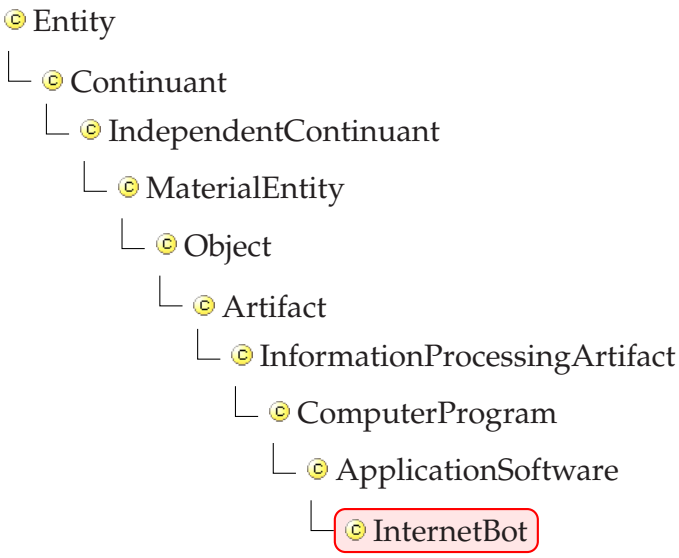
11.1.177 InternetBot

Definition
Application Software that runs automated tasks (scripts) over the Internet.

Annotations

- **Label:** Internet Bot
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/InternetBot

Hierarchy



Direct Super Types

- ApplicationSoftware

Direct Sub Types

- InternetRelayChatService

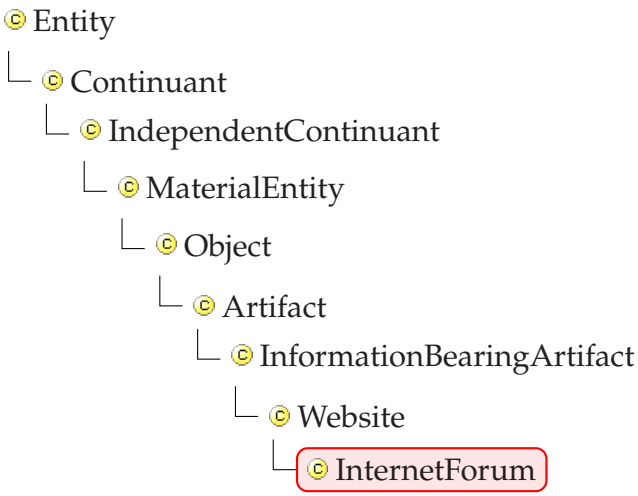
11.1.178 InternetForum

Definition
A Website on which people can hold conversations in the form of posted messages that are typically longer than one sentence and that are at least temporarily archived.

Annotations

- **Label:** Internet Forum
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/InternetForum

Hierarchy



Direct Super Types

- Website

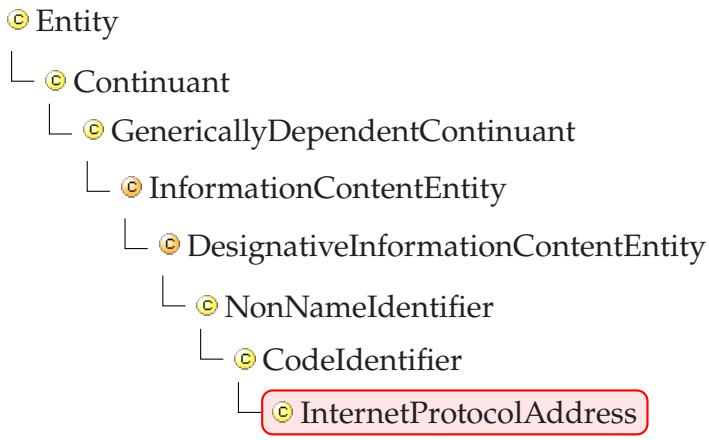
11.1.179 InternetProtocolAddress

Definition
A Code Identifier that designates a Computer or other device that is connected to the Internet Protocol Suite.

Annotations

- **Label:** Internet Protocol Address
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/InternetProtocolAddress

Hierarchy



Direct Super Types

- CodeIdentifier

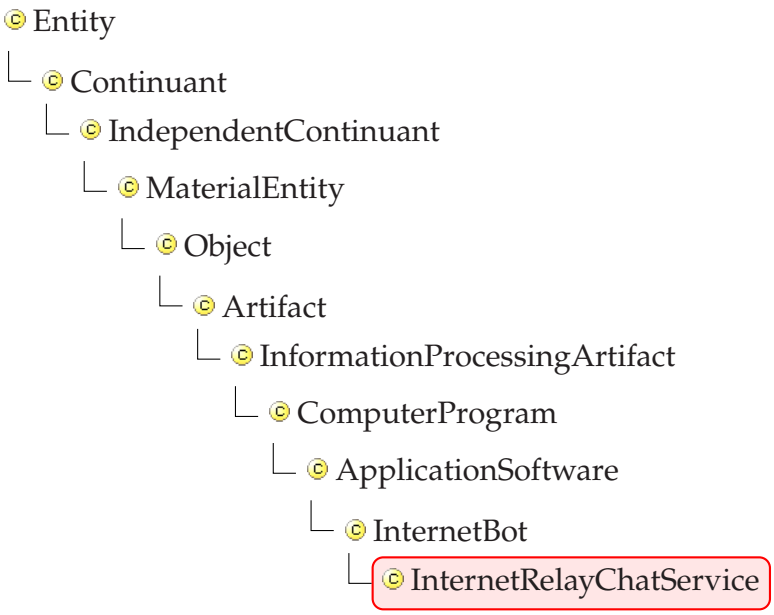
11.1.180 InternetRelayChatService

Definition
An Internet Bot that manages access to an IRC network.

Annotations

- **Label:** Internet Relay Chat Service
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/InternetRelayChatService

Hierarchy



Direct Super Types

- InternetBot

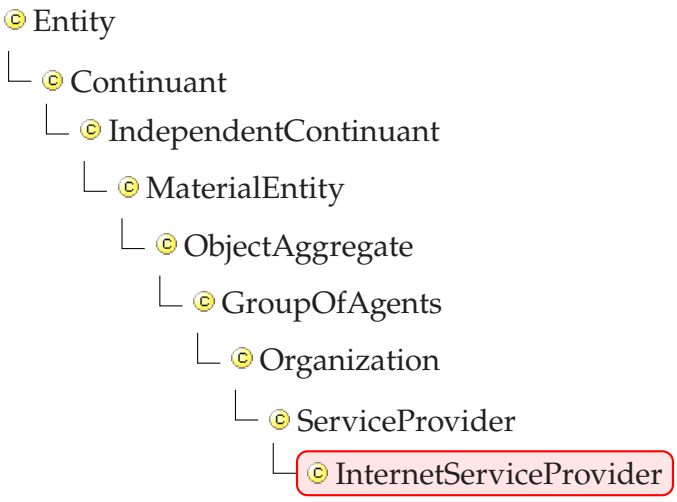
11.1.181 InternetServiceProvider

Definition
A Service Provider that provides services for accessing and using the Internet.

Annotations

- **Label:** Internet Service Provider
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/InternetServiceProvider

Hierarchy



Direct Super Types

- ServiceProvider

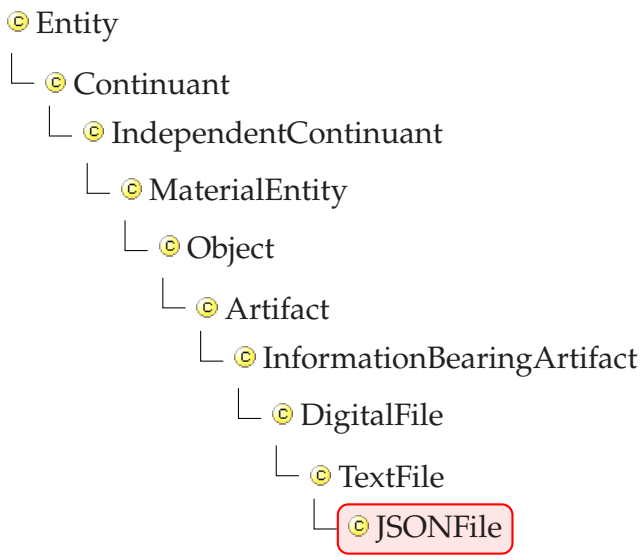
11.1.182 JSONFile

Definition
A Text File that uses JavaScript Object Notation as a Data Exchange Language.

Annotations

- **Label:** JSON File
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/JSONFile

Hierarchy



Direct Super Types

- TextFile

11.1.183 KeyValueDatabaseSoftwareApplicationModel

Definition
A Database Software Application Model that prescribes some Database Software Application where the data is stored as a collection of records, or objects, each of which is associated with a distinct key.

Annotations

- **Label:** Key-Value Database Software Application Model
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/KeyValueDatabaseSoftwareApplicationModel

Hierarchy

- Entity
  - Continuant
    - GenericallyDependentContinuant
      - InformationContentEntity
        - DirectiveInformationContentEntity
          - ArtifactDesignContentEntity
            - ArtifactModel
              - ComputerProgramArtifactModel
                - DatabaseSoftwareApplicationModel
                - KeyValueDatabaseSoftwareApplicationModel

Direct Super Types

- DatabaseSoftwareApplicationModel

Direct Sub Types

- DocumentStoreDatabaseSoftwareApplicationModel

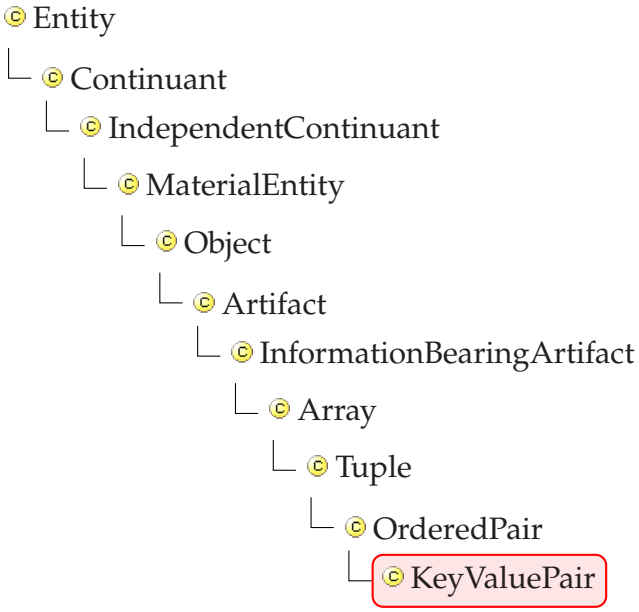
11.1.184 KeyValuePair

Definition
A Pair whose first element is some Information Bearing Artifact which bears some unique designator for some entity and whose second element is some Information Bearing Artifact which represents either the designated entity or some other designator which designates the location of information about that entity.

Annotations

- **Label:** Key-Value Pair
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/KeyValuePair

Hierarchy



Direct Super Types

- OrderedPair

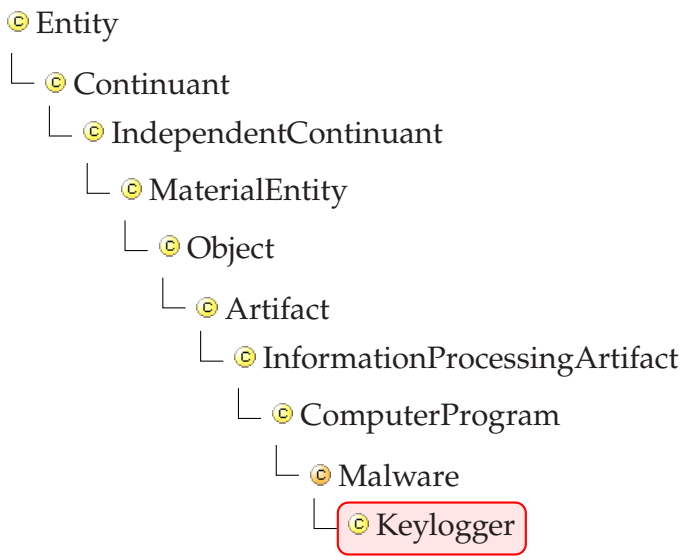
11.1.185 Keylogger

Definition
Malware that is designed to record the keys struck on a keyboard.

Annotations

- **Label:** Keylogger
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/Keylogger

Hierarchy



Direct Super Types

- Malware

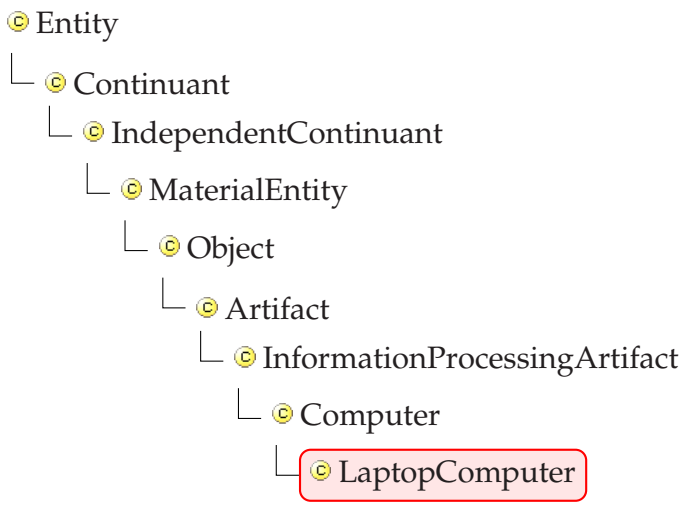
11.1.186 LaptopComputer

Definition
A Computer that is designed to be portable with a screen and keyboard included in a single clamshell housing.

Annotations

- **Label:** Laptop Computer
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/LaptopComputer

Hierarchy



Direct Super Types

- Computer

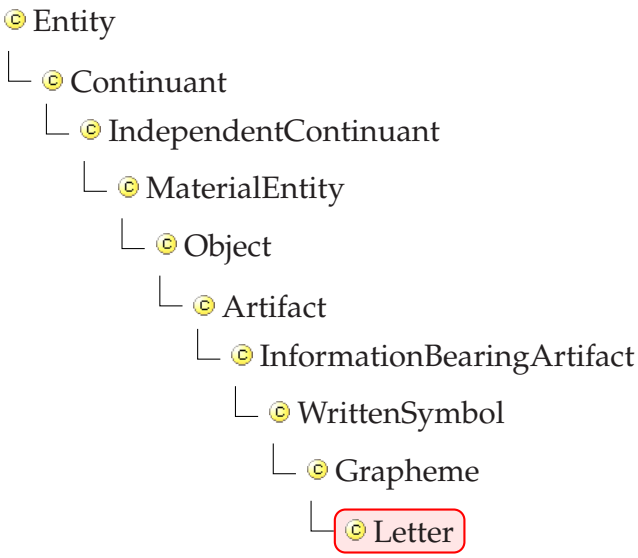
11.1.187 Letter

Definition
A Grapheme that consists of a single mark which is conventionally used in writing and printing to represent a speech sound and that is part of some alphabet.

Annotations

- **Label:** Letter
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/Letter

Hierarchy



Direct Super Types

- Grapheme

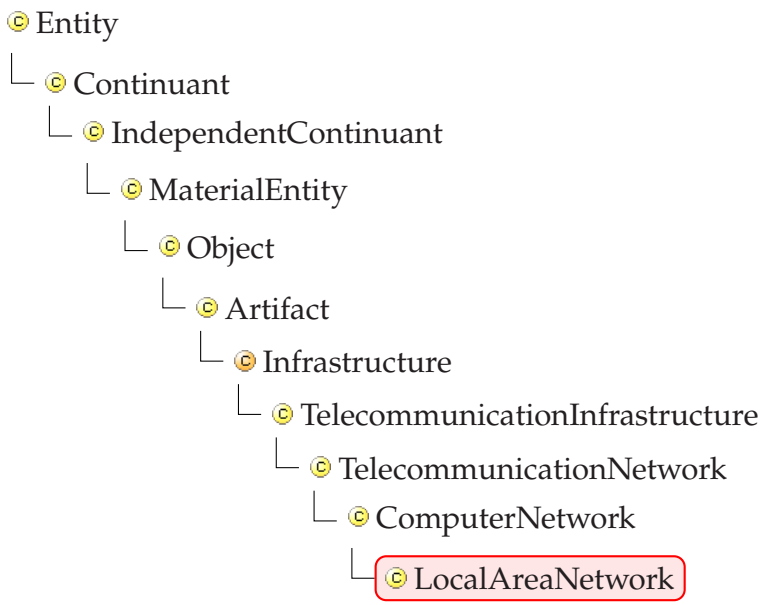
11.1.188 LocalAreaNetwork

Definition
A Computer Network that is designed to connect several resources within a small area (e.g., a building).

Annotations

- **Label:** Local Area Network
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/LocalAreaNetwork

Hierarchy



Direct Super Types

- ComputerNetwork

Direct Sub Types

- WirelessLocalAreaNetwork

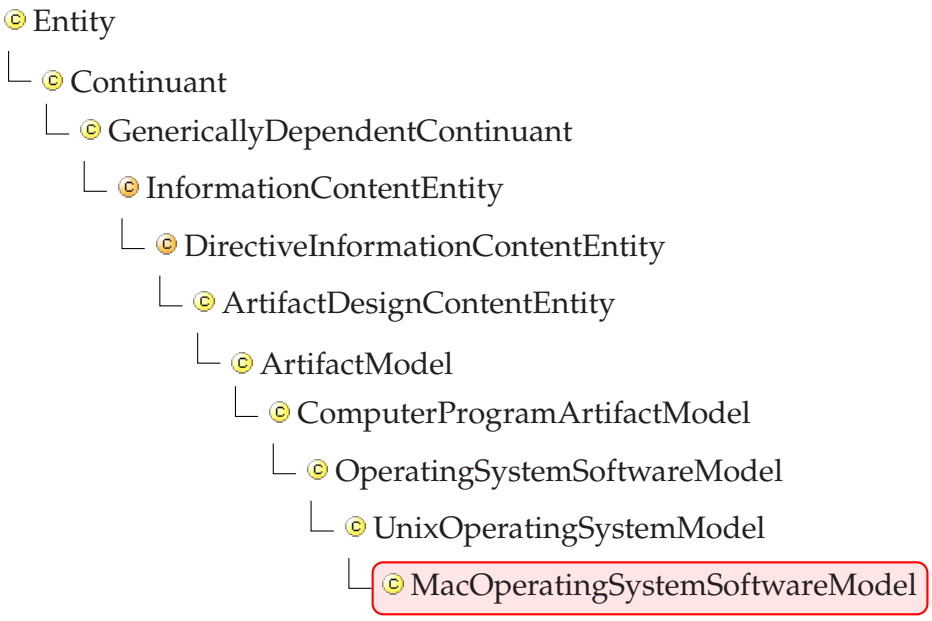
11.1.189 MacOperatingSystemSoftwareModel

Definition
A Unix Operating System Software Model that is developed and marketed by Apple Inc for its Mac personal computers.

Annotations

- **Label:** Mac Operating System Software Model
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/MacOperatingSystemSoftwareModel

Hierarchy



Direct Super Types

- UnixOperatingSystemModel

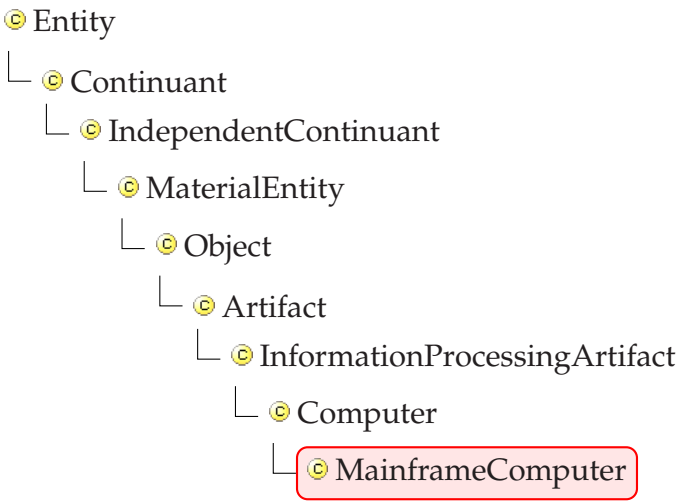
11.1.190 MainframeComputer

Definition
A Computer that is designed to be used primarily by large organizations for critical applications, bulk data processing, enterprise resource planning, and transaction processing.

Annotations

- **Label:** Mainframe Computer
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/MainframeComputer

Hierarchy



Direct Super Types

- Computer

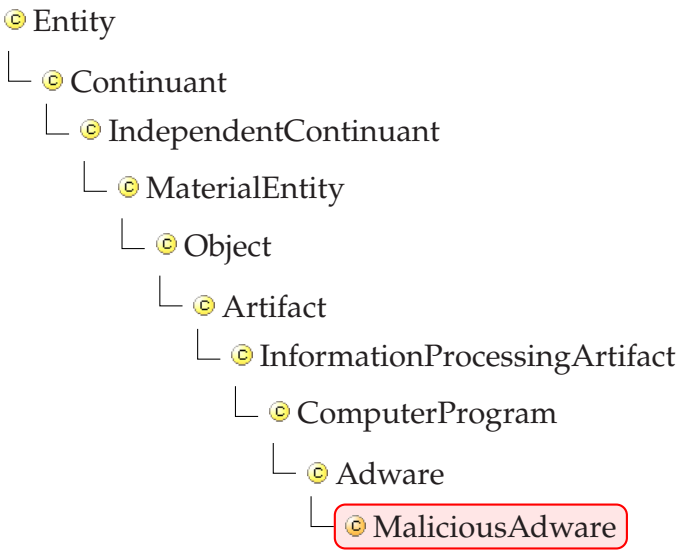
11.1.191 MaliciousAdware

Definition
Adware that is an agent in some Cyber Attack..

Annotations

- **Label:** Malicious Adware
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/MaliciousAdware

Hierarchy



Direct Super Types

- Adware

Equivalent Classes

- (Adware ∩ ∃ agentIn CyberAttack)

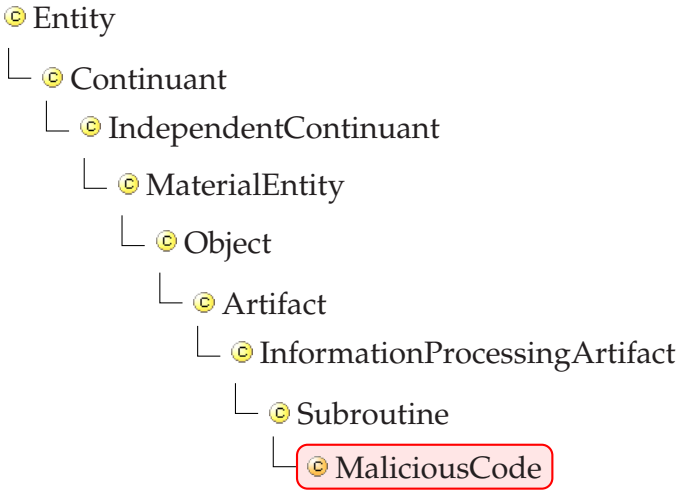
11.1.192 MaliciousCode

Definition
A Subroutine that is input of a Cyber Attack.

Annotations

- **Label:** Malicious Code
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/MaliciousCode

Hierarchy



Direct Super Types

- Subroutine

Equivalent Classes

- (Subroutine ∩ ∃ isInputOf CyberAttack)

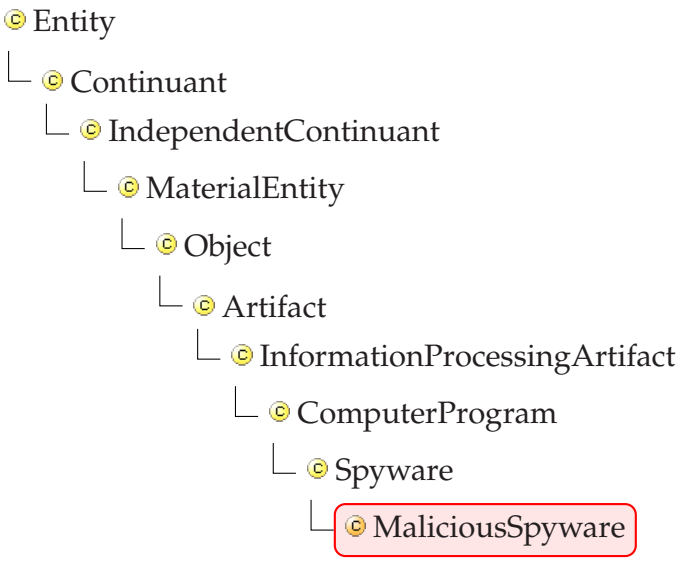
11.1.193 MaliciousSpyware

Definition
Spyware that is an agent in a Cyber Attack.

Annotations

- **Label:** Malicious Spyware
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/MaliciousSpyware

Hierarchy



Direct Super Types

- Spyware

Equivalent Classes

- (Spyware ∩ ∃ agentIn CyberAttack)

11.1.194 Malware

Definition
A Computer Program that is an agent in a Cyber Attack.

Annotations

- **Label:** Malware
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/Malware

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - MaterialEntity
        - Object
          - Artifact
            - InformationProcessingArtifact
              - ComputerProgram
                - Malware

Direct Super Types

- ComputerProgram
- hasPart MaliciousCode

Direct Sub Types

- BackdoorProgram
- BrowserHijackingProgram
- ComputerVirus
- ComputerWorm
- Keylogger
- Ransomware
- Rootkit
- TrojanHorseProgram

Equivalent Classes

- (ComputerProgram ⊓ ∃ agentIn CyberAttack)

11.1.195 Matrix

Definition
An Array which orders its elements along two dimensions.

Annotations

- **Label:** Matrix
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/Matrix

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - MaterialEntity
        - Object
          - Artifact
            - InformationBearingArtifact
              - Array
                - Matrix

Direct Super Types

- Array

Direct Sub Types

- DataTable

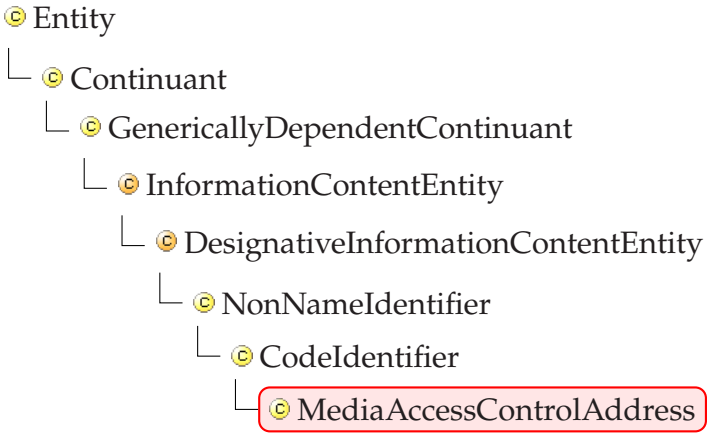
11.1.196 MediaAccessControlAddress

Definition
A Code Identifier that designates a Computer and is assigned to network interfaces for communications at the data link layer of a network segment.

Annotations

- **Label:** Media Access Control Address
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/MediaAccessControlAddress

Hierarchy



Direct Super Types

- CodeIdentifier

11.1.197 MemoryCorruption

Definition
A Cyber Vulnerability that is realized by a Cyber Attack which writes to memory outside the bounds of a buffer, when the root cause is something other than a sequential copies of excessive data from a fixed starting location.

Annotations

- **Label:** Memory Corruption
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/MemoryCorruption

Hierarchy

- Entity
  - Continuant
    - SpecificallyDependentContinuant
      - RealizableEntity
        - Disposition
          - Vulnerability
            - CyberVulnerability
              - MemoryCorruption

Direct Super Types

- CyberVulnerability

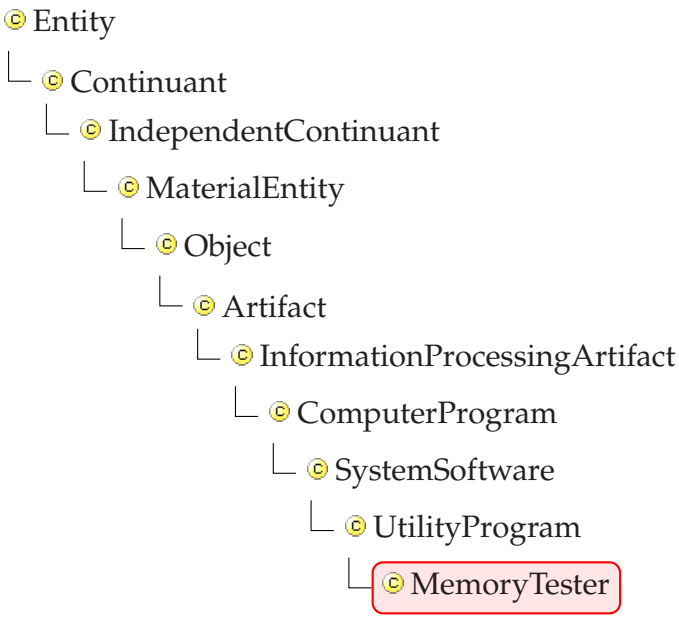
11.1.198 MemoryTester

Definition
A Utility Program that is designed to test and verify modules of Computer Memory.

Annotations

- **Label:** Memory Tester
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/MemoryTester

Hierarchy



Direct Super Types

- UtilityProgram

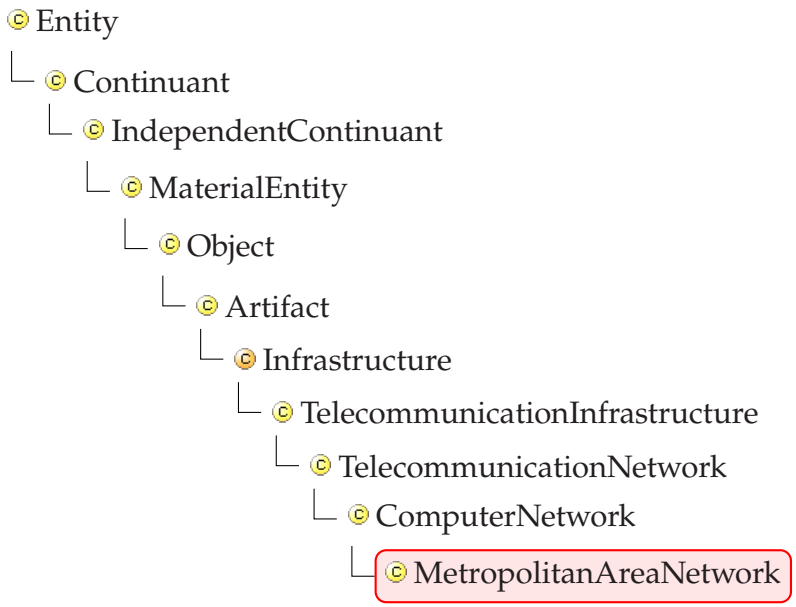
11.1.199 MetropolitanAreaNetwork

Definition
A Computer Network that is designed to connect several resources within a City.

Annotations

- **Label:** Metropolitan Area Network
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/MetropolitanAreaNetwork

Hierarchy



Direct Super Types

- ComputerNetwork

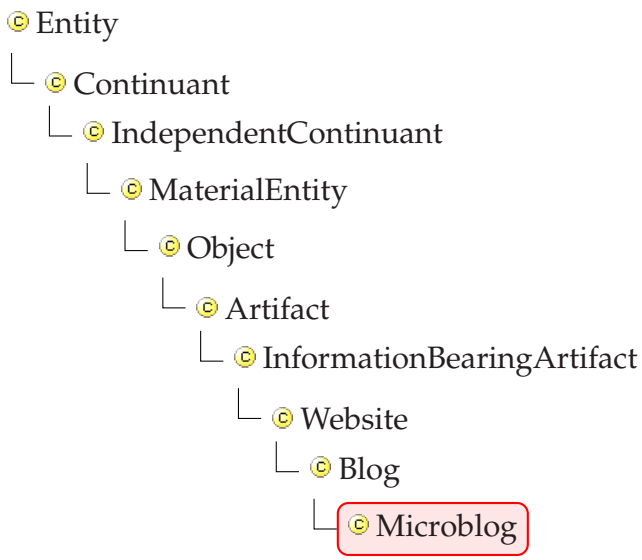
11.1.200 Microblog

Definition
A Blog that consists of short posts which can be shared online by other users.

Annotations

- **Label:** Microblog
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/Microblog

Hierarchy



Direct Super Types

- Blog

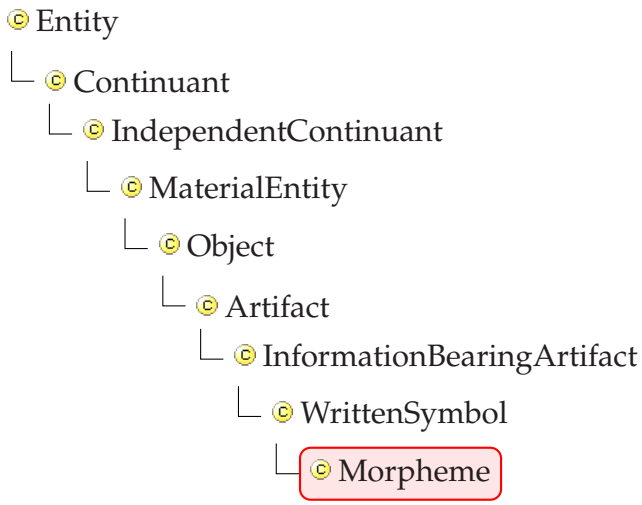
11.1.201 Morpheme

Definition
A Written Symbol that is the smallest meaningful unit of a writing system and which may or may not be freestanding.

Annotations

- **Label:** Morpheme
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/Morpheme

Hierarchy



Direct Super Types

- WrittenSymbol

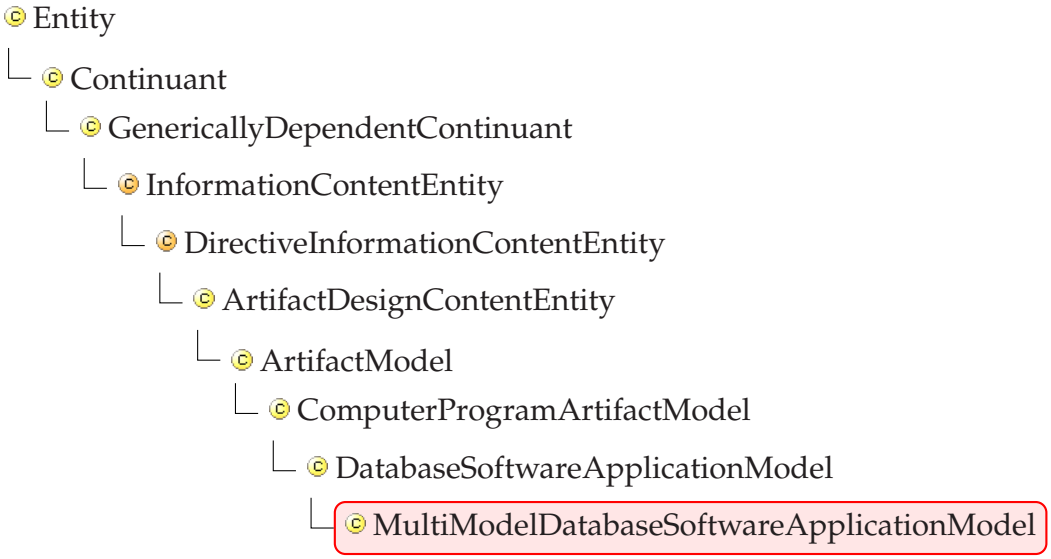
11.1.202 MultiModelDatabaseSoftwareApplicationModel

Definition
A Database Software Application Model that prescribes a Database Software Application where the data is stored using more than one data model.

Annotations

- **Label:** Multi-Model Database Software Application Model
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/MultiModelDatabaseSoftwareApplicationModel

Hierarchy



Direct Super Types

- DatabaseSoftwareApplicationModel

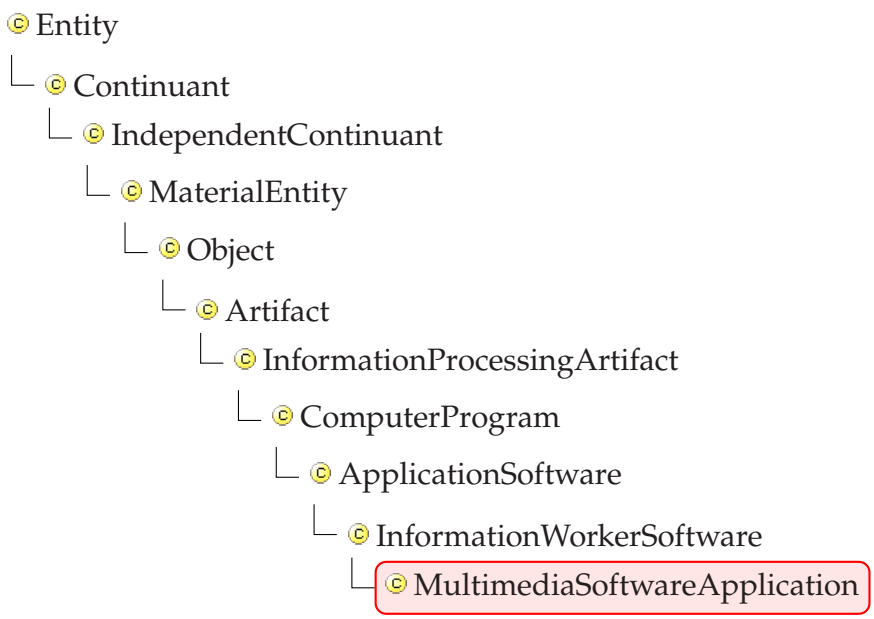
11.1.203 MultimediaSoftwareApplication

Definition
An Information Worker Software Application that is designed to enable a user to create and edit Images, Audio Files, and Videos.

Annotations

- **Label:** Multimedia Software Application
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/MultimediaSoftwareApplication

Hierarchy



Direct Super Types

- InformationWorkerSoftware

Direct Sub Types

- AnimationSoftwareApplication
- AudioEditingSoftwareApplication
- GraphicArtSoftwareApplication
- VideoEditingSoftwareApplication

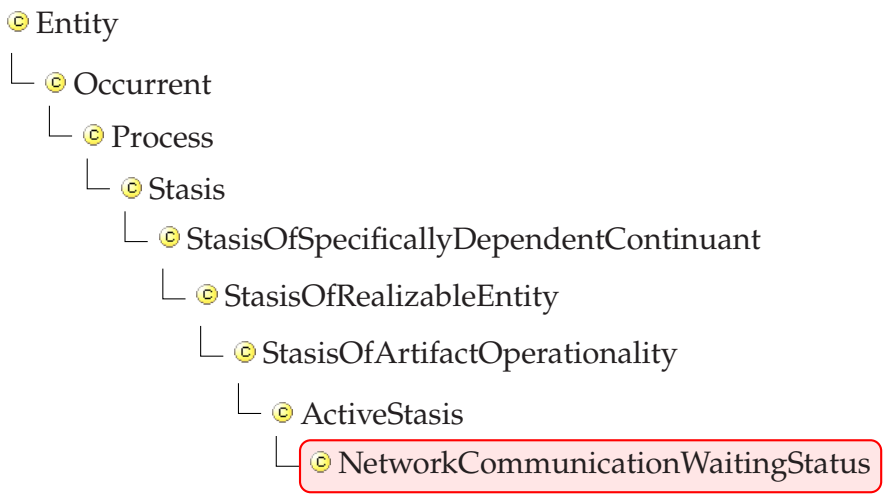
11.1.204 NetworkCommunicationWaitingStatus

Definition
An Active Stasis in which some resource on a network is waiting to receive messages from other resources it is connected to on that network.

Annotations

- **Label:** Network Communication Waiting Status
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/NetworkCommunicationWaitingStatus

Hierarchy



Direct Super Types

- ActiveStasis

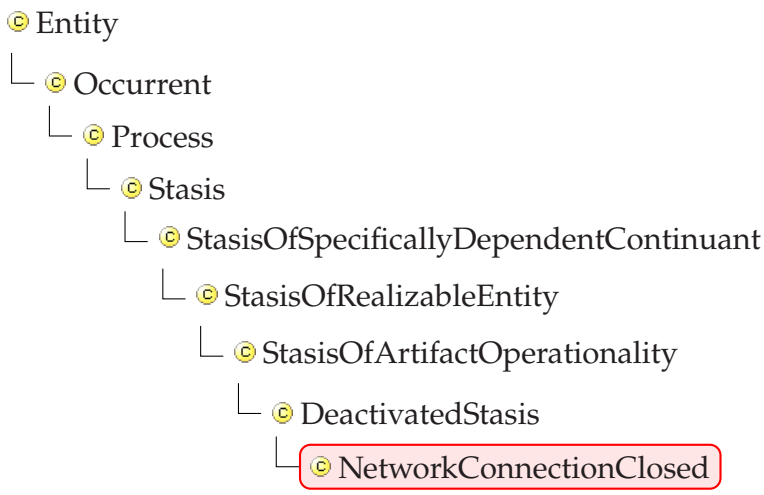
11.1.205 NetworkConnectionClosed

Definition
A Deactivated Stasis in which multiple resources connected over a network are not connected via their designed communication functions.

Annotations

- **Label:** Network Connection Closed
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/NetworkConnectionClosed

Hierarchy



Direct Super Types

- DeactivatedStasis

11.1.206 NetworkConnectionEstablished

Definition
An Active Stasis in which multiple resources connected over a network are connected via their designed communication functions.

Annotations

- **Label:** Network Connection Established
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/NetworkConnectionEstablished

Hierarchy

- Entity
  - Occurrent
    - Process
      - Stasis
        - StasisOfSpecificallyDependentContinuant
          - StasisOfRealizableEntity
            - StasisOfArtifactOperationality
              - ActiveStasis
                - NetworkConnectionEstablished

Direct Super Types

- ActiveStasis

11.1.207 NetworkConnectionExecution

Definition
A Computer Program Execution in which two resources are connected or unconnected on a network.

Annotations

- **Label:** Network Connection Execution
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/NetworkConnectionExecution

Hierarchy

- Entity
  - Occurrent
    - Process
      - MechanicalProcess
        - ComputerProgramExecution
          - NetworkConnectionExecution

Direct Super Types

- ComputerProgramExecution

Direct Sub Types

- NetworkConnectionInitiated
- NetworkConnectionTermination

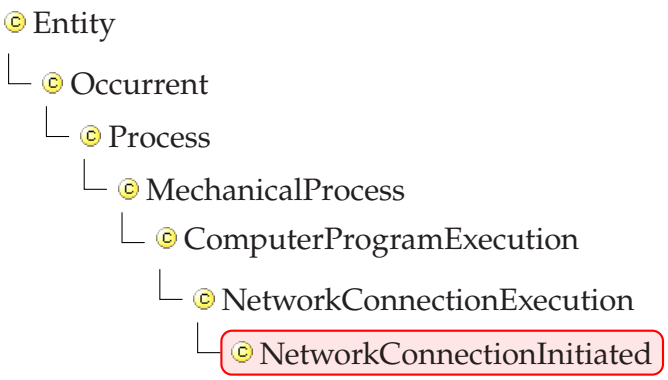
11.1.208 NetworkConnectionInitiated

Definition
A Computer Program Execution in which two previously unconnected resources become connected on a network.

Annotations

- **Label:** Network Connection Initiation
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/NetworkConnectionInitiated

Hierarchy



Direct Super Types

- NetworkConnectionExecution

Direct Sub Types

- TCPThreeWayHandshake

11.1.209 NetworkConnectionTermination

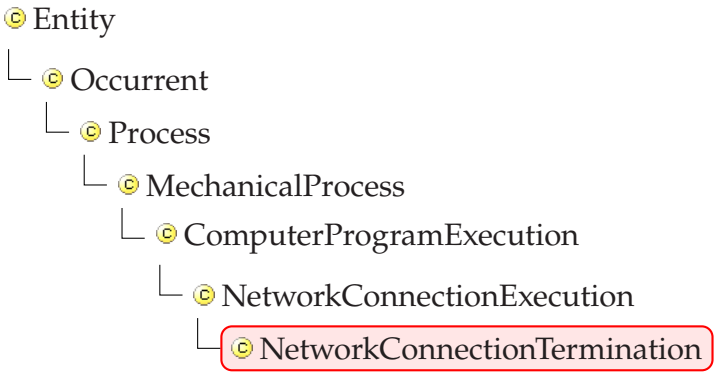
Definition

A Computer Program Execution in which two previously connected resources on a network become unconnected.

Annotations

- **Label:** Network Connection Termination
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/NetworkConnectionTermination

Hierarchy



Direct Super Types

- NetworkConnectionExecution

11.1.210 NetworkHost

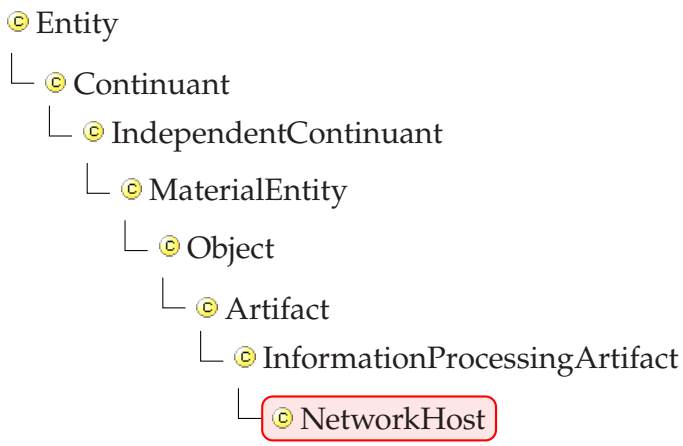
Definition

An Information Processing Artifact that is part of a Computer Network.

Annotations

- **Label:** Network Host
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/NetworkHost

Hierarchy



Direct Super Types

- InformationProcessingArtifact

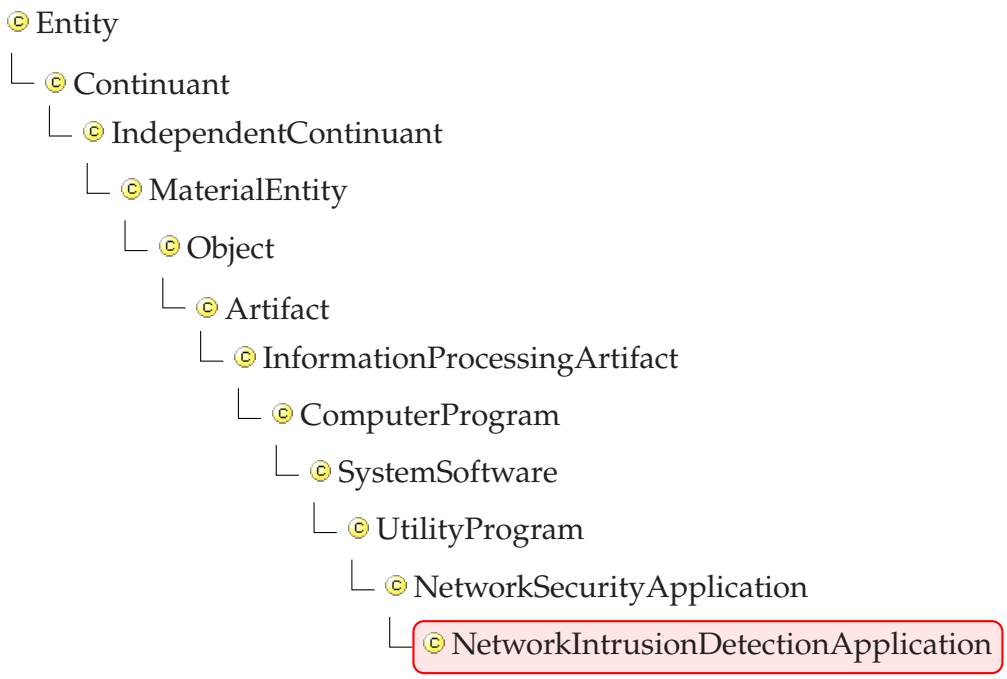
11.1.211 NetworkIntrusionDetectionApplication

Definition
A Network Security Application that is designed to detect and alert users or administrators about successful or failed attempts from unauthorized agents to gain access to some Computer Network.

Annotations

- **Label:** Network Intrusion Detection Application
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/NetworkIntrusionDetectionApplication

Hierarchy



Direct Super Types

- NetworkSecurityApplication

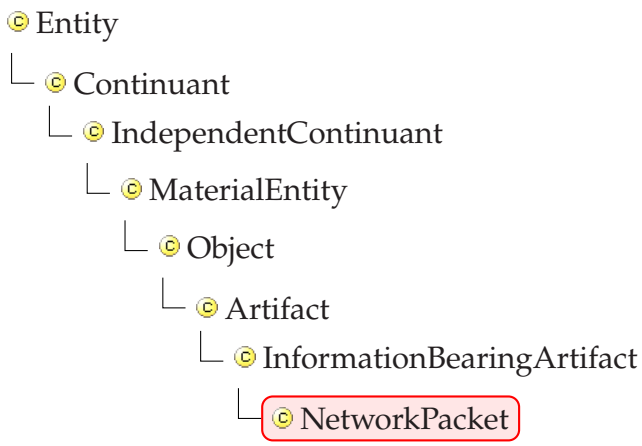
11.1.212 NetworkPacket

Definition
An Information Bearing Artifact that bears some collection of data that is meant to be communicated over some Computer Network.

Annotations

- **Label:** Network Packet
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/NetworkPacket

Hierarchy



Direct Super Types

- InformationBearingArtifact
- hasPart PacketHeader

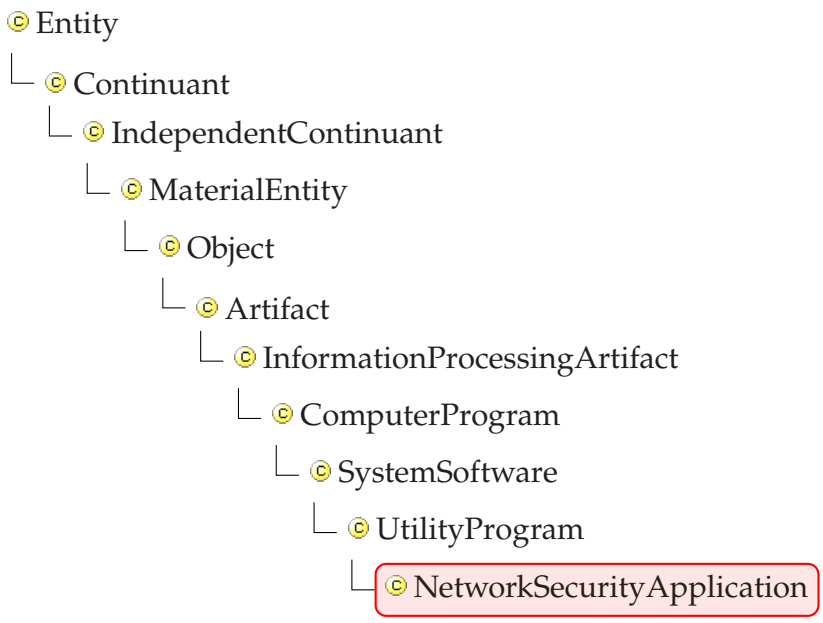
11.1.213 NetworkSecurityApplication

Definition
A Utility Program that is designed to protect the usability and integrity of some Computer Network and its data.

Annotations

- **Label:** Network Security Application
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/NetworkSecurityApplication

Hierarchy



Direct Super Types

- UtilityProgram

Direct Sub Types

- Firewall
- NetworkIntrusionDetectionApplication

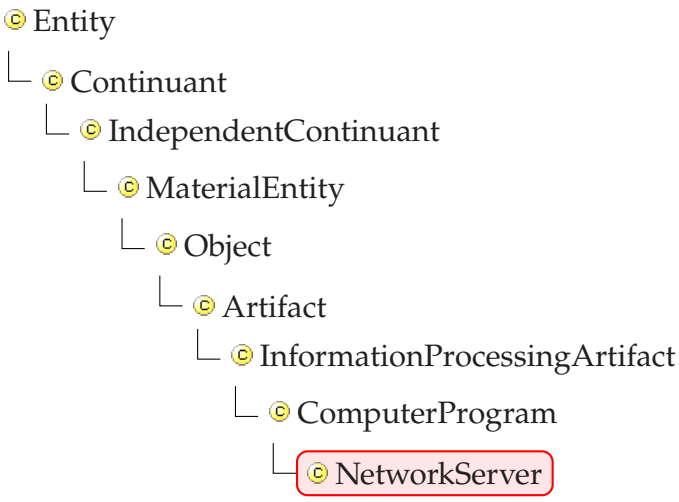
11.1.214 NetworkServer

Definition
A Computer Program that enables clients to access a Computer Service Function over a Computer Network.

Annotations

- **Label:** Network Server
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/NetworkServer

Hierarchy



Direct Super Types

- ComputerProgram

Direct Sub Types

- FileServer
- PrintServer
- WebServer

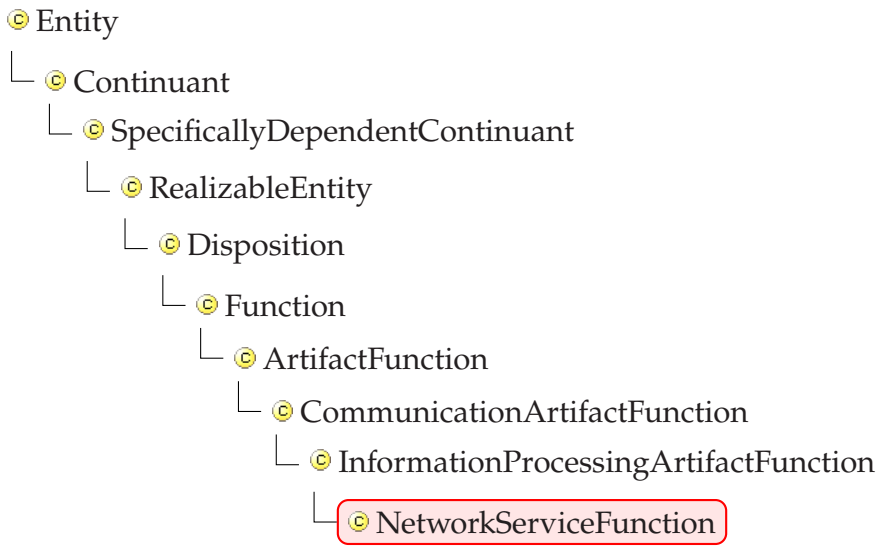
11.1.215 NetworkServiceFunction

Definition
An Information Processing Artifact Function that when realized is in a process of a client accessing some other Information Processing Artifact Function, called a service, over a Computer Network.

Annotations

- **Label:** Network Service Function
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/NetworkServiceFunction

Hierarchy



Direct Super Types

- InformationProcessingArtifactFunction

Direct Sub Types

- DHCPServiceFunction
- DNSServiceFunction
- RemoteAccessServiceFunction
- WebServiceFunction

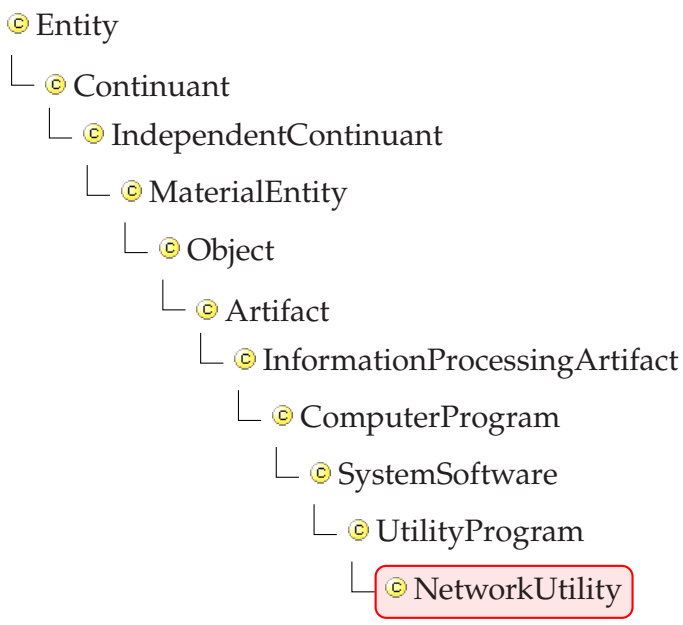
11.1.216 NetworkUtility

Definition
A Utility Program that is designed to analyze and configure various aspects of a Computer Network.

Annotations

- **Label:** Network Utility
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/NetworkUtility

Hierarchy



Direct Super Types

- UtilityProgram

Direct Sub Types

- netshUtility
- netstatUtility
- nslookupUtility
- pingUtility
- tracerouteUtility
- vnStatUtility

11.1.217 Node

Definition
An Information Bearing Artifact that is a basic element in a graph data structure, which can be connected to other such elements by edges.

Annotations

- **Label:** Node
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/Node

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - MaterialEntity
        - Object
          - Artifact
            - InformationBearingArtifact
              - Node

Direct Super Types

- InformationBearingArtifact

11.1.218 NodeAttribute

Definition
An Information Bearing Artifact that is attached to a Node, and which typically bears information about that Node or what it represents.

Annotations

- **Label:** Node Attribute
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/NodeAttribute

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - MaterialEntity
        - Object
          - Artifact
            - InformationBearingArtifact
              - NodeAttribute

Direct Super Types

- InformationBearingArtifact

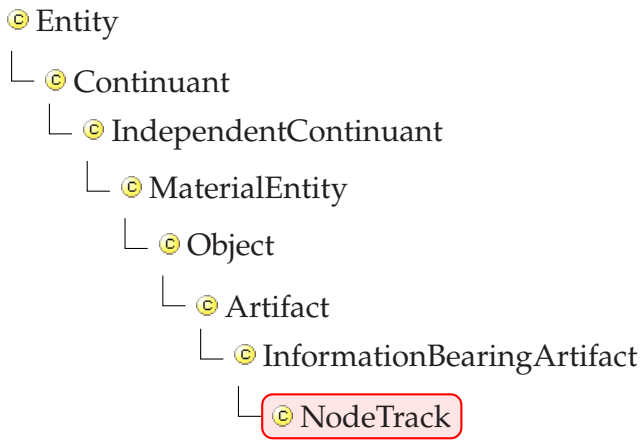
11.1.219 NodeTrack

Definition
An Information Bearing Artifact that is an ordered sequence of Nodes.

Annotations

- **Label:** Node Track
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/NodeTrack

Hierarchy



Direct Super Types

- InformationBearingArtifact

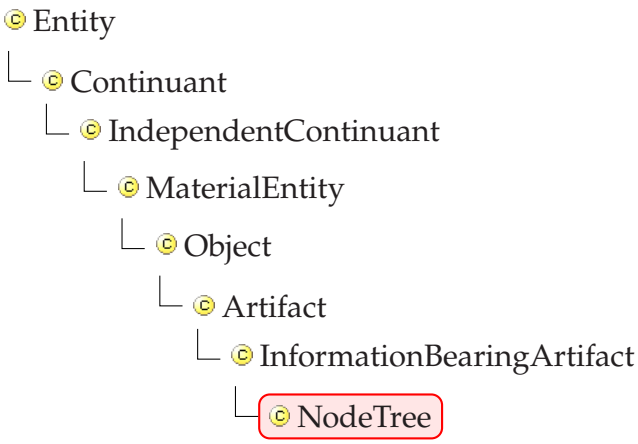
11.1.220 NodeTree

Definition
An Information Bearing Entity that consists of a hierarchy of Nodes with exactly one root Node.

Annotations

- **Label:** Node Tree
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/NodeTree

Hierarchy



Direct Super Types

- InformationBearingArtifact

Direct Sub Types

- SITAFeatureTree

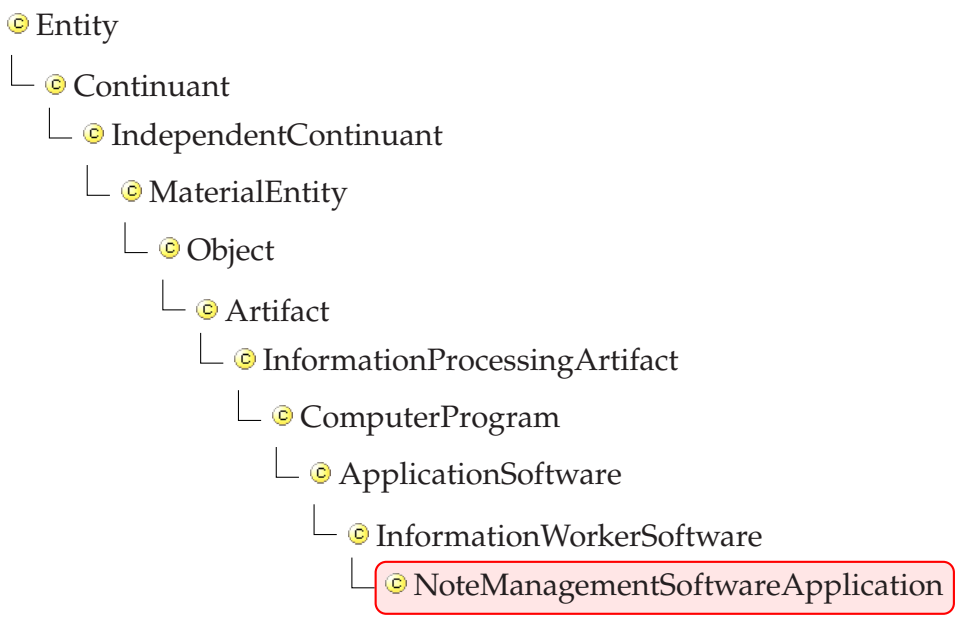
11.1.221 NoteManagementSoftwareApplication

Definition
An Information Worker Software Application that is designed to enable a user to record information captured from another source.

Annotations

- **Label:** Note Management Software Application
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/NoteManagementSoftwareApplication

Hierarchy



Direct Super Types

- InformationWorkerSoftware

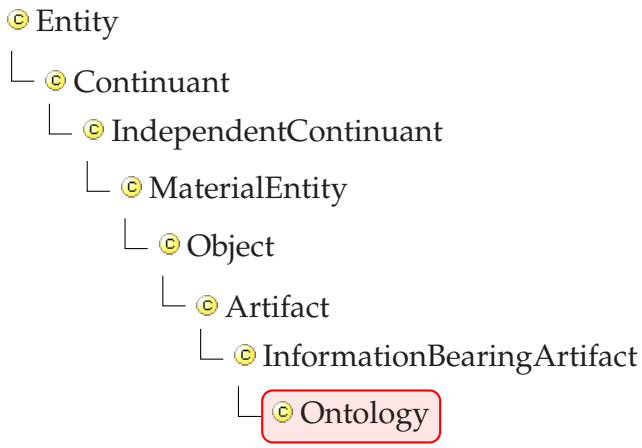
11.1.222 Ontology

Definition
An Information Bearing Artifact that is designed to represent types of entities and the relationships between them, and which can be encoded in a Computer Language.

Annotations

- **Label:** Ontology
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/Ontology

Hierarchy



Direct Super Types

- InformationBearingArtifact

11.1.223 OntologyEditingSoftwareApplication

Definition
An Information Worker Software Application that is designed to enable a user to create and manage an Ontology.

Annotations

- **Label:** Ontology Editing Software Application
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/OntologyEditingSoftwareApplication

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - MaterialEntity
        - Object
          - Artifact
            - InformationProcessingArtifact
              - ComputerProgram
                - ApplicationSoftware
                  - InformationWorkerSoftware
                    - OntologyEditingSoftwareApplication

Direct Super Types

- InformationWorkerSoftware

11.1.224 OpenSystemsInterconnectionCategory

Definition
A Nominal Measurement Information Content Entity that categorizes pieces of hardware or software based on their communication functionality.

Annotations

- **Label:** Open Systems Interconnection Category
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/OpenSystemsInterconnectionCategory

Hierarchy

- Entity
  - Continuant
    - GenericallyDependentContinuant
      - InformationContentEntity
        - DescriptiveInformationContentEntity
          - MeasurementInformationContentEntity
            - NominalMeasurementInformationContentEntity
              - OpenSystemsInterconnectionCategory

Direct Super Types

- NominalMeasurementInformationContentEntity

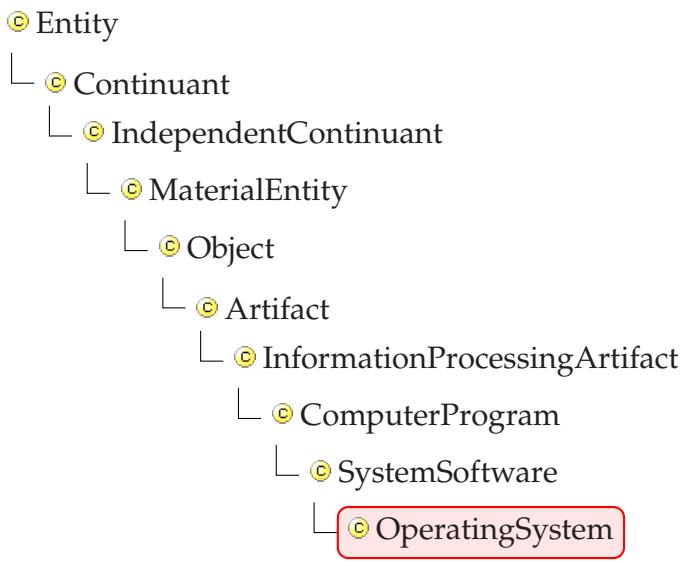
11.1.225 OperatingSystem

Definition
System Software that is designed to manage Computer hardware and software resources and provides common services for Computer Programs.

Annotations

- **Label:** Operating System
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/OperatingSystem

Hierarchy



Direct Super Types

- SystemSoftware

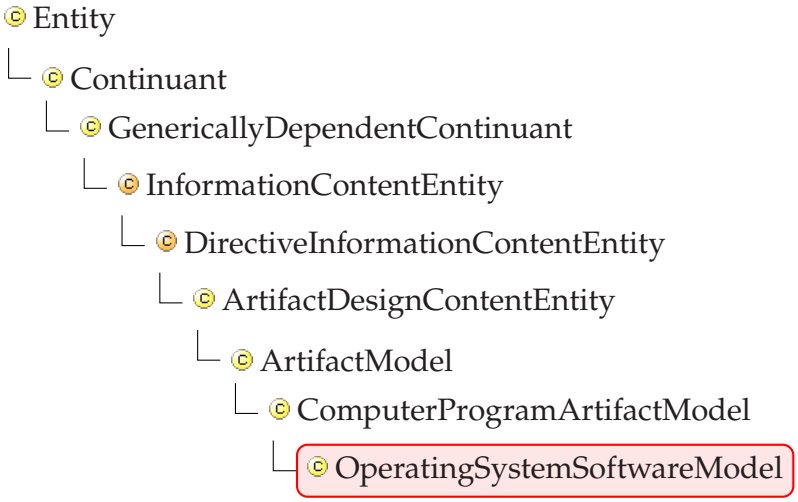
11.1.226 OperatingSystemSoftwareModel

Definition
A Computer Program Artifact Model that prescribes some Operating System.

Annotations

- **Label:** Operating System Software Model
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/OperatingSystemSoftwareModel

Hierarchy



Direct Super Types

- ComputerProgramArtifactModel
- prescribes OperatingSystem

Direct Sub Types

- UnixOperatingSystemModel
- WindowsOperatingSystemModel

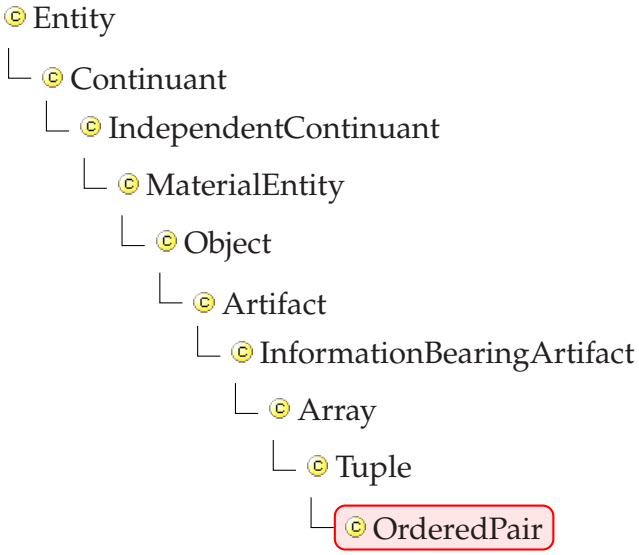
11.1.227 OrderedPair

Definition
A Tuple which consists of exactly two ordered elements.

Annotations

- **Label:** Ordered Pair
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/OrderedPair

Hierarchy



Direct Super Types

- Tuple

Direct Sub Types

- KeyValuePair

11.1.228 OrphanComputerProgramExecution

Definition
A Child Computer Program Execution whose Parent Computer Process has terminated.

Annotations

- **Label:** Orphan Computer Program Execution
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/OrphanComputerProgramExecution

Hierarchy

- Entity
  - Occurrent
    - Process
      - MechanicalProcess
        - ComputerProgramExecution
          - ChildComputerProgramExecution
            - OrphanComputerProgramExecution

Direct Super Types

- ChildComputerProgramExecution

11.1.229 OutputDevice

Definition
A Computer Component that converts information into human-understandable form

Annotations

- **Label:** Output Device
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/OutputDevice

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - MaterialEntity
        - Object
          - Artifact
            - ComputerComponent
              - OutputDevice

Direct Super Types

- ComputerComponent

Direct Sub Types

- ComputerMonitor
- ComputerPrinter

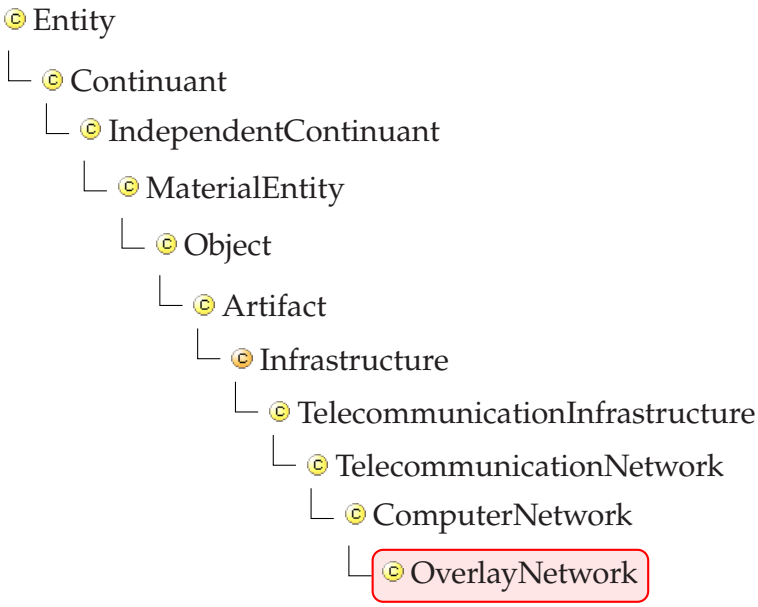
11.1.230 OverlayNetwork

Definition
A Computer Network that is built on top of another Computer Network.

Annotations

- **Label:** Overlay Network
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/OverlayNetwork

Hierarchy



Direct Super Types

- ComputerNetwork

Direct Sub Types

- DarkNetwork
- PeerToPeerNetwork

11.1.231 PackageManager

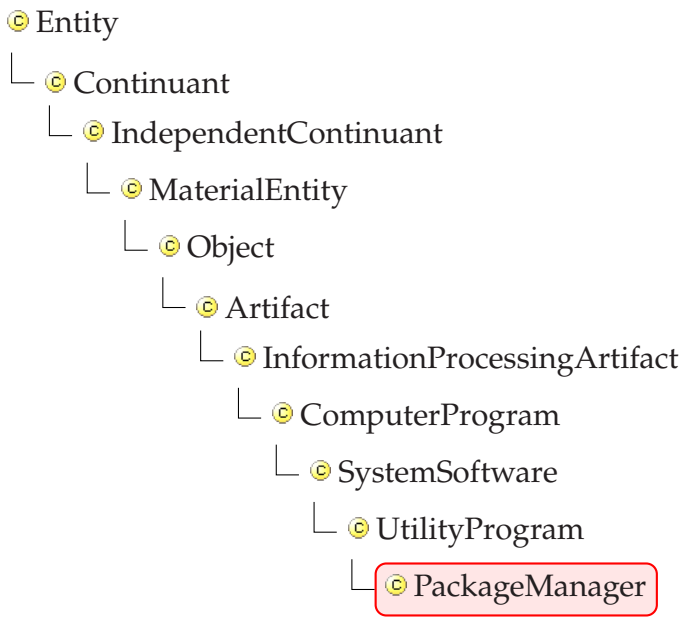
Definition

A Utility Program that is designed to automate the process of installing, upgrading, configuring, and removing Computer Programs for a Computer's Operating System.

Annotations

- **Label:** Package Manager
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/PackageManager

Hierarchy



Direct Super Types

- UtilityProgram

11.1.232 PacketHeader

Definition

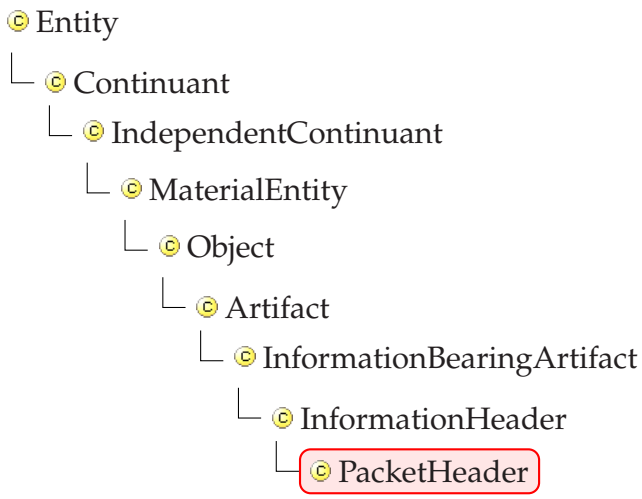
A Information Header that is part of some Computer Packet.

Annotations

- **Label:** Packet Header

- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/PacketHeader

Hierarchy



Direct Super Types

- InformationHeader
- partOf NetworkPacket

Direct Sub Types

- TCPHeader

11.1.233 PacketTransfer

Definition
A Data Transfer in which a Network Packet is transmitted from one Computer to another.

Annotations

- **Label:** Packet Transfer
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/PacketTransfer

Hierarchy

- Entity
  - Occurrent
    - Process
      - MechanicalProcess
        - ComputerProgramExecution
          - DataTransfer
            - PacketTransfer

Direct Super Types

- DataTransfer

11.1.234 ParentComputerProgramExecution

Definition
A Computer Program Execution that starts some other Computer Program Execution.

Annotations

- **Label:** Parent Computer Program Execution
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/ParentComputerProgramExecution

Hierarchy

- Entity
  - Occurrent
    - Process
      - MechanicalProcess
        - ComputerProgramExecution
          - ParentComputerProgramExecution

Direct Super Types

- ComputerProgramExecution

Equivalent Classes

- (ComputerProgramExecution ⊓ ∃ processStarts ComputerProgramExecution)

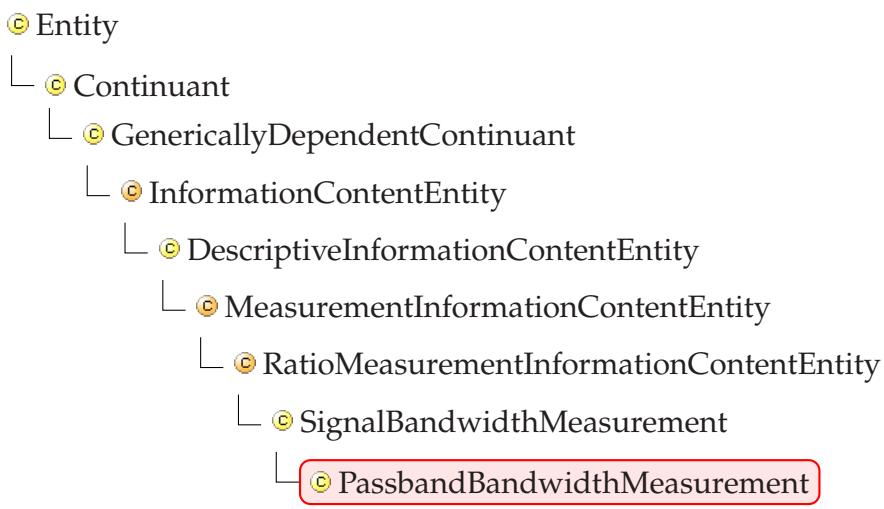
11.1.235 PassbandBandwidthMeasurement

Definition
A Signal Bandwidth Measurement that is a measurement of the range of continuous Frequencies between some upper and lower cutoff Frequencies.

Annotations

- **Label:** Passband Bandwidth Measurement
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/PassbandBandwidthMeasurement

Hierarchy



Direct Super Types

- SignalBandwidthMeasurement

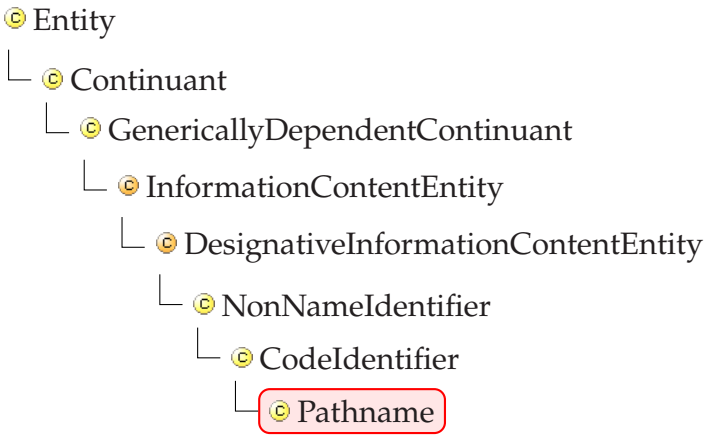
11.1.236 Pathname

Definition
A Code Identifier that designates a Digital File or File System Directory by specifying where that item is located within a hierarchy of File System Directories.

Annotations

- **Label:** Pathname
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/Pathname

Hierarchy



Direct Super Types

- CodeIdentifier

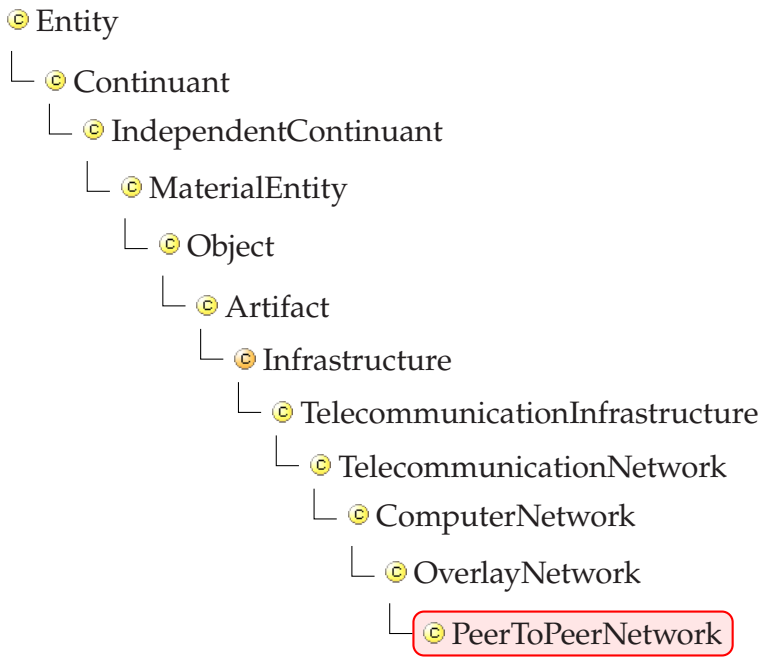
11.1.237 PeerToPeerNetwork

Definition
An Overlay Network that partitions tasks or workloads between equally privileged peers on the network.

Annotations

- **Label:** Peer-to-Peer Network
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/PeerToPeerNetwork

Hierarchy



Direct Super Types

- OverlayNetwork

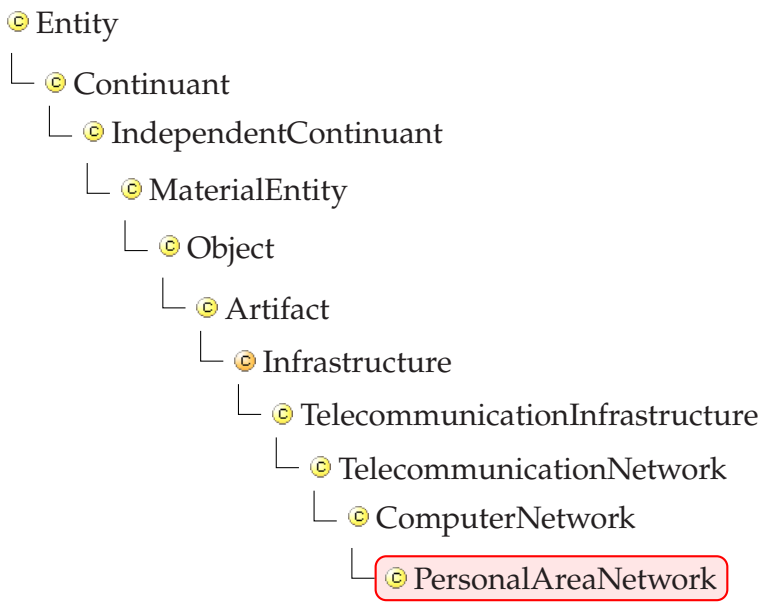
11.1.238 PersonalAreaNetwork

Definition
A Computer Network that is designed to connect several personal devices such as Computers, Telephones, and Tablets.

Annotations

- **Label:** Personal Area Network
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/PersonalAreaNetwork

Hierarchy



Direct Super Types

- ComputerNetwork

11.1.239 Phishing

Definition
A Cyber Attack wherein an Agent sends an electronic message purporting to be from a reputable sender in order to induce its recipients to reveal sensitive information.

Annotations

- **Label:** Phishing
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/Phishing

Hierarchy

- Entity
  - Occurrent
    - Process
      - Act
        - CyberAct
          - CyberAttack
            - Phishing

Direct Super Types

- CyberAttack

11.1.240 PointingDevice

Definition
An Input Device that allows a user to input spatial data to Information Processing Artficat..

Annotations

- **Label:** Pointing Device
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/PointingDevice

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - MaterialEntity
        - Object
          - Artifact
            - ComputerComponent
              - InputDevice
                - PointingDevice

Direct Super Types

- InputDevice

Direct Sub Types

- ComputerMouse

11.1.241 PresentationSoftwareApplication

Definition
An Information Worker Software Application that is designed to enable a user to create, edit, and present a series of Images or Videos.

Annotations

- **Label:** Presentation Software Application
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/PresentationSoftwareApplication

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - MaterialEntity
        - Object
          - Artifact
            - InformationProcessingArtifact
              - ComputerProgram
                - ApplicationSoftware
                  - InformationWorkerSoftware
                    - PresentationSoftwareApplication

Direct Super Types

- InformationWorkerSoftware

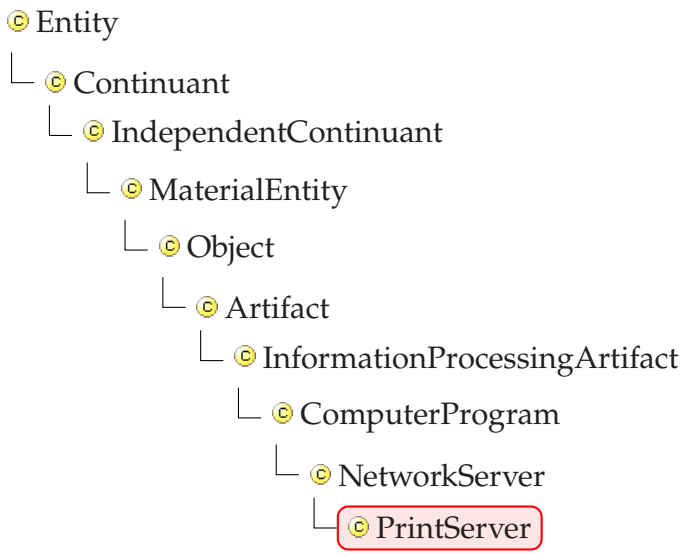
11.1.242 PrintServer

Definition
A Network Server that enables clients to access a Computer Printer Function.

Annotations

- **Label:** Print Server
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/PrintServer

Hierarchy



Direct Super Types

- NetworkServer

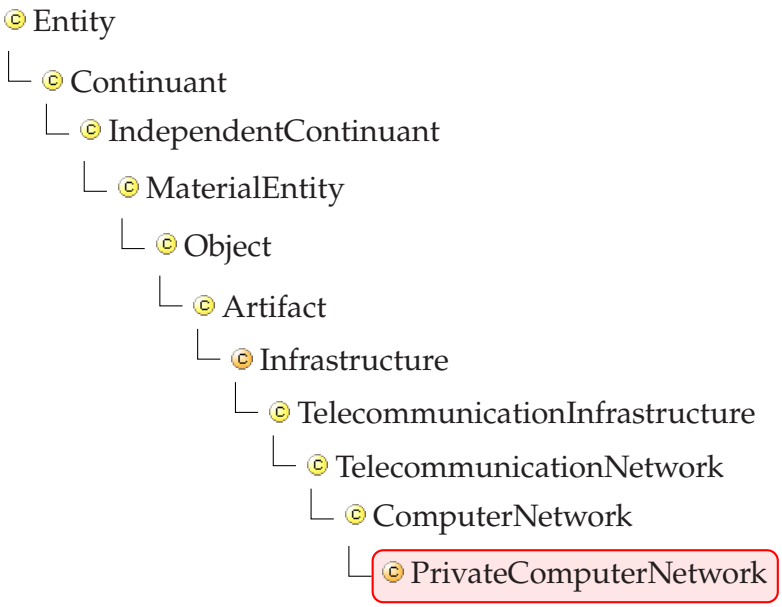
11.1.243 PrivateComputerNetwork

Definition
A Computer Network which requires authentication in order to access it.

Annotations

- **Label:** Private Computer Network
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/PrivateComputerNetwork

Hierarchy



Direct Super Types

- ComputerNetwork

Direct Sub Types

- VirtualPrivateNetwork

Equivalent Classes

- (ComputerNetwork ⊓ ∃ participatesIn Authentication)

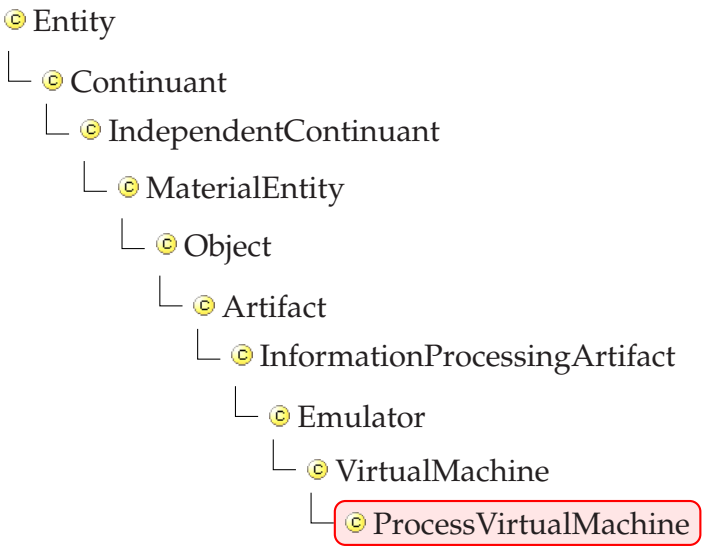
11.1.244 ProcessVirtualMachine

Definition
A Virtual Machine that executes Computer Programs in a platform-independent environment.

Annotations

- **Label:** Process Virtual Machine
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/ProcessVirtualMachine

Hierarchy



Direct Super Types

- VirtualMachine

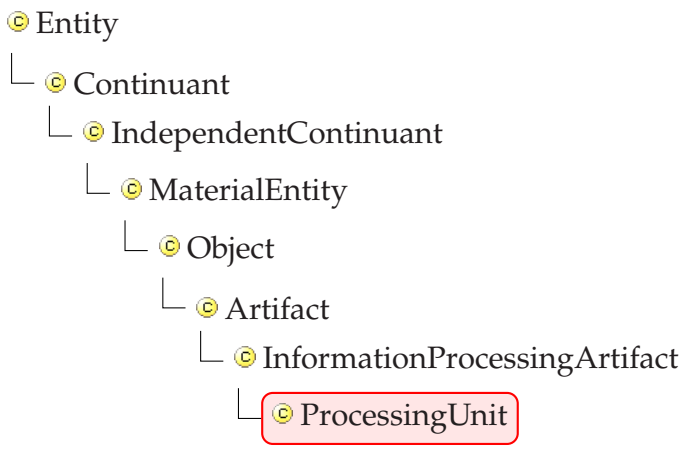
11.1.245 ProcessingUnit

Definition
An Information Processing Artifact that is designed to execute the instructions of some Computer Program.

Annotations

- **Label:** Processing Unit
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/ProcessingUnit

Hierarchy



Direct Super Types

- InformationProcessingArtifact

Direct Sub Types

- CentralProcessingUnit
- GraphicsProcessingUnit

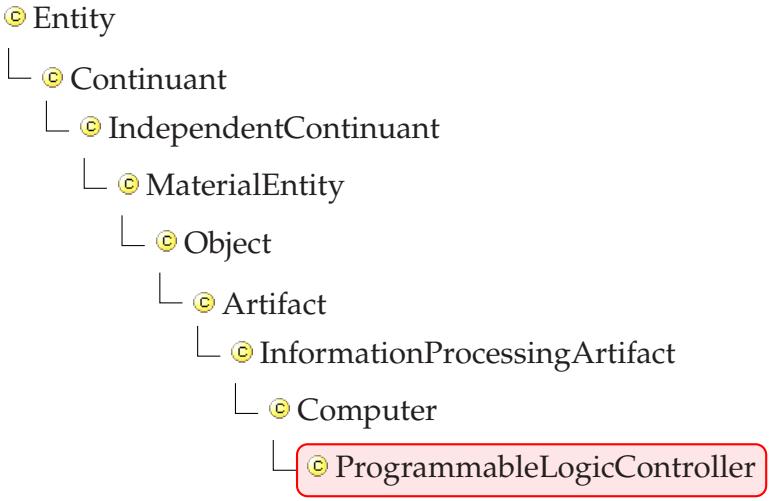
11.1.246 ProgrammableLogicController

Definition
A Computer that is designed to be rugged and adaptable for the control of manufacturing processes.

Annotations

- **Label:** Programmable Logic Controller
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/ProgrammableLogicController

Hierarchy



Direct Super Types

- Computer

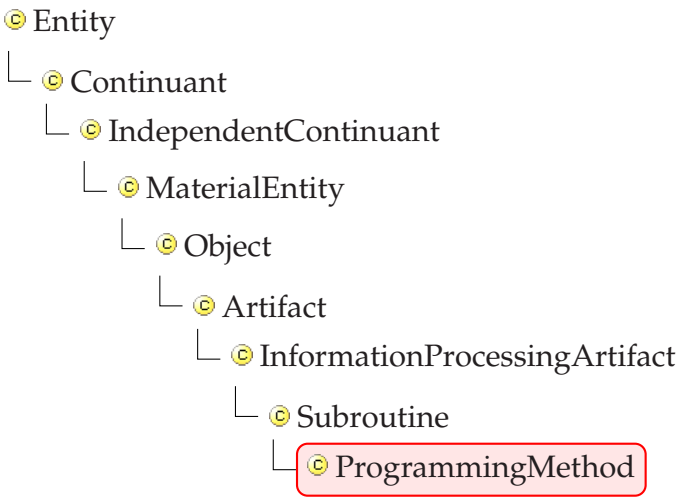
11.1.247 ProgrammingMethod

Definition
A Subroutine that is part of a Computer Object.

Annotations

- **Label:** Programming Method
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/ProgrammingMethod

Hierarchy



Direct Super Types

- Subroutine

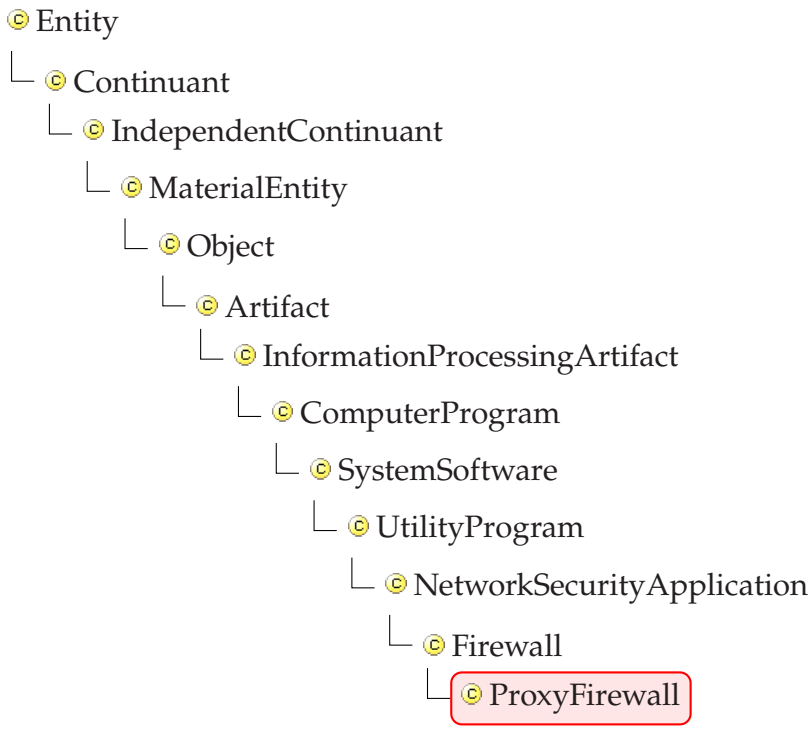
11.1.248 ProxyFirewall

Definition
A Firewall that protects network resources by filtering messages at the application layer using stateful inspection technology and deep packet inspection.

Annotations

- **Label:** Proxy Firewall
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/ProxyFirewall

Hierarchy



Direct Super Types

- Firewall

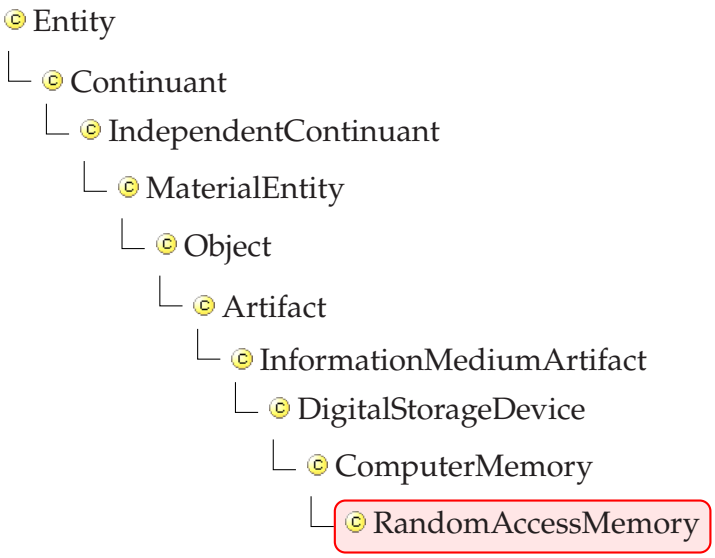
11.1.249 RandomAccessMemory

Definition
Computer Memory that stores frequently used Computer Programs to increase the general speed of a Computer.

Annotations

- **Label:** Random-Access Memory
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/RandomAccessMemory

Hierarchy



Direct Super Types

- ComputerMemory

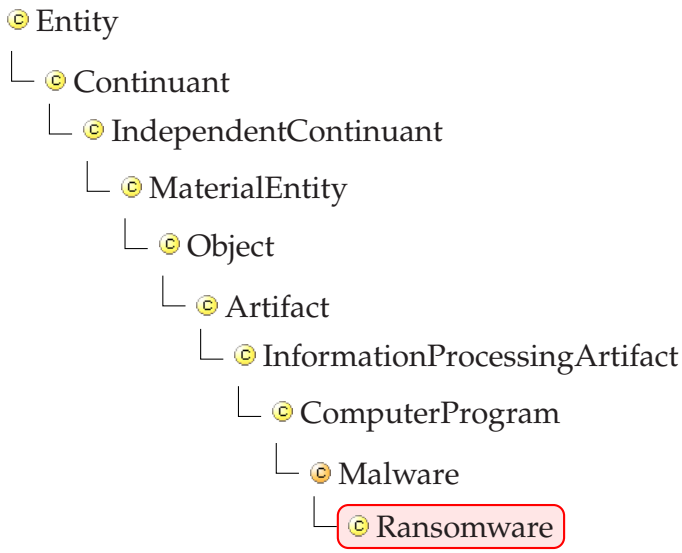
11.1.250 Ransomware

Definition
Malware that is designed to lock a user out of a computer system, and threaten to publish the victim's data or perpetually block system access unless a ransom is paid.

Annotations

- **Label:** Ransomware
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/Ransomware

Hierarchy



Direct Super Types

- Malware

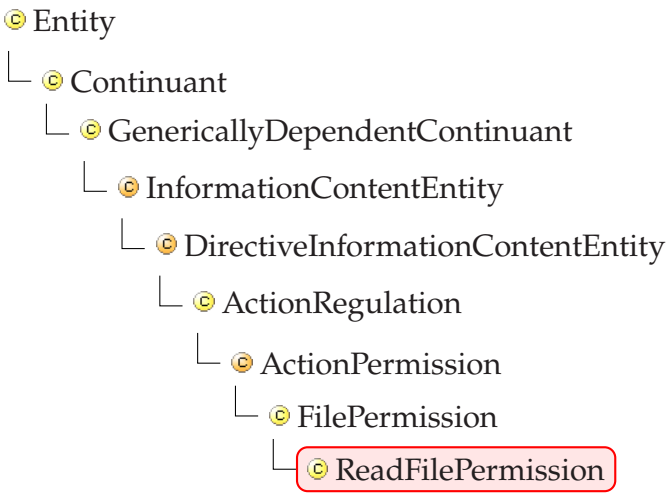
11.1.251 ReadFilePermission

Definition
A File Permission that prescribes the reading of a file by a user account.

Annotations

- **Label:** Read File Permission
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/ReadFilePermission

Hierarchy



Direct Super Types

- FilePermission

11.1.252 RelationalDatabaseSoftwareApplicationModel

Definition
A Database Software Application Model that prescribes a Database Software Application where the data is stored as a set of linked tables, or relations, that contain attributes, or columns, along with identifying keys that can be use to write queries to return joined and trimmed subsets of the database contents.

Annotations

- **Label:** Relational Database Software Application Model
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/RelationalDatabaseSoftwareApplicationModel

Hierarchy

- Entity
  - Continuant
    - GenericallyDependentContinuant
      - InformationContentEntity
        - DirectiveInformationContentEntity
          - ArtifactDesignContentEntity
            - ArtifactModel
              - ComputerProgramArtifactModel
                - DatabaseSoftwareApplicationModel
                - RelationalDatabaseSoftwareApplicationModel

Direct Super Types

- DatabaseSoftwareApplicationModel

11.1.253 RemoteAccess

Definition
A Computer Program Execution in which an Information Processing Artifact at one location connects with some other Information Processing Artifact at some other, remote location.

Annotations

- **Label:** Remote Access
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/RemoteAccess

Hierarchy

- Entity
  - Occurrent
    - Process
      - MechanicalProcess
        - ComputerProgramExecution
          - RemoteAccess

Direct Super Types

- ComputerProgramExecution

11.1.254 RemoteAccessServiceFunction

Definition
A Network Service Function that when realized is in a process of a Computer remotely accessing and controling another Computer on a Computer Network.

Annotations

- **Label:** Remote Access Service Function
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/RemoteAccessServiceFunction

Hierarchy

- Entity
  - Continuant
    - SpecificallyDependentContinuant
      - RealizableEntity
        - Disposition
          - Function
            - ArtifactFunction
              - CommunicationArtifactFunction
                - InformationProcessingArtifactFunction
                  - NetworkServiceFunction
                    - RemoteAccessServiceFunction

Direct Super Types

- NetworkServiceFunction

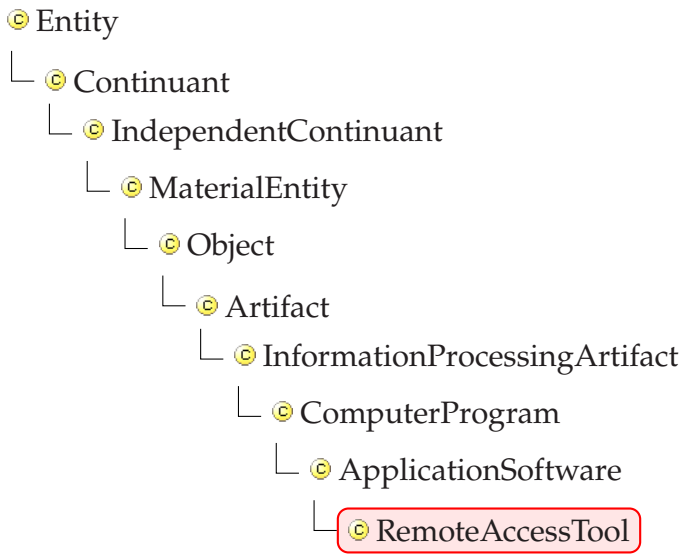
11.1.255 RemoteAccessTool

Definition
Application Software that allows a remote operator to control a system.

Annotations

- **Label:** Remote Access Tool
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/RemoteAccessTool

Hierarchy



Direct Super Types

- ApplicationSoftware

11.1.256 RemoteTerminalUnit

Definition
A Computer that is designed to interface objects in the physical world to a Distributed Control System or a SCADA System by transmitting telemetry data to a master system, and by using messages from the master supervisory system to control connected objects.

Annotations

- **Label:** Remote Terminal Unit
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/RemoteTerminalUnit

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - MaterialEntity
        - Object
          - Artifact
            - InformationProcessingArtifact
              - Computer
                - RemoteTerminalUnit

Direct Super Types

- Computer

11.1.257 RootDirectory

Definition
A File System Directory that is the first or top-most directory in a hierarchy of File System Directories.

Annotations

- **Label:** Root Directory
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/RootDirectory

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - MaterialEntity
        - ObjectAggregate
          - FileSystemDirectory
            - RootDirectory

Direct Super Types

- FileSystemDirectory

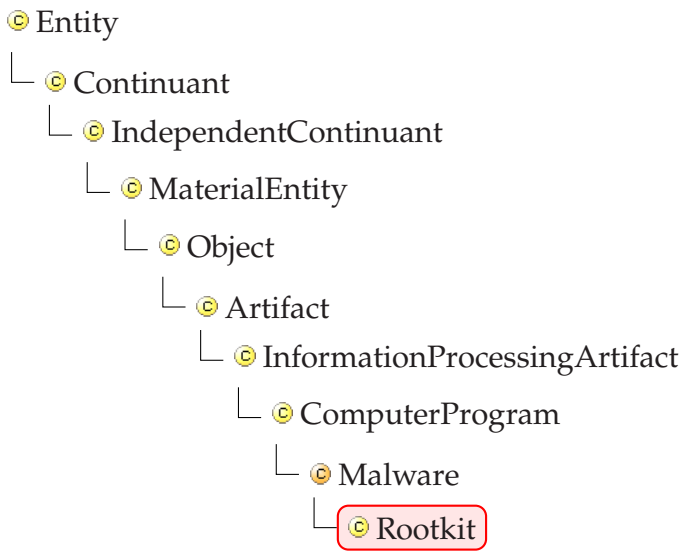
11.1.258 Rootkit

Definition
Malware that is designed to enable an unauthorized user to gain administrator access to a Computer.

Annotations

- **Label:** Rootkit
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/Rootkit

Hierarchy



Direct Super Types

- Malware

Direct Sub Types

- Bootkit

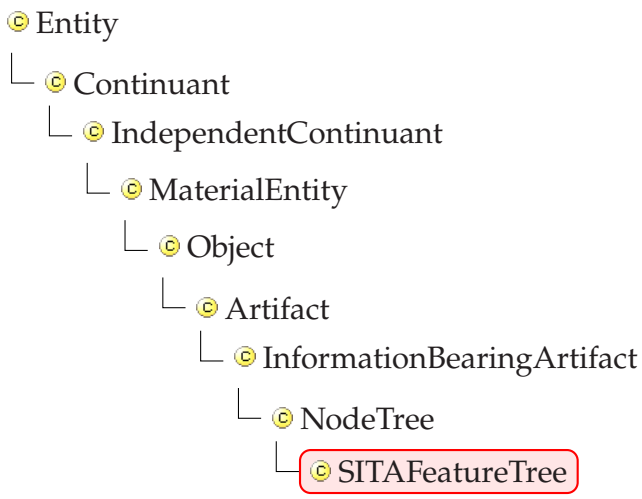
11.1.259 SITAFeatureTree

Annotations

- **Label:** SITA Feature Tree

- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/SITAFeatureTree

Hierarchy



Direct Super Types

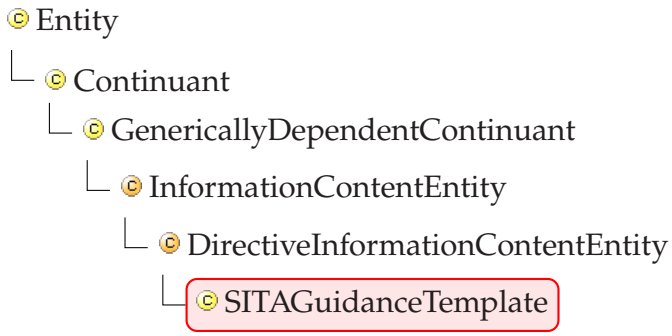
- NodeTree

11.1.260 SITAGuidanceTemplate

Annotations

- **Label:** SITA Guidance Template
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/SITAGuidanceTemplate

Hierarchy



Direct Super Types

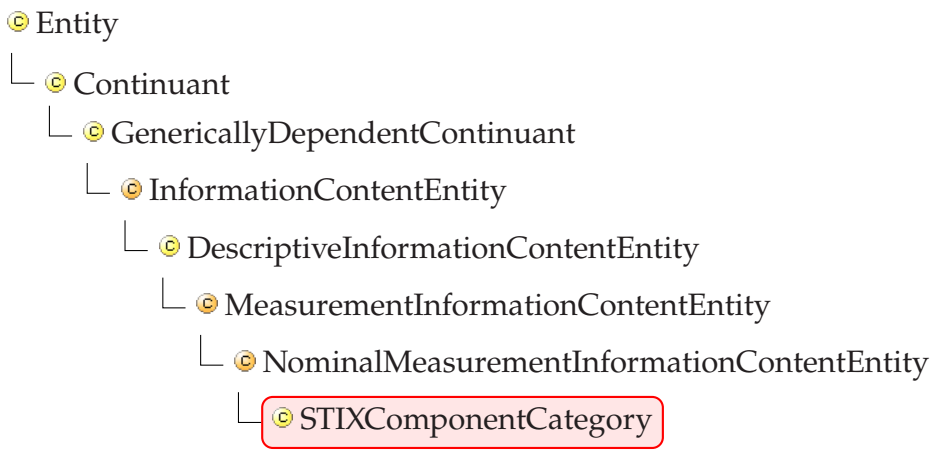
- DirectiveInformationContentEntity

11.1.261 STIXComponentCategory

Annotations

- **Label:** STIX Component Category
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/STIXComponentCategory

Hierarchy



Direct Super Types

- NominalMeasurementInformationContentEntity

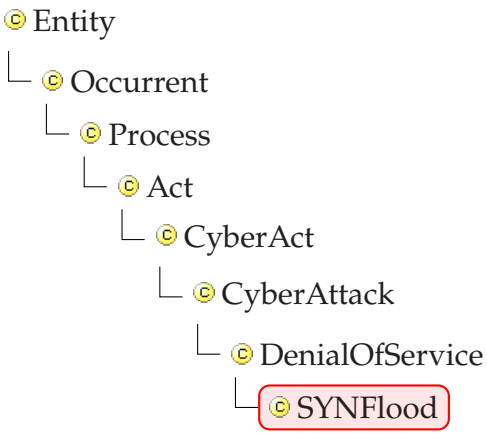
11.1.262 SYNFlood

Definition
A Denial of Service in which an Agent sends a succession of SYN requests to a target's system in an attempt to consume enough server resources to make the system unresponsive to legitimate traffic.

Annotations

- **Label:** SYN Flood
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/SYNFlood

Hierarchy



Direct Super Types

- DenialOfService

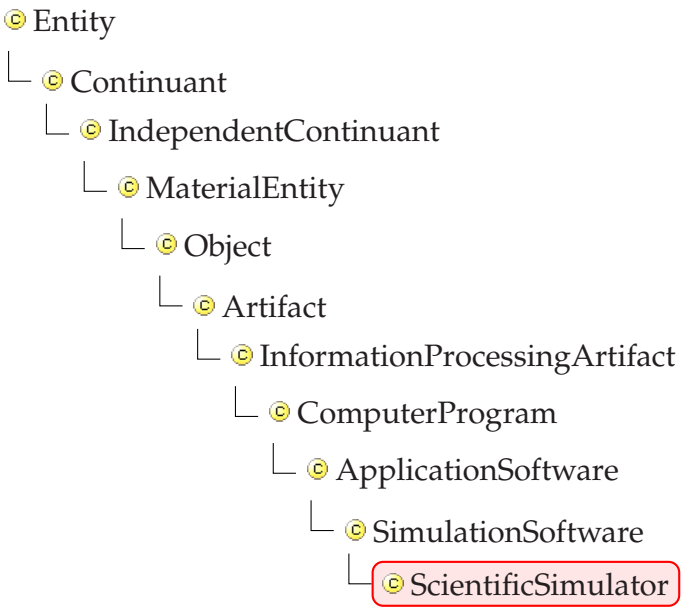
11.1.263 ScientificSimulator

Definition
Simulation Software that is designed to enable a user to model some scientific phenomenon.

Annotations

- **Label:** Scientific Simulator
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/ScientificSimulator

Hierarchy



Direct Super Types

- SimulationSoftware

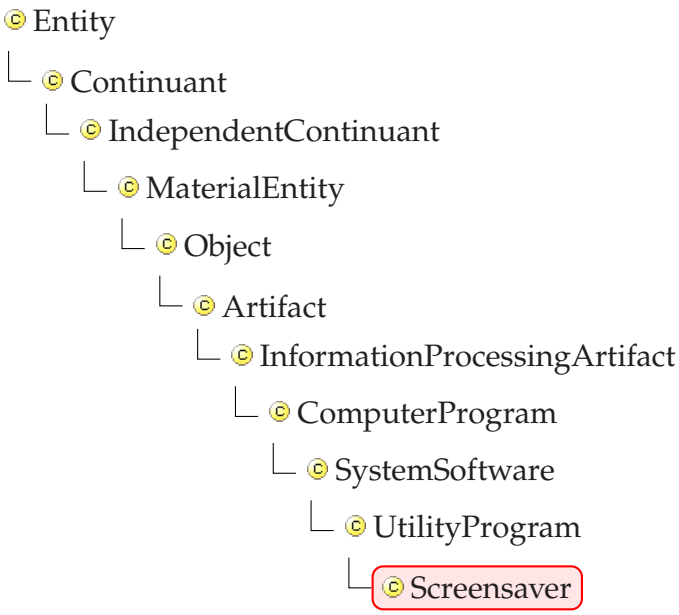
11.1.264 Screensaver

Definition
A Utility Program that is designed to blank the Screen or to fill it with Images when the Computer is not in use.

Annotations

- **Label:** Screensaver
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/Screensaver

Hierarchy



Direct Super Types

- UtilityProgram

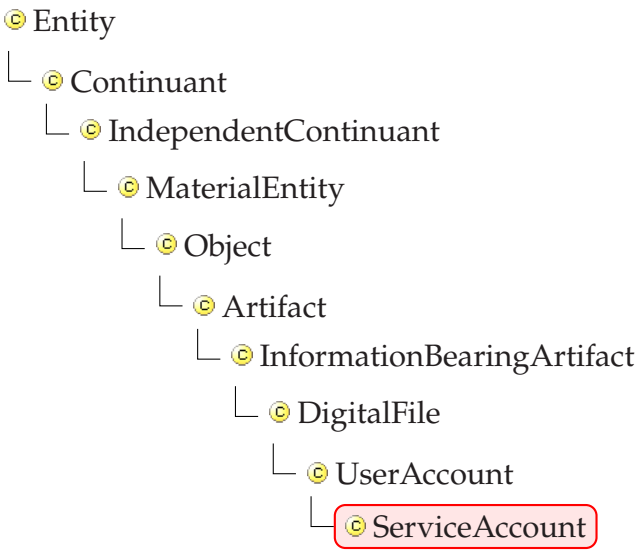
11.1.265 ServiceAccount

Definition
A User Account that is used to run applications and other processes.

Annotations

- **Label:** Service Account
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/ServiceAccount

Hierarchy



Direct Super Types

- UserAccount

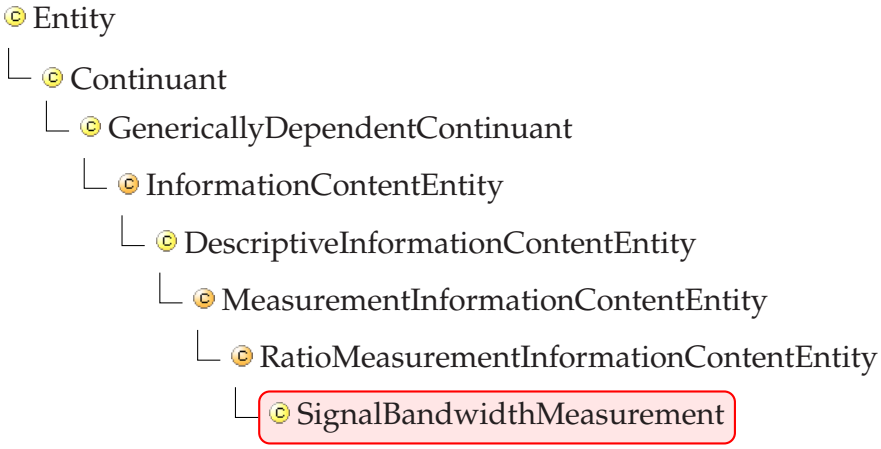
11.1.266 SignalBandwidthMeasurement

Definition
A Ratio Measurement Information Content Entity that is a measurement of the range of some continuous band of Frequencies in the transmission of a signal.

Annotations

- **Label:** Signal Bandwidth Measurement
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/SignalBandwidthMeasurement

Hierarchy



Direct Super Types

- RatioMeasurementInformationContentEntity

Direct Sub Types

- BasebandBandwidthMeasurement
- PassbandBandwidthMeasurement

11.1.267 SimulationSoftware

Definition
Application Software that is designed to enable a user to model a process with a set of mathematical formulas.

Annotations

- **Label:** Simulation Software
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/SimulationSoftware

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - MaterialEntity
        - Object
          - Artifact
            - InformationProcessingArtifact
              - ComputerProgram
                - ApplicationSoftware
                - SimulationSoftware

Direct Super Types

- ApplicationSoftware

Direct Sub Types

- BattlefieldSimulator
- DigitalTwin
- EmergencySimulator
- ScientificSimulator
- SocialSimulator
- VehicleSimulator

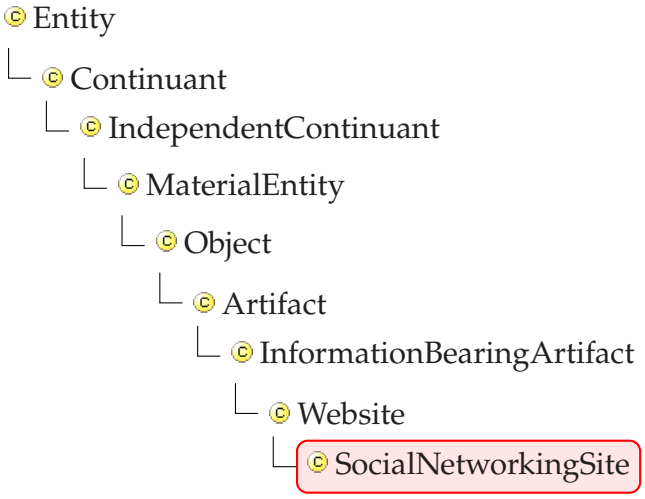
11.1.268 SocialNetworkingSite

Definition
A Website that is used by people to build social networks or social relations with other people who share similar personal or career interests, activities, backgrounds, or real-life connections.

Annotations

- **Label:** Social Networking Site
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/SocialNetworkingSite

Hierarchy



Direct Super Types

- Website

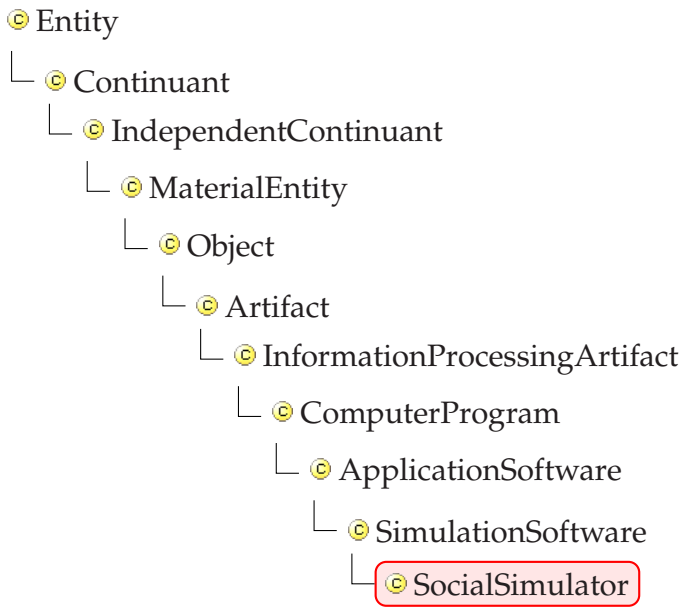
11.1.269 SocialSimulator

Definition
Simulation Software that is designed to enable a user to model some social phenomenon.

Annotations

- **Label:** Social Simulator
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/SocialSimulator

Hierarchy



Direct Super Types

- SimulationSoftware

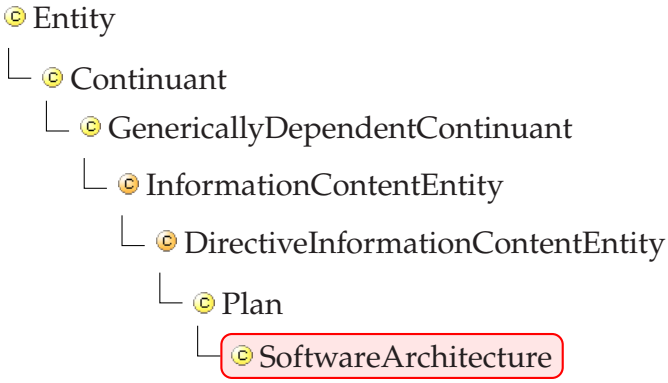
11.1.270 SoftwareArchitecture

Definition
A Plan Specification that prescribes the fundamental structures of a software system and how to create such systems.

Annotations

- **Label:** Software Architecture
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/SoftwareArchitecture

Hierarchy



Direct Super Types

- Plan

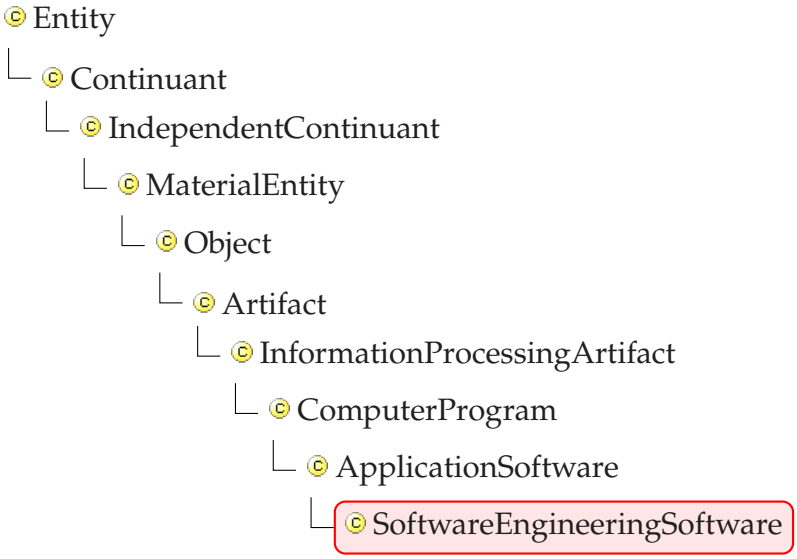
11.1.271 SoftwareEngineeringSoftware

Definition
Application Software that is designed to enable a user to create and manage a software product.

Annotations

- **Label:** Software Engineering Software
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/SoftwareEngineeringSoftware

Hierarchy



Direct Super Types

- ApplicationSoftware

Direct Sub Types

- CodeCompiler
- CodeInterpreter
- IntegratedDevelopmentEnvironment
- SoftwareFramework

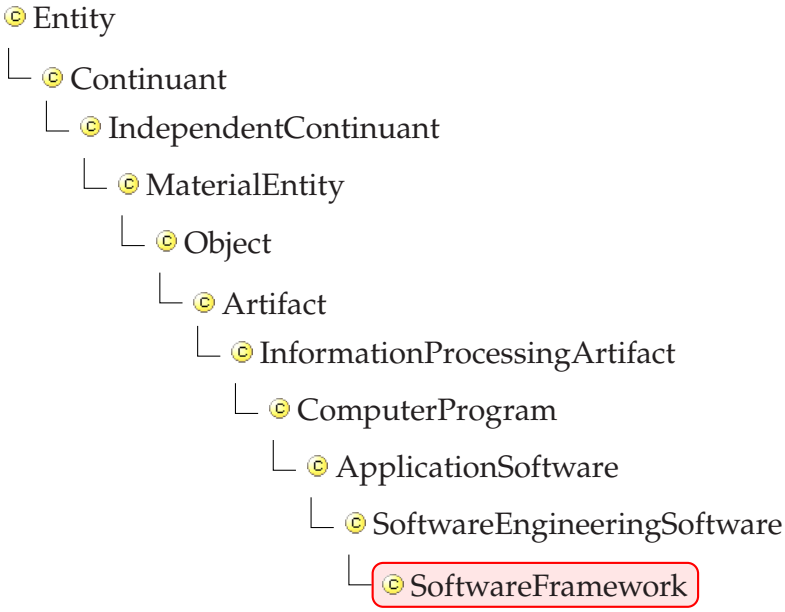
11.1.272 SoftwareFramework

Definition
A Software Engineering Software that provides generic functionality and can be selectively changed by additional user-written code to provide application-specific functionality.

Annotations

- **Label:** Software Framework
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/SoftwareFramework

Hierarchy



Direct Super Types

- SoftwareEngineeringSoftware

11.1.273 SoftwareLibrary

Definition
An Information Bearing Artifact that is an aggregate of Digital Files and that is designed to support the development or execution of Computer Programs.

Annotations

- **Label:** Software Library
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/SoftwareLibrary

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - MaterialEntity
        - Object
          - Artifact
            - InformationBearingArtifact
              - SoftwareLibrary

Direct Super Types

- InformationBearingArtifact

11.1.274 SoftwareStack

Definition

An Information Processing Artifact composed of software, software subsystems, or components needed to create a complete platform such that no additional software is needed to support applications.

Annotations

- **Label:** Software Stack
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/SoftwareStack

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - MaterialEntity
        - Object
          - Artifact
            - InformationProcessingArtifact
              - SoftwareStack

Direct Super Types

- InformationProcessingArtifact

Direct Sub Types

- DataProcessingStack
- WebServiceStack

11.1.275 SpreadsheetSoftwareApplication

Definition

An Information Worker Software Application that is designed to enable a user to organize, analyze, and chart/graph data in Data Rows and Data Columns.

Annotations

- **Label:** Spreadsheet Software Application
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/SpreadsheetSoftwareApplication

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - MaterialEntity
        - Object
          - Artifact
            - InformationProcessingArtifact
              - ComputerProgram
                - ApplicationSoftware
                  - InformationWorkerSoftware
                    - SpreadsheetSoftwareApplication

Direct Super Types

- InformationWorkerSoftware

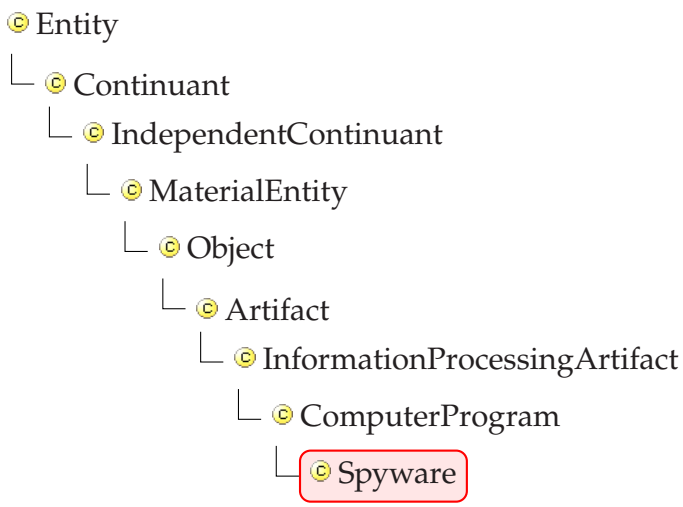
11.1.276 Spyware

Definition
A Computer Program that is designed to gather information about a person or organization without their knowledge, that may send such information to another entity without the consumer's consent, or that asserts control over a device without the consumer's knowledge.

Annotations

- **Label:** Spyware
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/Spyware

Hierarchy



Direct Super Types

- ComputerProgram

Direct Sub Types

- MaliciousSpyware

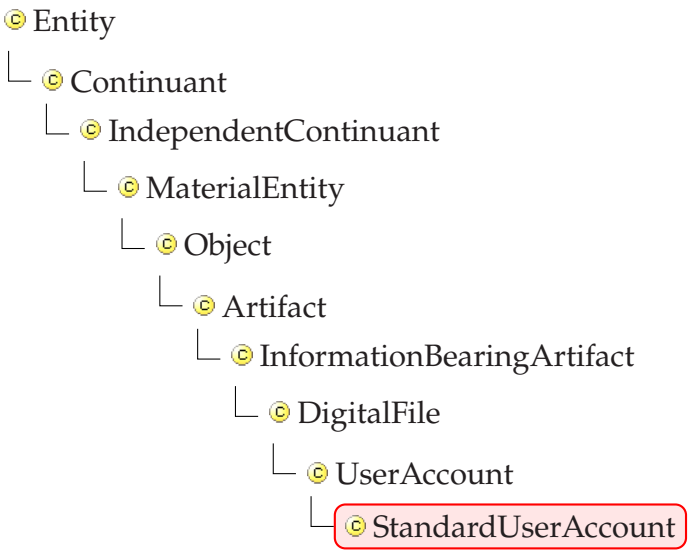
11.1.277 StandardUserAccount

Definition
A User Account that is not permitted to create, edit, view, or delete system files.

Annotations

- **Label:** Standard User Account
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/StandardUserAccount

Hierarchy



Direct Super Types

- UserAccount

11.1.278 StasisOfDigitalStorage

The purpose of this Stasis is to represent that some Digital Storage Device (e.g., a hard drive or RAM) stores (at a given time) a Computer Program. We cannot say that a Computer Program (an IBA) is part_of some hard drive or RAM, because although the hard drive or RAM might take on qualities in order to encode the Program, the Program itself is not identical to any of those qualities.

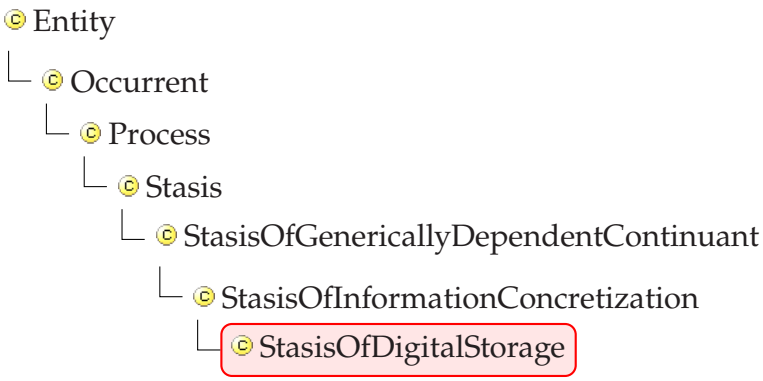
Definition
A Stasis of Information Bearing that has as participants some Digital Storage Device and some Information Quality Entity.

Annotations

- **Label:** Stasis of Digital Storage

- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/StasisOfDigitalStorage

Hierarchy



Direct Super Types

- StasisOfInformationConcretization

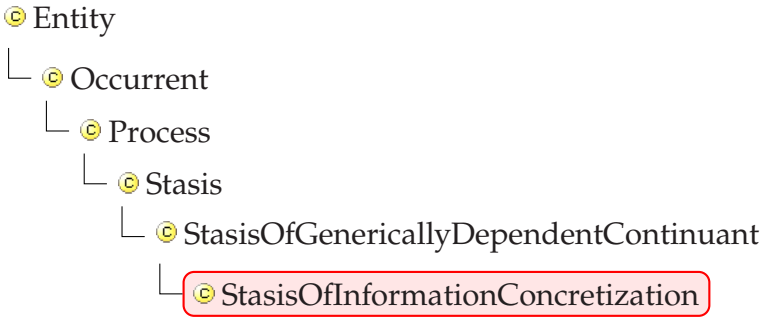
11.1.279 StasisOfInformationConcretization

Definition
A Stasis of Generically Dependent Continuant that has as participants some Information Bearing Entity and some Information Content Entity.

Annotations

- **Label:** Stasis of Information Bearing
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/StasisOfInformationConcretization

Hierarchy



Direct Super Types

- StasisOfGenericallyDependentContinuant

Direct Sub Types

- StasisOfDigitalStorage

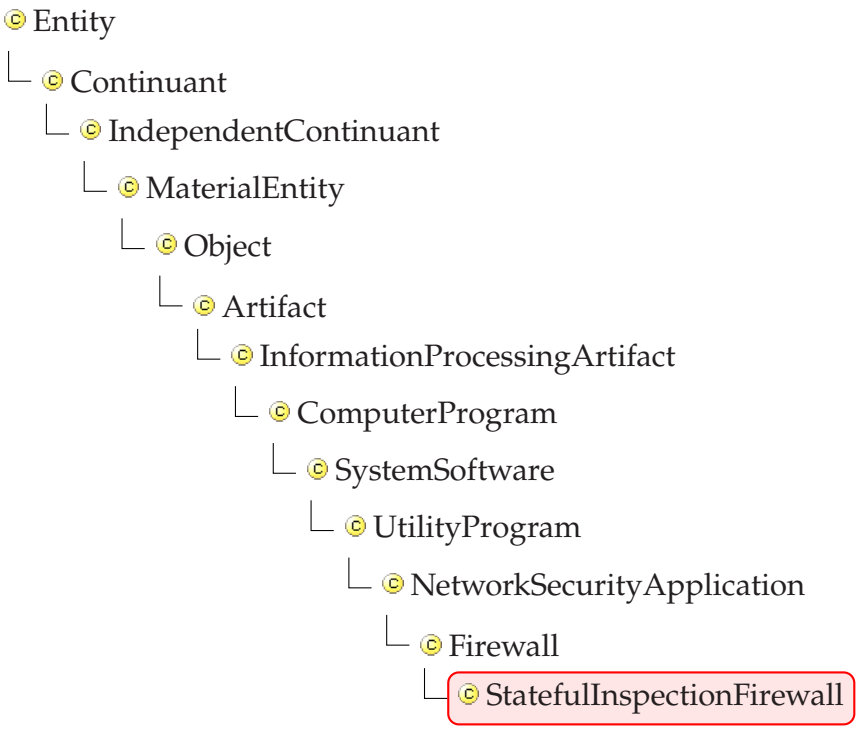
11.1.280 StatefulInspectionFirewall

Definition
A Firewall that allows or blocks traffic based on state, port, and protocol.

Annotations

- **Label:** Stateful Inspection Firewall
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/StatefulInspectionFirewall

Hierarchy



Direct Super Types

- Firewall

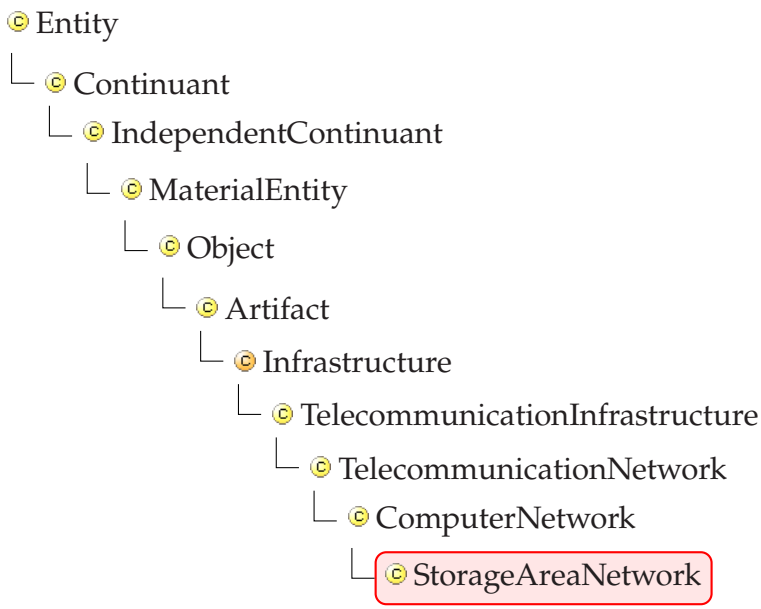
11.1.281 StorageAreaNetwork

Definition
A Computer Network that is designed to provide access to consolidated, block level data storage.

Annotations

- **Label:** Storage Area Network
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/StorageAreaNetwork

Hierarchy



Direct Super Types

- ComputerNetwork

11.1.282 Subroutine

Definition
An Information Processing Artifact that bears some Algorithm which is designed to be executed within the context of some Computer Program.

Annotations

- **Label:** Subroutine
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/Subroutine

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - MaterialEntity
        - Object
          - Artifact
            - InformationProcessingArtifact
              - Subroutine

Direct Super Types

- InformationProcessingArtifact

Direct Sub Types

- HashFunction
- MaliciousCode
- ProgrammingMethod

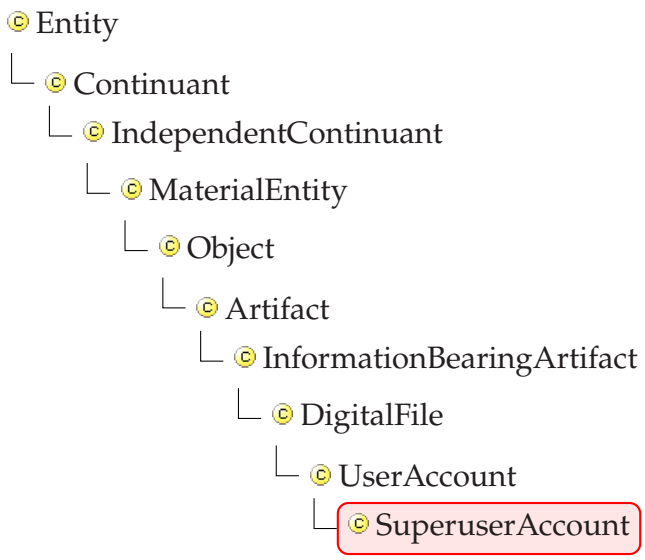
11.1.283 SuperuserAccount

Definition
A User Account used for system adiministration that has all permissions to all files and programs.

Annotations

- **Label:** Superuser Account
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/SuperuserAccount

Hierarchy



Direct Super Types

- UserAccount

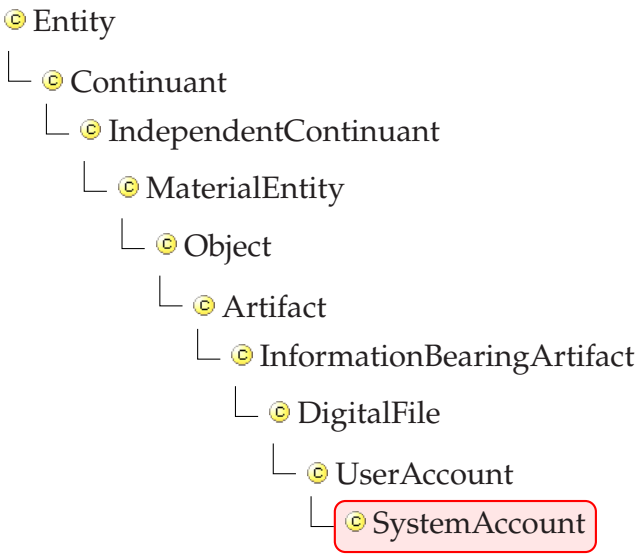
11.1.284 SystemAccount

Definition
A User Account that is created by an operating system during installation and that is used for operating system defined purposes.

Annotations

- **Label:** System Account
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/SystemAccount

Hierarchy



Direct Super Types

- UserAccount

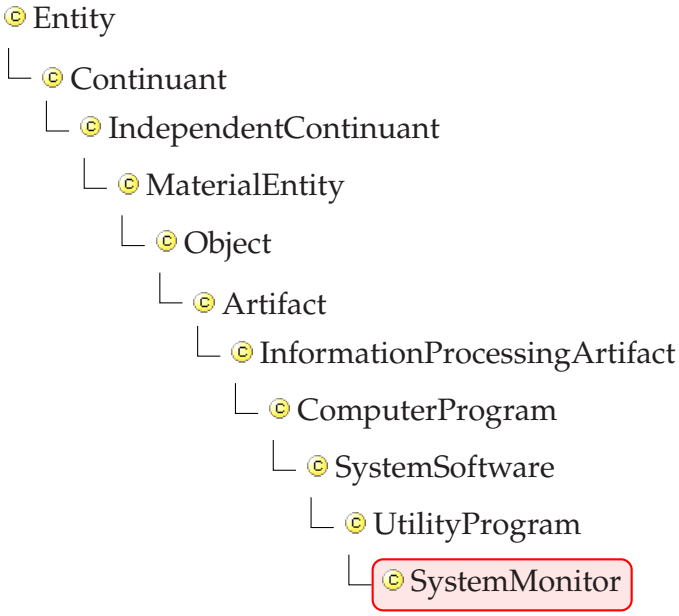
11.1.285 SystemMonitor

Definition
A Utility Program that is designed to monitor resources and performance in a Computer.

Annotations

- **Label:** System Monitor
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/SystemMonitor

Hierarchy



Direct Super Types

- UtilityProgram

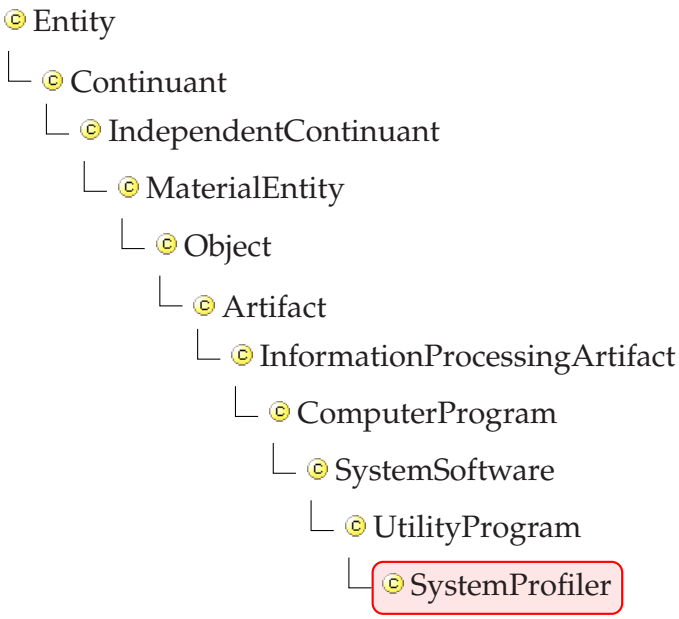
11.1.286 SystemProfiler

Definition
A Utility Program that is designed to provide detailed information about the software installed and hardware attached to a Computer.

Annotations

- **Label:** System Profiler
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/SystemProfiler

Hierarchy



Direct Super Types

- UtilityProgram

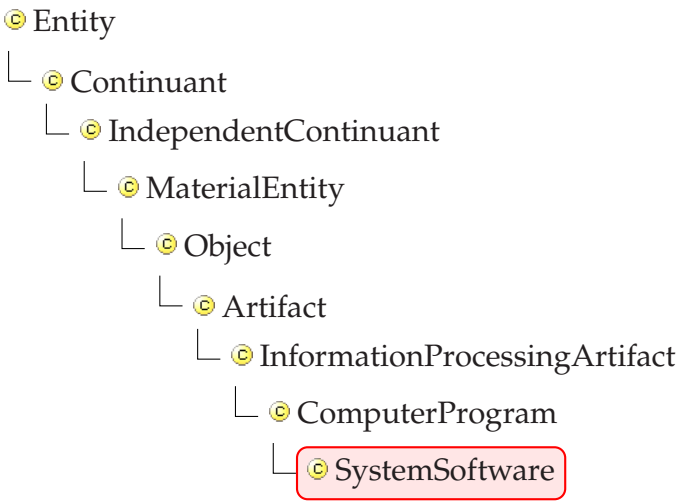
11.1.287 SystemSoftware

Definition
A Computer Program that is designed to support the infrastructure of a Computer.

Annotations

- **Label:** System Software
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/SystemSoftware

Hierarchy



Direct Super Types

- ComputerProgram

Direct Sub Types

- Firmware
- OperatingSystem
- UtilityProgram

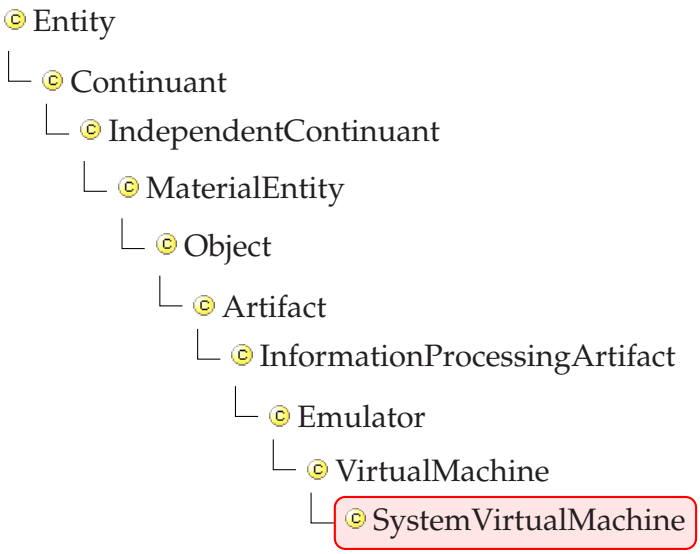
11.1.288 SystemVirtualMachine

Definition
A Virtual Machine that provides the functionality of an entire Operating System.

Annotations

- **Label:** System Virtual Machine
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/SystemVirtualMachine

Hierarchy



Direct Super Types

- VirtualMachine

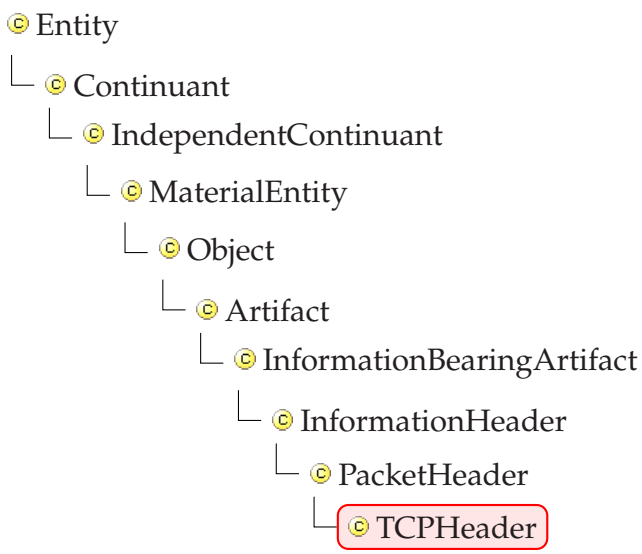
11.1.289 TCPHeader

Definition
A Packet Header that is prescribed by the Transmission Control Protocol.

Annotations

- **Label:** TCP Header
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/TCPHeader

Hierarchy



Direct Super Types

- PacketHeader

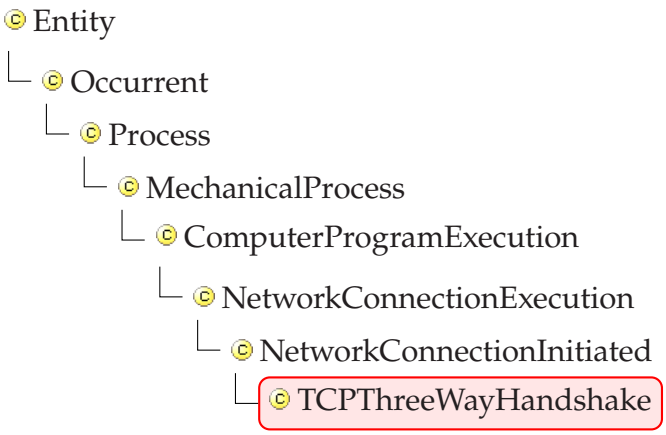
11.1.290 TCPThreeWayHandshake

Definition
A Network Connection Initiation in which two hosts establish a network connection by means of Transmission Control Protocol flags (in order): SYN, SYN-ACK, and ACK.

Annotations

- **Label:** TCP Three-Way Handshake
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/TCPThreeWayHandshake

Hierarchy



Direct Super Types

- NetworkConnectionInitiated

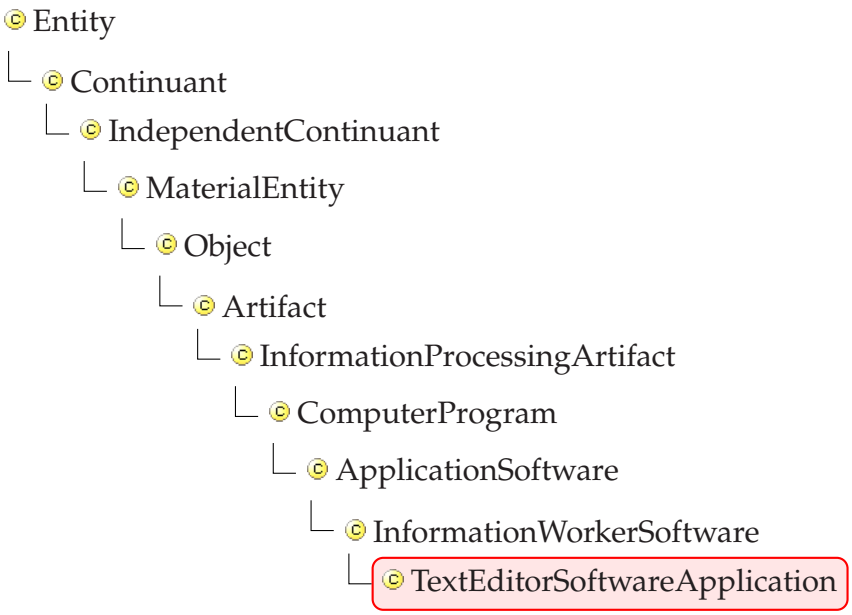
11.1.291 TextEditorSoftwareApplication

Definition
An Information Worker Software Application that is designed to enable a user to create and edit a Text File.

Annotations

- **Label:** Text Editor Software Application
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/TextEditorSoftwareApplication

Hierarchy



Direct Super Types

- InformationWorkerSoftware

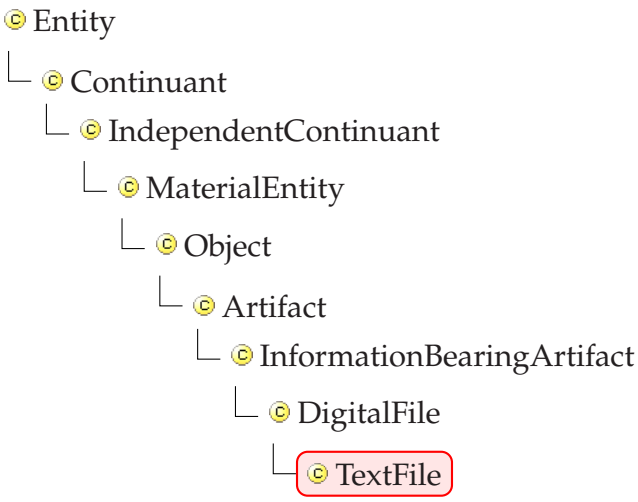
11.1.292 TextFile

Definition
A Digital File that bears information in such a way that it can be displayed as a sequence of human-readable symbols.

Annotations

- **Label:** Text File
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/TextFile

Hierarchy



Direct Super Types

- DigitalFile

Direct Sub Types

- JSONFile

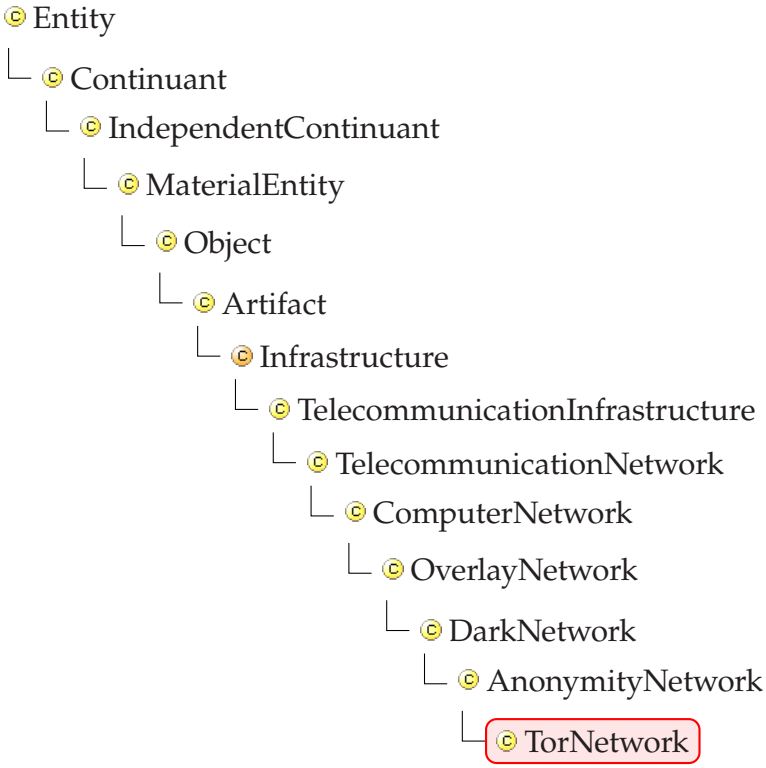
11.1.293 TorNetwork

Definition
An Anonymity Network that uses TOR software.

Annotations

- **Label:** Tor Network
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/TorNetwork

Hierarchy



Direct Super Types

- AnonymityNetwork

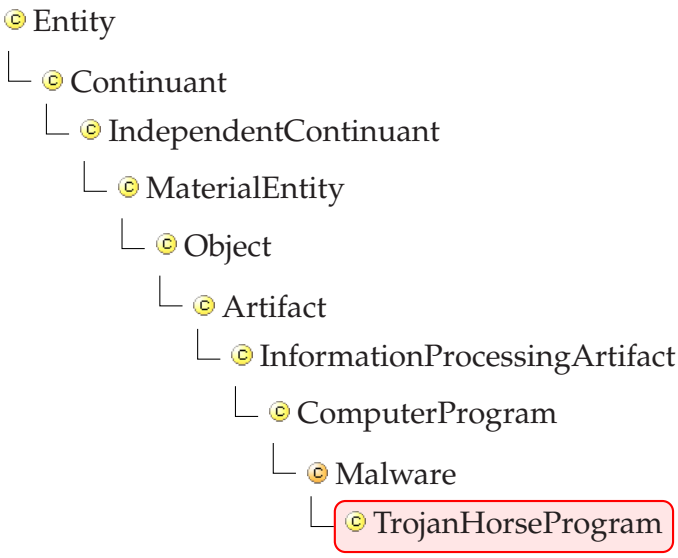
11.1.294 TrojanHorseProgram

Definition
Malware that is designed to deceive a user into executing it.

Annotations

- **Label:** Trojan Horse Program
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/TrojanHorseProgram

Hierarchy



Direct Super Types

- Malware

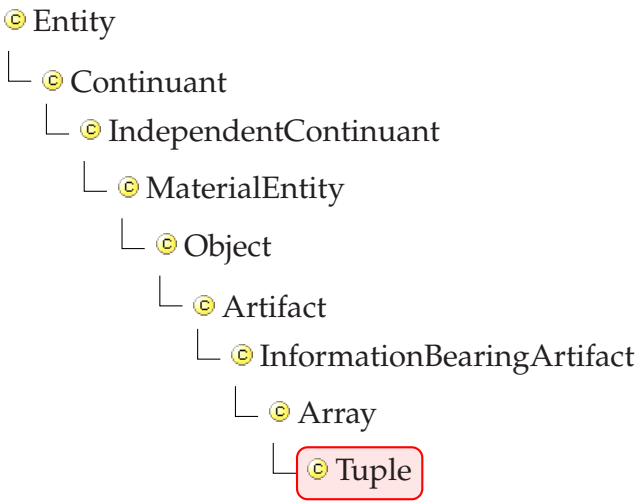
11.1.295 Tuple

Definition
An Array which orders its elements along one dimension only.

Annotations

- **Label:** Tuple
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/Tuple

Hierarchy



Direct Super Types

- Array

Direct Sub Types

- DataColumn
- DataRow
- HashBucket
- OrderedPair

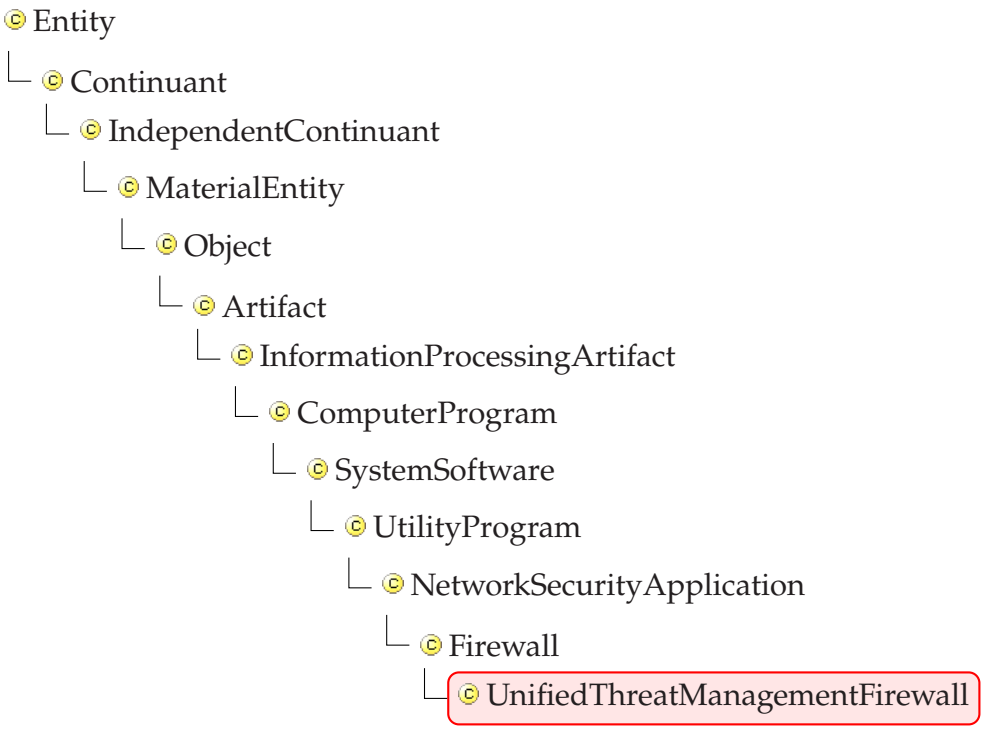
11.1.296 UnifiedThreatManagementFirewall

Definition
A Firewall that combines the functions of a Stateful Inspection Firewall and intrusion prevention and antivirus.

Annotations

- **Label:** Unified Threat Management Firewall
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/UnifiedThreatManagementFirewall

Hierarchy



Direct Super Types

- Firewall

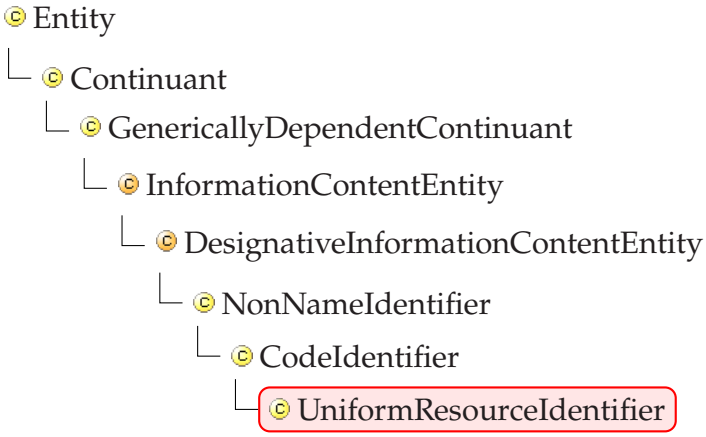
11.1.297 UniformResourceIdentifier

Definition
A Code Identifier that designates a resource on a Computer Network.

Annotations

- **Label:** Uniform Resource Identifier
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/UniformResourceIdentifier

Hierarchy



Direct Super Types

- CodeIdentifier

Direct Sub Types

- InternationalizedResourceIdentifier
- UniformResourceLocator

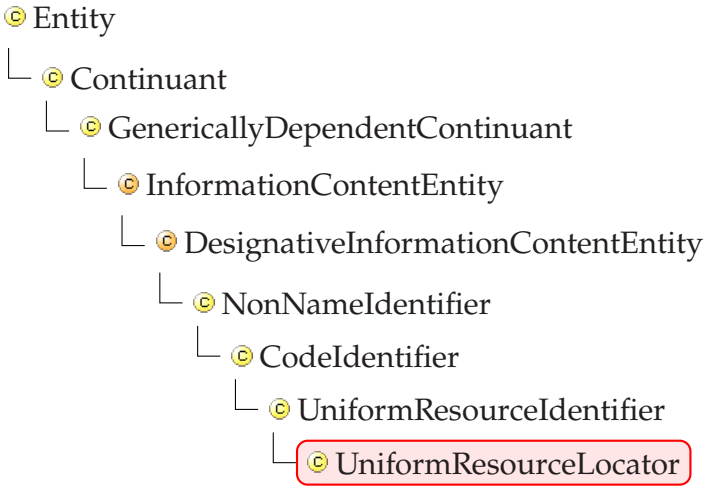
11.1.298 UniformResourceLocator

Definition
A Uniform Resource Identifier that specifies both the primary access mechanism and network location of the designated resource.

Annotations

- **Label:** Uniform Resource Locator
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/UniformResourceLocator

Hierarchy



Direct Super Types

- UniformResourceIdentifier

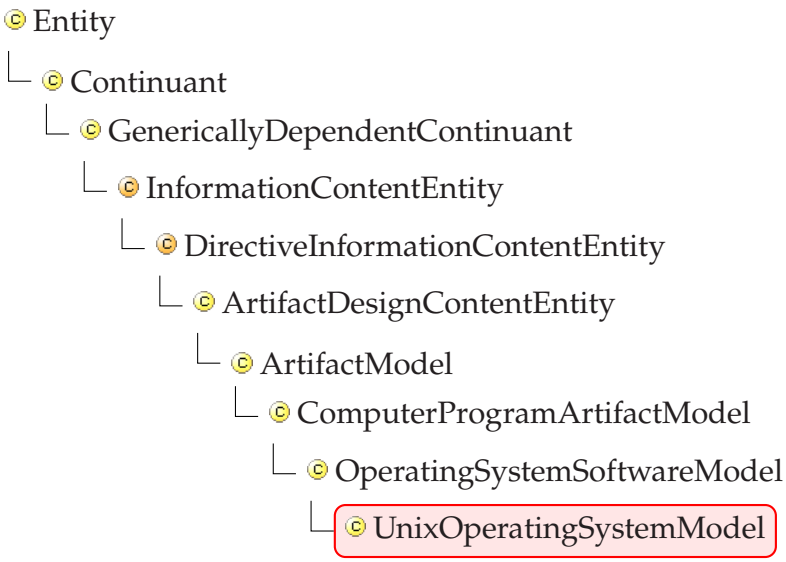
11.1.299 UnixOperatingSystemModel

Definition
A Operating System Software Model that has evolved from the original AT&T Unix Model

Annotations

- **Label:** Unix Operating System Model
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/UnixOperatingSystemModel

Hierarchy



Direct Super Types

- OperatingSystemSoftwareModel

Direct Sub Types

- MacOperatingSystemSoftwareModel

11.1.300 UploadingProcess

Definition
A File Transfer in which a Computer File stored on some user's local Computer is transferred to and stored on some remote Computer.

Annotations

- **Label:** Uploading Process
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/UploadingProcess

Hierarchy

- Entity
  - Occurrent
    - Process
      - MechanicalProcess
        - ComputerProgramExecution
          - DataTransfer
            - FileTransfer
              - UploadingProcess

Direct Super Types

- FileTransfer

11.1.301 UrgentNominalMeasurement

Definition
A Nominal Measurement Information Content Entity that measures some entity as needing urgent attention.

Annotations

- **Label:** Urgent Nominal Measurement
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/UrgentNominalMeasurement

Hierarchy

- Entity
  - Continuant
    - GenericallyDependentContinuant
      - InformationContentEntity
        - DescriptiveInformationContentEntity
          - MeasurementInformationContentEntity
            - NominalMeasurementInformationContentEntity
              - UrgentNominalMeasurement

Direct Super Types

- NominalMeasurementInformationContentEntity

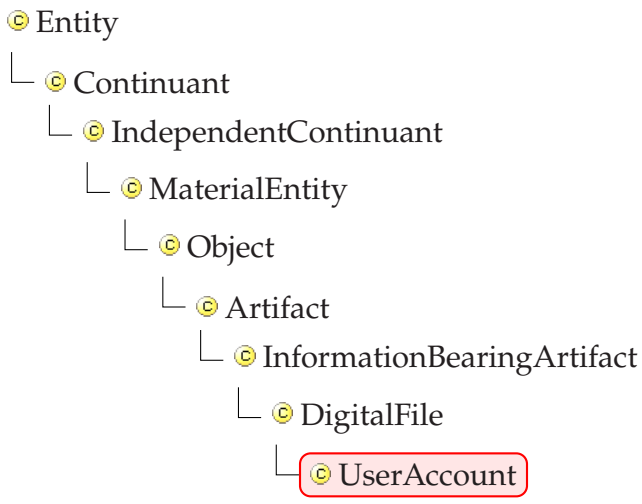
11.1.302 UserAccount

Definition
A Digital File that stores information about an individual's username, password, and permission to access a computer system.

Annotations

- **Label:** User Account
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/UserAccount

Hierarchy



Direct Super Types

- DigitalFile

Direct Sub Types

- ServiceAccount
- StandardUserAccount
- SuperuserAccount
- SystemAccount

11.1.303 UserGroupIdentifier

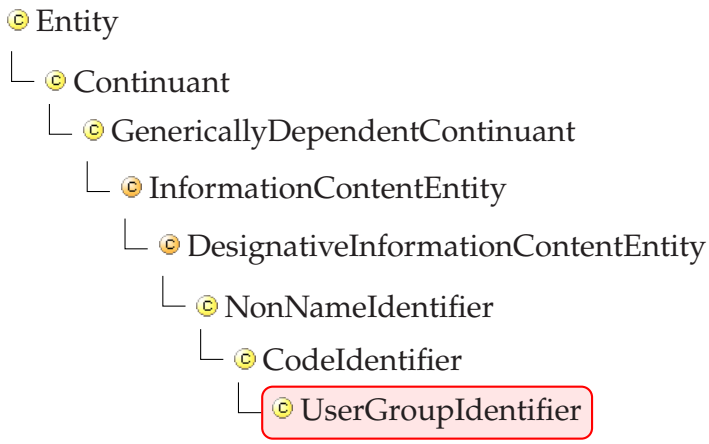
Definition

A Code Identifier that identifies a group of registered users of a computer system for the purposes of managing access to that system.

Annotations

- **Label:** User Group Identifier
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/UserGroupIdentifier

Hierarchy



Direct Super Types

- CodeIdentifier

11.1.304 UserIdentifier

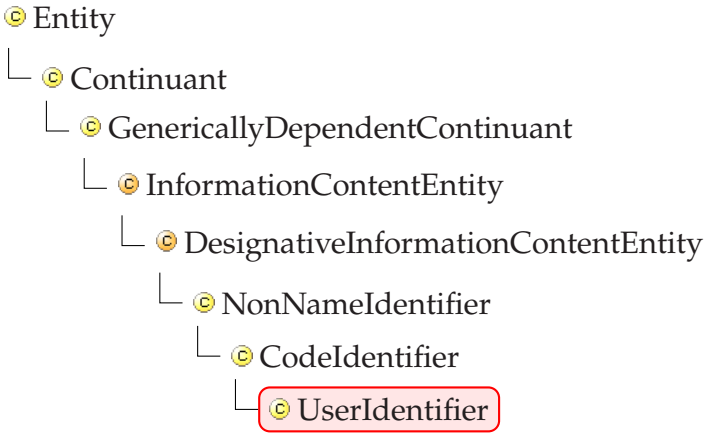
Definition

A Code Identifier that identifies the account of a registered user of a computer system.

Annotations

- **Label:** User Identifier
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/UserIdentifier

Hierarchy



Direct Super Types

- CodeIdentifier

11.1.305 UtilityProgram

Definition
System Software that is designed to analyze, configure, optimize, or maintain a Computer.

Annotations

- **Label:** Utility Program
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/UtilityProgram

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - MaterialEntity
        - Object
          - Artifact
            - InformationProcessingArtifact
              - ComputerProgram
                - SystemSoftware
                  - UtilityProgram

Direct Super Types

- SystemSoftware

Direct Sub Types

- AntivirusApplication
- ApplicationManager
- BackupSoftware
- DataSynchronizationUtility
- DiskChecker
- DiskCleaner
- DiskCompressionUtility
- DiskDefragmenter
- DiskPartitionEditor
- DiskSpaceAnalyzer
- DynamicDNSService
- FileArchiver
- FileManager
- HypervisorProgram
- MemoryTester
- NetworkSecurityApplication
- NetworkUtility
- PackageManager
- Screensaver
- SystemMonitor
- SystemProfiler

11.1.306 Variable

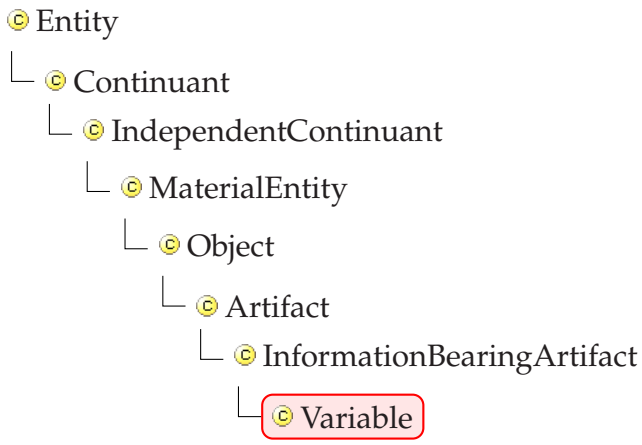
Definition

An Information Bearing Artifact that is designed to bear different Information Content Entities within the context of an Algorithm.

Annotations

- **Label:** Variable
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/Variable

Hierarchy



Direct Super Types

- InformationBearingArtifact

Direct Sub Types

- VariableField

11.1.307 VariableField

Definition

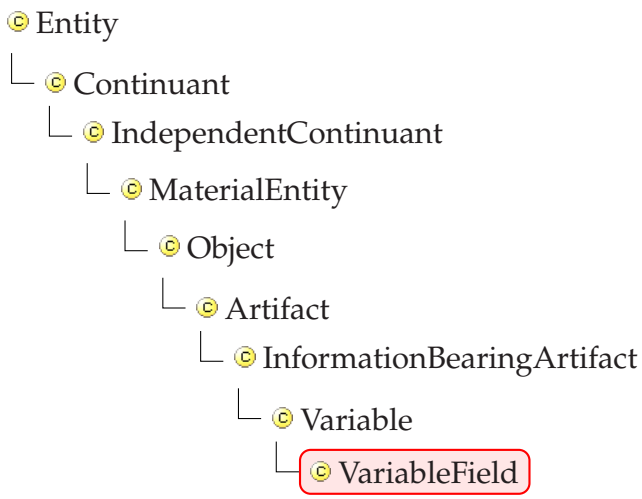
A Variable that is associated with a Computer Object and accessible for all its Programming Methods.

Annotations

- **Label:** Variable Field
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology

- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/VariableField

Hierarchy



Direct Super Types

- Variable

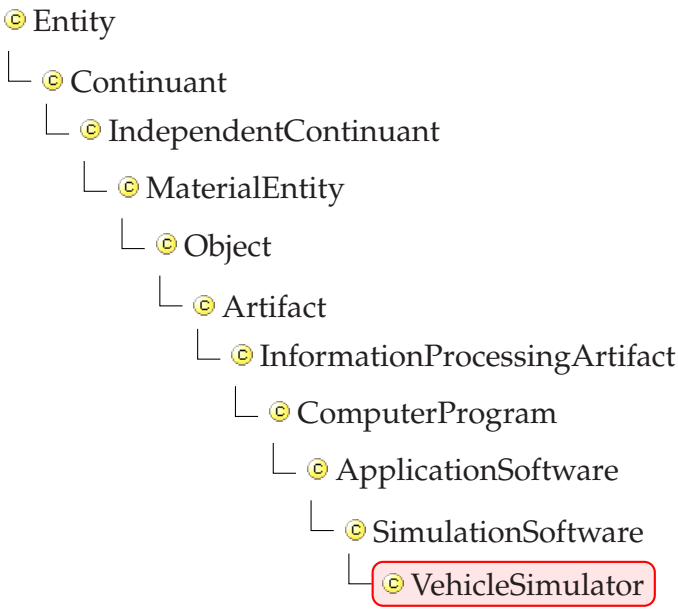
11.1.308 VehicleSimulator

Definition
Simulation Software that is designed to enable a user to model the process of operating a Vehicle.

Annotations

- **Label:** Vehicle Simulator
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/VehicleSimulator

Hierarchy



Direct Super Types

- SimulationSoftware

Direct Sub Types

- DrivingSimulator
- FlightSimulator

11.1.309 VersionControlUtility

Definition
A Data Synchronization Utility that is designed to manage changes to a collection of information over time.

Annotations

- **Label:** Version Control Utility
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/VersionControlUtility

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - MaterialEntity
        - Object
          - Artifact
            - InformationProcessingArtifact
              - ComputerProgram
                - SystemSoftware
                  - UtilityProgram
                    - DataSynchronizationUtility
                      - VersionControlUtility

Direct Super Types

- DataSynchronizationUtility

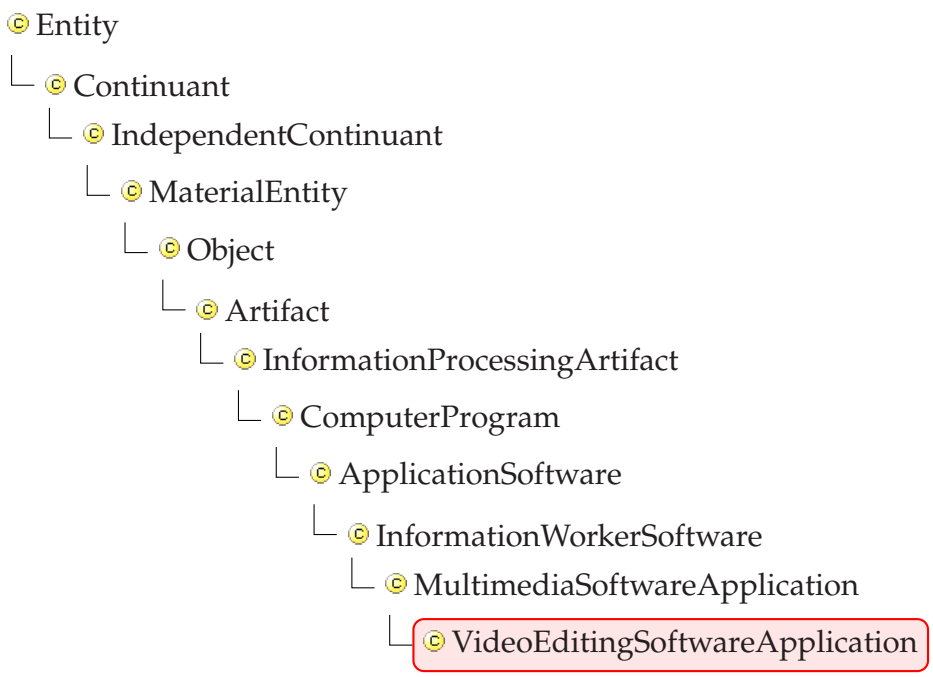
11.1.310 VideoEditingSoftwareApplication

Definition
A Multimedia Software Application that is designed to enable a user to create and edit video files.

Annotations

- **Label:** Video Editing Software Application
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/VideoEditingSoftwareApplication

Hierarchy



Direct Super Types

- MultimediaSoftwareApplication

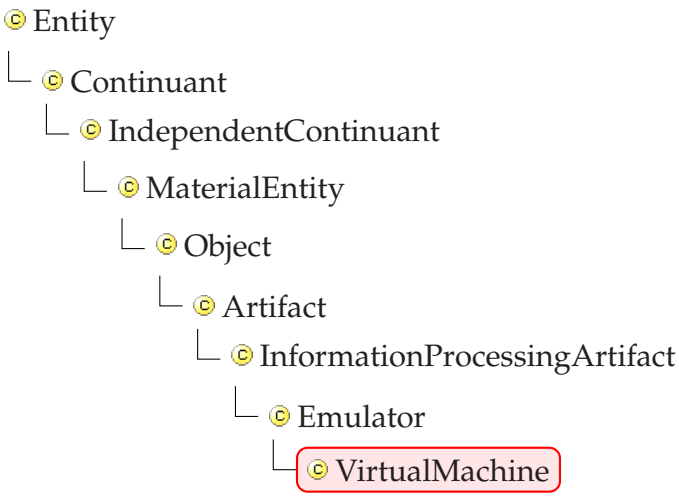
11.1.311 VirtualMachine

Definition
An Emulator that simulates the functionality of a physical Computer.

Annotations

- **Label:** Virtual Machine
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/VirtualMachine

Hierarchy



Direct Super Types

- Emulator

Direct Sub Types

- ProcessVirtualMachine
- SystemVirtualMachine

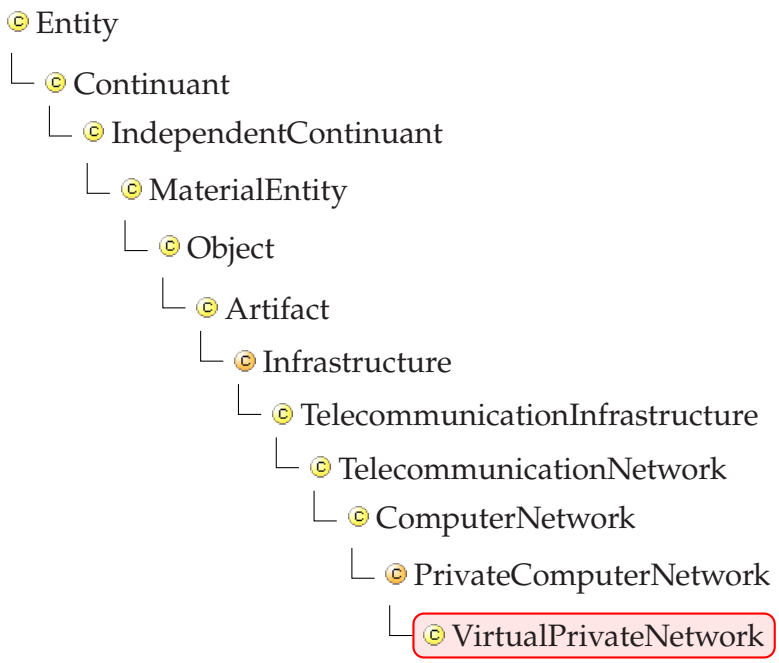
11.1.312 VirtualPrivateNetwork

Definition
A Private Computer Network that can be accessed via a non-Private Network.

Annotations

- **Label:** Virtual Private Network
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/VirtualPrivateNetwork

Hierarchy



Direct Super Types

- PrivateComputerNetwork

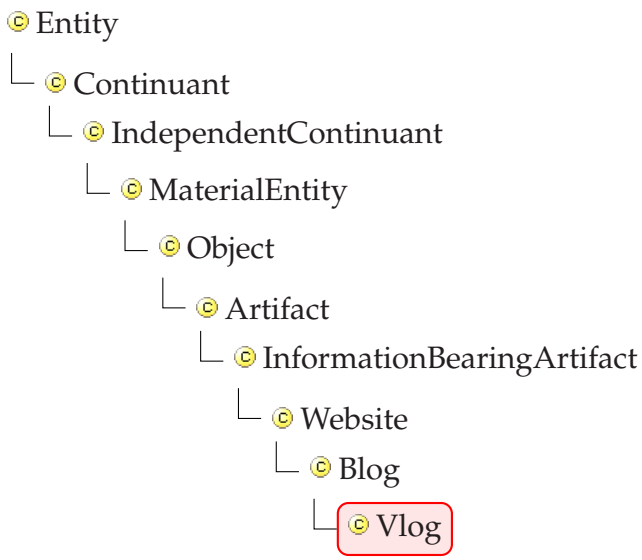
11.1.313 Vlog

Definition
A Blog whose posts are Videos.

Annotations

- **Label:** Vlog
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/Vlog

Hierarchy



Direct Super Types

- Blog

11.1.314 VulnerabilityScannerSoftware

Definition
An Application Software designed to assess computers, networks or applications for known weaknesses.

Annotations

- **Label:** Vulnerability Scanner Software
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/VulnerabilityScannerSoftware

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - MaterialEntity
        - Object
          - Artifact
            - InformationProcessingArtifact
              - ComputerProgram
                - ApplicationSoftware
                - VulnerabilityScannerSoftware

Direct Super Types

- ApplicationSoftware

11.1.315 Watchlist

Definition
A Directive Information Content Entity which prescribes which individuals, groups, or items require close surveillance.

Annotations

- **Label:** Watchlist
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/Watchlist

Hierarchy

- Entity
  - Continuant
    - GenericallyDependentContinuant
      - InformationContentEntity
        - DirectiveInformationContentEntity
          - Watchlist

Direct Super Types

- DirectiveInformationContentEntity

Direct Sub Types

- DomainWatchlist

11.1.316 WebBrowser

Definition
A Content Access Software Application that is used to retrieve, present, and traverse information resources on the Internet.

Annotations

- **Label:** Web Browser
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/WebBrowser

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - MaterialEntity
        - Object
          - Artifact
            - InformationProcessingArtifact
              - ComputerProgram
                - ApplicationSoftware
                - ContentAccessSoftware
                - WebBrowser

Direct Super Types

- ContentAccessSoftware

11.1.317 WebPage

Web Pages often have Web Applications as parts.

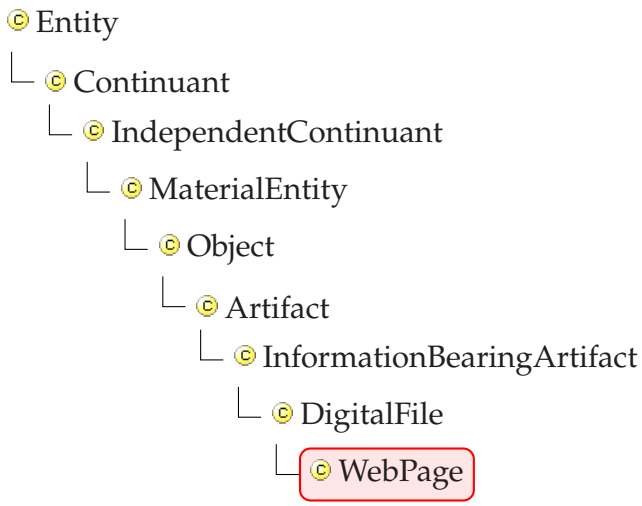
Definition

A Digital File that is accessed over the Internet using a Web Browser.

Annotations

- **Label:** Web Page
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/WebPage

Hierarchy



Direct Super Types

- DigitalFile

Direct Sub Types

- WebPortal

11.1.318 WebPortal

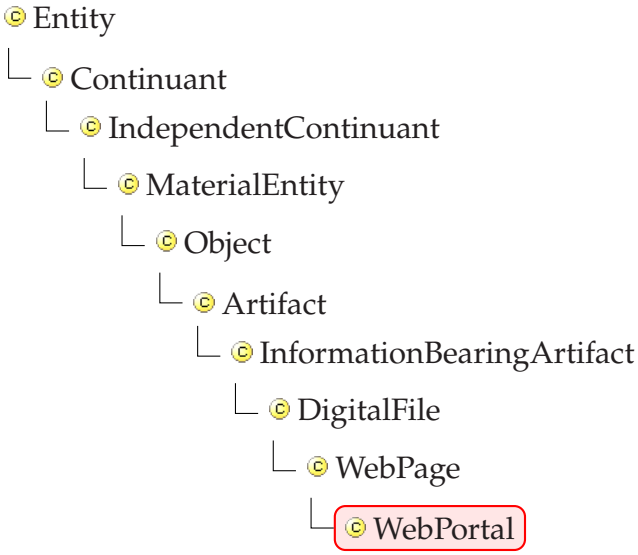
Definition

A Web Page that is an organized gateway that helps to configure the access to information found on the Internet.

Annotations

- **Label:** Web Portal
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/WebPortal

Hierarchy



Direct Super Types

- WebPage

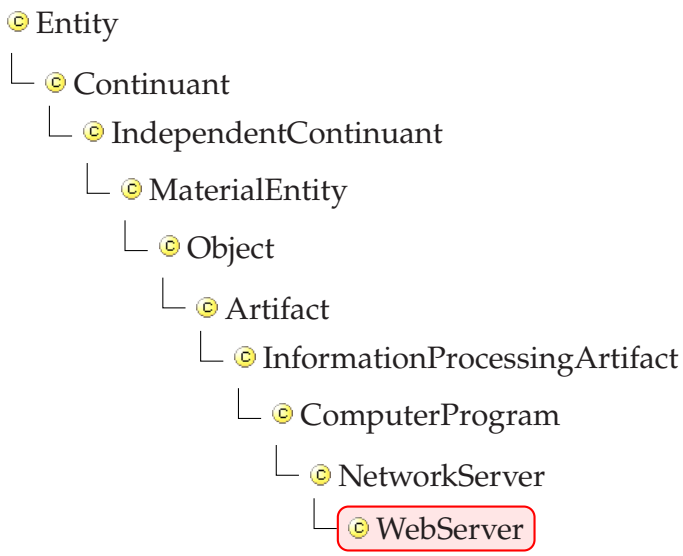
11.1.319 WebServer

Definition
A Network Server that enables a client to access a Computer Service Function over the World Wide Web..

Annotations

- **Label:** Web Server
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/WebServer

Hierarchy



Direct Super Types

- NetworkServer

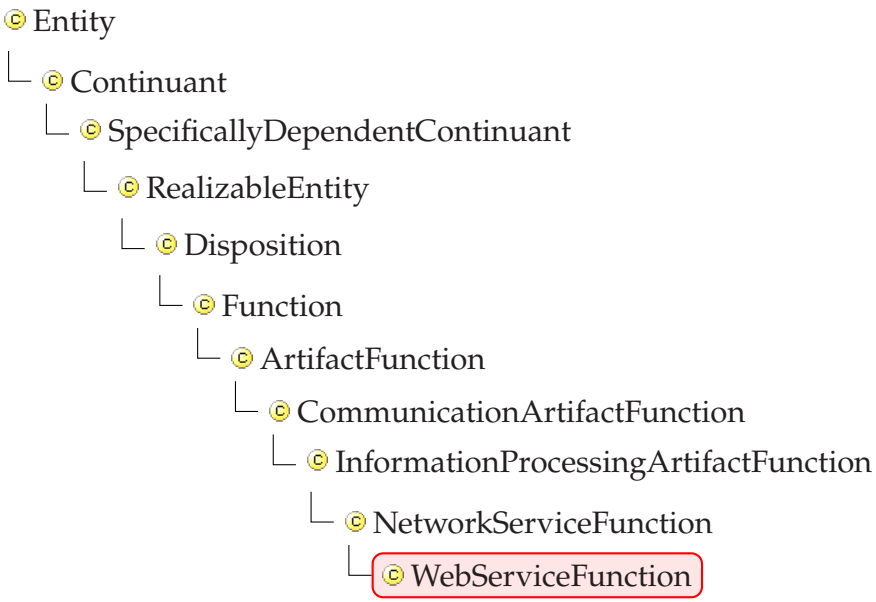
11.1.320 WebServiceFunction

Definition
A Computer Service Function that when realized is in a process of a client accessing a service over the World Wide Web.

Annotations

- **Label:** Web Service Function
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/WebServiceFunction

Hierarchy



Direct Super Types

- NetworkServiceFunction

11.1.321 WebServiceStack

Definition
A Software Stack that is designed for enabling the use of Web Servers and their hosted services.

Annotations

- **Label:** Web Service Stack
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/WebServiceStack

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - MaterialEntity
        - Object
          - Artifact
            - InformationProcessingArtifact
              - SoftwareStack
                - WebServiceStack

Direct Super Types

- SoftwareStack

11.1.322 Website

Definition
An Information Bearing Artifact that is an aggregate of Web Pages.

Annotations

- **Label:** Website
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/Website

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - MaterialEntity
        - Object
          - Artifact
            - InformationBearingArtifact
              - Website

Direct Super Types

- InformationBearingArtifact
- hasPart WebPage

Direct Sub Types

- Blog
- InternetForum
- SocialNetworkingSite

11.1.323 WideAreaNetwork

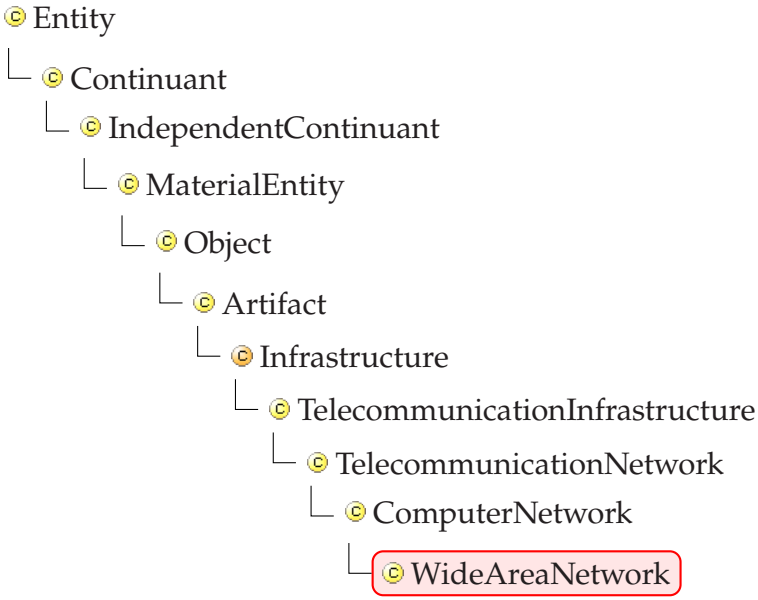
Definition

A Computer Network that is designed to connect several resources and is not restricted to a geographical location.

Annotations

- **Label:** Wide Area Network
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/WideAreaNetwork

Hierarchy



Direct Super Types

- ComputerNetwork

11.1.324 WidowsServerOperatingSystemModel

Definition

A Windows Operating System Model that prescribes a Microsoft Server Operating System.

Annotations

- **Label:** Windows Server Operating System Model
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/WidowsServerOperatingSystemModel

Hierarchy

- Entity
  - Continuant
    - GenericallyDependentContinuant
      - InformationContentEntity
        - DirectiveInformationContentEntity
          - ArtifactDesignContentEntity
            - ArtifactModel
              - ComputerProgramArtifactModel
                - OperatingSystemSoftwareModel
                  - WindowsOperatingSystemModel
                    - WidowsServerOperatingSystemModel

Direct Super Types

- WindowsOperatingSystemModel

11.1.325 WindowSizeDirective

Definition

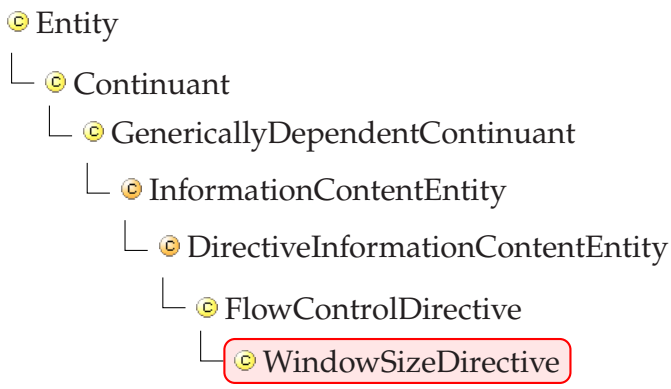
A Flow Control Directive that prescribes the rate of data transmission in an Information Transfer Process.

Annotations

- **Label:** Window Size Directive

- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/WindowSizeDirective

Hierarchy



Direct Super Types

- FlowControlDirective

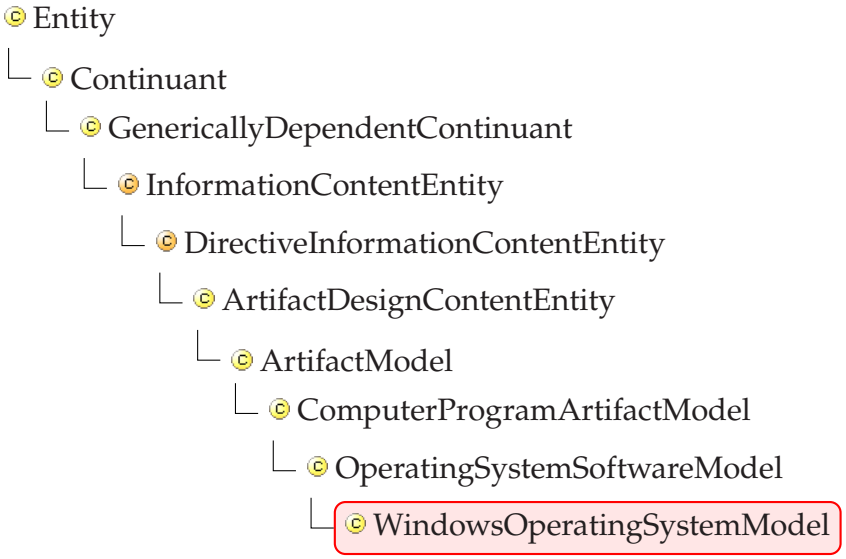
11.1.326 WindowsOperatingSystemModel

Definition
A Operating System Software Model that is developed and marketed by Microsoft.

Annotations

- **Label:** Windows Operating System Model
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/WindowsOperatingSystemModel

Hierarchy



Direct Super Types

- OperatingSystemSoftwareModel

Direct Sub Types

- WidowsServerOperatingSystemModel

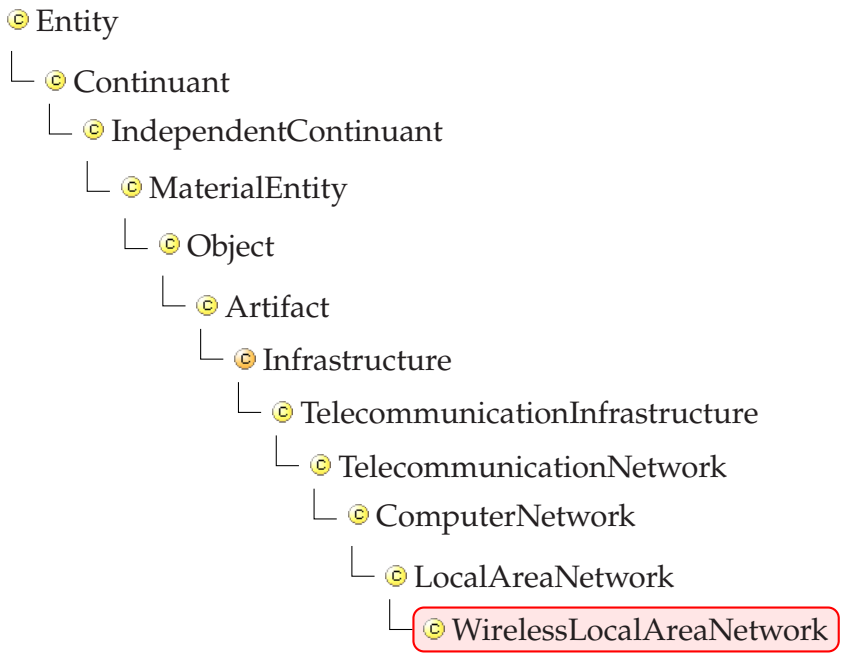
11.1.327 WirelessLocalAreaNetwork

Definition
A Local Area Network that connects resources wirelessly.

Annotations

- **Label:** Wireless Local Area Network
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/WirelessLocalAreaNetwork

Hierarchy



Direct Super Types

- LocalAreaNetwork

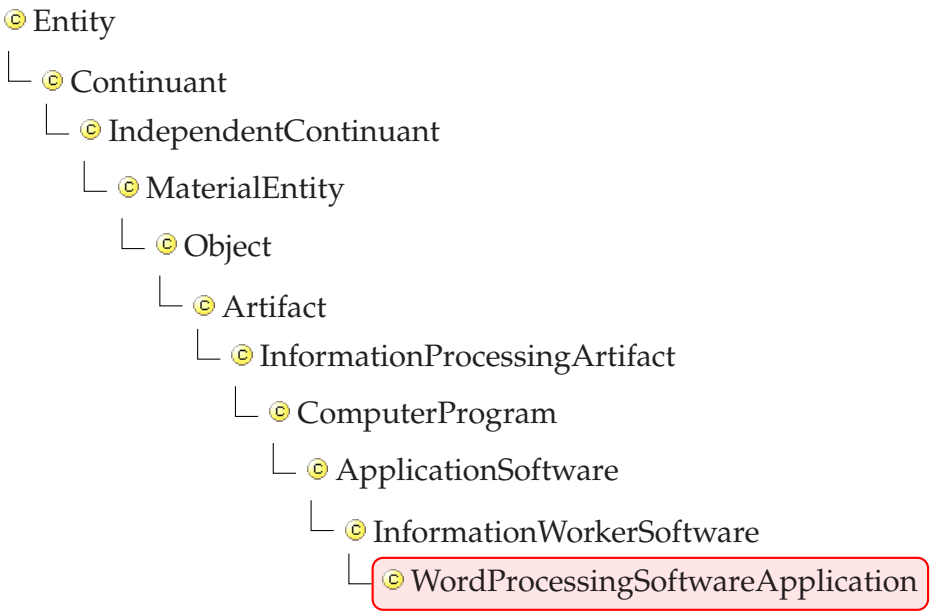
11.1.328 WordProcessingSoftwareApplication

Definition
An Information Worker Software Application that is designed to enable a user to create, edit, and format Documents.

Annotations

- **Label:** Word Processing Software Application
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/WordProcessingSoftwareApplication

Hierarchy



Direct Super Types

- InformationWorkerSoftware

11.1.329 WriteFilePermission

Definition
A File Permission that prescribes the editing of a file by a user account.

Annotations

- **Label:** Write File Permission
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/WriteFilePermission

Hierarchy

- Entity
  - Continuant
    - GenericallyDependentContinuant
      - InformationContentEntity
        - DirectiveInformationContentEntity
          - ActionRegulation
            - ActionPermission
              - FilePermission
                - WriteFilePermission

Direct Super Types

- FilePermission

11.1.330 WrittenSymbol

Definition
An Information Bearing Artifact that is designed to facilitate written communication.

Annotations

- **Label:** Written Symbol
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/WrittenSymbol

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - MaterialEntity
        - Object
          - Artifact
            - InformationBearingArtifact
              - WrittenSymbol

Direct Super Types

- InformationBearingArtifact

Direct Sub Types

- Grapheme
- Morpheme
- WrittenWord

11.1.331 WrittenWord

Definition
A Written Symbol that is the smallest meaningful unit of a writing system which has freestanding semantic or pragmatic content and that consists of 1 or more Morphemes.

Annotations

- **Label:** Written Word
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/WrittenWord

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - MaterialEntity
        - Object
          - Artifact
            - InformationBearingArtifact
              - WrittenSymbol
                - WrittenWord

Direct Super Types

- WrittenSymbol
- hasPart Morpheme

11.1.332 XMLDatabaseSoftwareApplicationModel

Definition

A Document Store Database Software Application Model that prescribes a data persistence software system that allows data to be specified, and sometimes stored, in XML format.

Annotations

- **Label:** XML Database Software Application Model
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/XMLDatabaseSoftwareApplicationModel

Hierarchy

- Entity
  - Continuant
    - GenericallyDependentContinuant
      - InformationContentEntity
        - DirectiveInformationContentEntity
          - ArtifactDesignContentEntity
            - ArtifactModel
              - ComputerProgramArtifactModel
                - DatabaseSoftwareApplicationModel
                  - KeyValueDatabaseSoftwareApplicationModel
                    - DocumentStoreDatabaseSoftwareApplicationModel
                      - XMLDatabaseSoftwareApplicationModel

Direct Super Types

- DocumentStoreDatabaseSoftwareApplicationModel

11.1.333 ZombieComputerProgramExecution

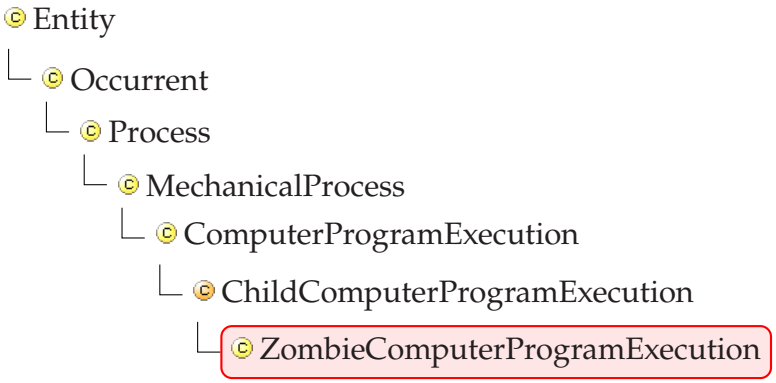
Definition

A Child Computer Program Execution that has terminated but is still identified by an entry in a process table.

Annotations

- **Label:** Zombie Computer Program Execution
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/ZombieComputerProgramExecution

Hierarchy



Direct Super Types

- ChildComputerProgramExecution

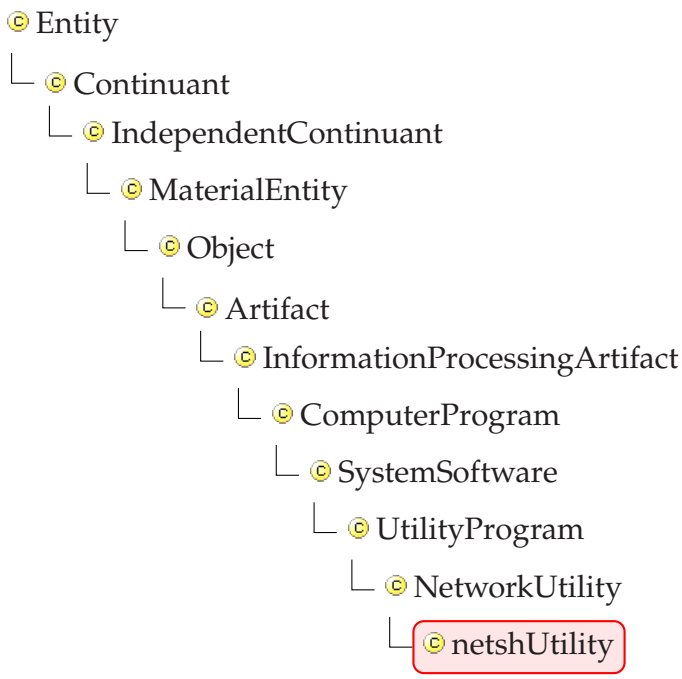
11.1.334 netshUtility

Definition
A Network Utility that is designed to allow local or remote configuration of network devices.

Annotations

- **Label:** netsh Utility
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/netshUtility

Hierarchy



Direct Super Types

- NetworkUtility

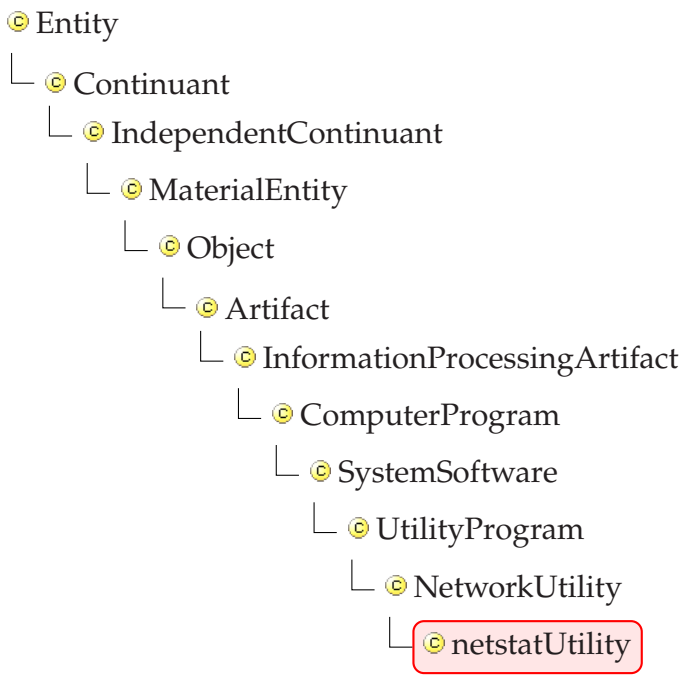
11.1.335 netstatUtility

Definition
A Network Utility that is designed to display incoming and outgoing network connections for the Transmission Control Protocol, routing tables, network interfaces, and network protocol statistics.

Annotations

- **Label:** netstat Utility
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/netstatUtility

Hierarchy



Direct Super Types

- NetworkUtility

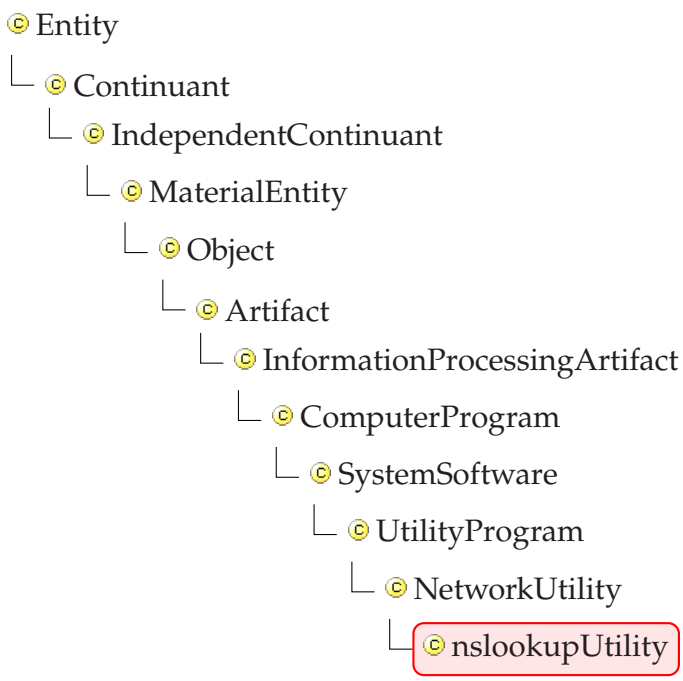
11.1.336 nslookupUtility

Definition
A Network Utility that is designed to query the Domain Name System (DNS) to obtain Domain Name or Internet Protocol Address mapping or for any other specific DNS record.

Annotations

- **Label:** nslookup Utility
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/nslookupUtility

Hierarchy



Direct Super Types

- NetworkUtility

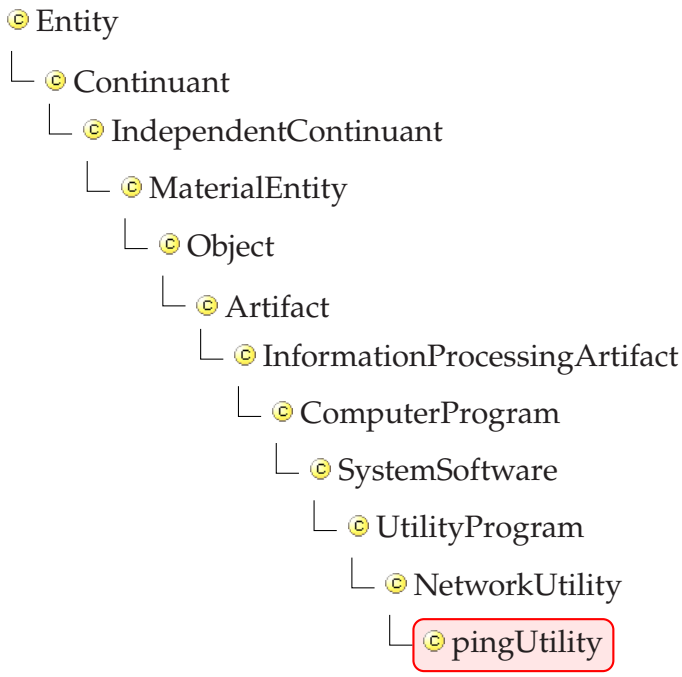
11.1.337 pingUtility

Definition
A Network Utility that is designed to test the reachability of a host on an Internet Protocol network.

Annotations

- **Label:** ping Utility
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/pingUtility

Hierarchy



Direct Super Types

- NetworkUtility

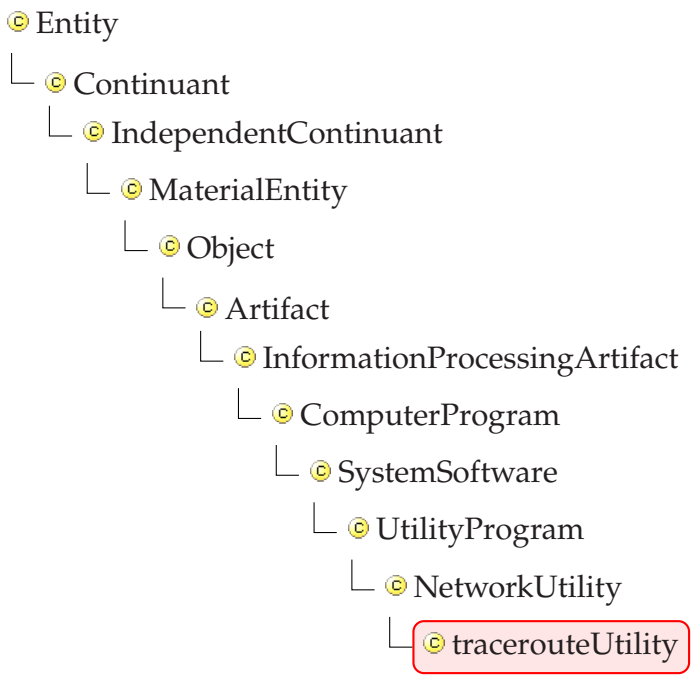
11.1.338 tracerouteUtility

Definition
A Network Utility that is designed to displaying the route (path) and measuring transit delays of Network Packets across an Internet Protocol network

Annotations

- **Label:** traceroute Utility
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/tracerouteUtility

Hierarchy



Direct Super Types

- NetworkUtility

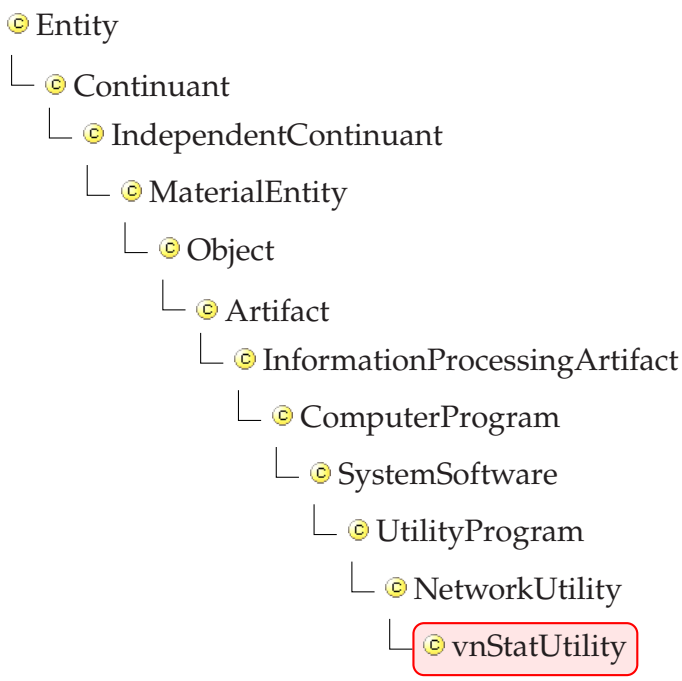
11.1.339 vnStatUtility

Definition
A Network Utility that is designed to keeps a log of hourly, daily and monthly network traffic.

Annotations

- **Label:** vnStat Utility
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/vnStatUtility

Hierarchy



Direct Super Types

- NetworkUtility

11.2 Properties

11.2.1 fileAttachmentOf

Annotations

- **Label:** file attachment of
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/file_attachment_of

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** hasFileAttachment

Hierarchy

- partOf
  - fileAttachmentOf

Direct Super Types

- partOf

11.2.2 formatUsedIn

Annotations

- **Label:** format used in
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/format_used_in

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** usesFormat

Hierarchy

- isAbout
  - prescribes
    - formatUsedIn

Direct Super Types

- prescribes

11.2.3 hasCausalFactor

Annotations

- **Label:** has causal factor
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/has_causal_factor

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** isCausalFactorIn

Hierarchy

hasParticipant
└ hasCausalFactor

Direct Super Types

- hasParticipant

11.2.4 hasChildNode

Annotations

- **Label:** has child node
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/has_child_node

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** hasParentNode

11.2.5 hasFileAttachment

Annotations

- **Label:** has file attachment
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/has_file_attachment

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** fileAttachmentOf

Hierarchy

hasPart
  hasFileAttachment

Direct Super Types

- hasPart

11.2.6 hasNodeAttribute

Annotations

- **Label:** has node attribute
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/has_node_attribute

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** nodeAttributeOf

11.2.7 hasParentNode

Annotations

- **Label:** has parent node
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/has_parent_node

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** hasChildNode

11.2.8 inhibitedBy

Annotations

- **Label:** inhibited by

- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/inhibited_by

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** inhibits

Hierarchy

causedBy
  inhibitedBy

Direct Super Types

- causedBy

SuperProperty Of (Chain)

- realizes o participatesIn o causedBy SubPropertyOf: inhibitedBy

11.2.9 inhibits

Annotations

- **Label:** inhibits
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/inhibits

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** inhibitedBy

Hierarchy

isCauseOf
  inhibits

Direct Super Types

- isCauseOf

SuperProperty Of (Chain)

- isCauseOf o hasParticipant o realizedIn SubPropertyOf: inhibits

Domain

- Process

Range

- Process

11.2.10 isCausalFactorIn

Annotations

- **Label:** is causal factor in
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/is_causal_factor_in

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** hasCausalFactor

Hierarchy

participatesIn
└ isCausalFactorIn

Direct Super Types

- participatesIn

11.2.11 nodeAttributeOf

Annotations

- **Label:** node attribute of
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/node_attribute_of

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** hasNodeAttribute

11.2.12 usesFormat

Annotations

- **Label:** uses format
- **Is Curated In:** http://www.ontologyrepository.com/CommonCoreOntologies/Domain/CyberOntology
- **ID:** http://www.ontologyrepository.com/CommonCoreOntologies/uses_format

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** formatUsedIn

Hierarchy

isSubjectOf
└ prescribedBy
  └ usesFormat

Direct Super Types

- prescribedBy

12

Value Ontology

The value ontology is designed to represent value-related entities.

12.1 Named Classes

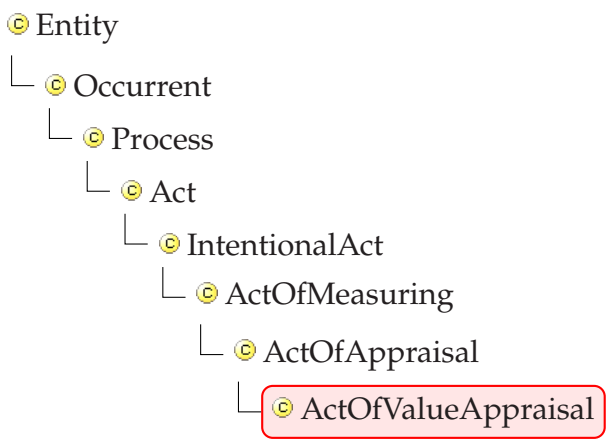
12.1.1 ActOfValueAppraisal

An act of value appraisal is an act of appraisal that involves the evaluation of an entities value. The outputs of this process are typically one or more representations that encode estimates of the value assigned to either process profiles (i.e., the process value) or qualities (i.e., the value quality).

Annotations

- **Label:** Act Of Value Appraisal
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#ActOfValueAppraisal

Hierarchy



Direct Super Types

- ActOfAppraisal

Figures

- Figure 12.1
- Figure 12.7

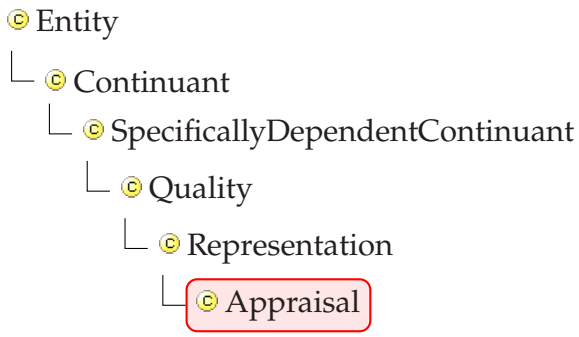
12.1.2 Appraisal

An appraisal is a representation that represents the results of an act of an appraisal. Appraisals are typically the outputs of an act of appraisal.

Annotations

- **Label:** Appraisal
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#Appraisal

Hierarchy



Direct Super Types

- Representation

Direct Sub Types

- AppraisalOfRisk
- AppraisalOfValue

Figures

- Figure 12.1

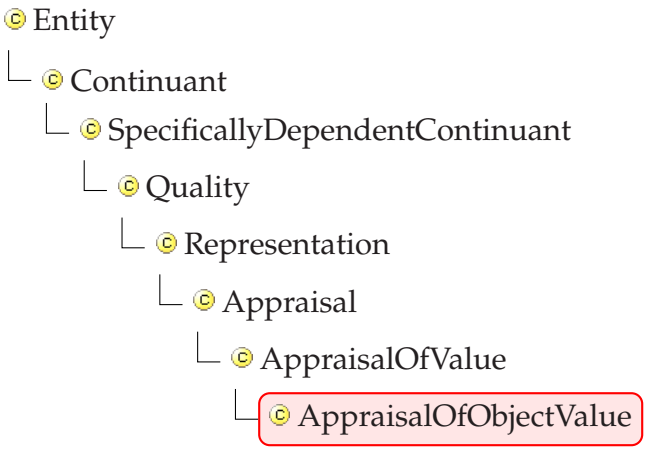
12.1.3 AppraisalOfObjectValue

An appraisal of objective value is an appraisal of the value of an object. In this case, the representation encodes the value of a quality (i.e., the quality value).

Annotations

- **Label:** Appraisal Of Object Value
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#AppraisalOfObjectValue

Hierarchy



Direct Super Types

- AppraisalOfValue
- concretizes (MeasurementInformationContentEntity ⊓ isAMeasurementOf Value)

Figures

- Figure 12.1

12.1.4 AppraisalOfProcessValue

An appraisal of process value is an appraisal of the value of an process. In this case, the representation encodes the value of a process via a process profile (i.e., the process value process profile).

Annotations

- **Label:** Appraisal Of Process Value
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#AppraisalOfProcessValue

Hierarchy

- Entity
  - Continuant
    - SpecificallyDependentContinuant
      - Quality
        - Representation
          - Appraisal
            - AppraisalOfValue
              - AppraisalOfProcessValue

Direct Super Types

- AppraisalOfValue
- concretizes (MeasurementInformationContentEntity ⊓ isAMeasurementOf ProcessValue)

Figures

- Figure 12.1

12.1.5 AppraisalOfValue

An appraisal of value is a representation that represents the results of an act of appraisal.

Annotations

- **Label:** Appraisal Of Value
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#AppraisalOfValue

Hierarchy

- Entity
  - Continuant
    - SpecificallyDependentContinuant
      - Quality
        - Representation
          - Appraisal
            - AppraisalOfValue

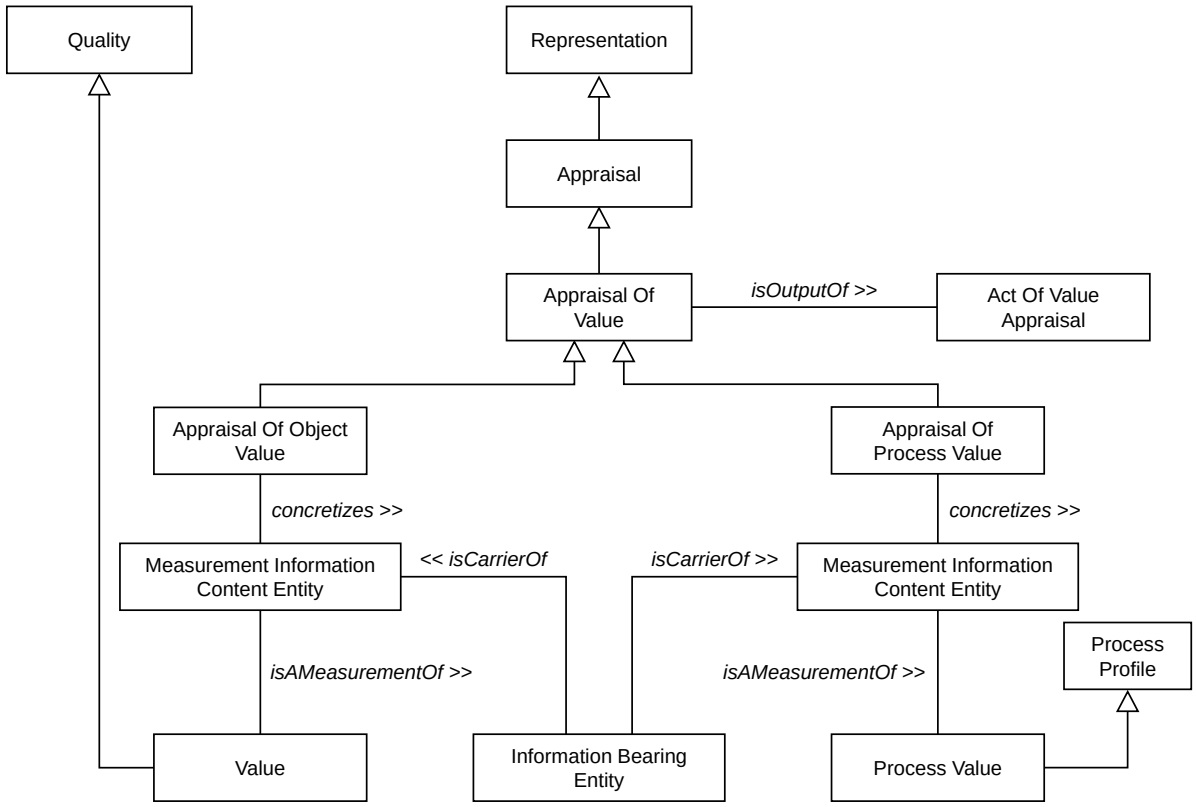


Figure 12.1: Measurement information content entities are used to represent the value assigned to objects (via qualities) or processes (via process profiles).

Direct Super Types

- Appraisal
- isOutputOf ActOfValueAppraisal

Direct Sub Types

- AppraisalOfObjectValue
- AppraisalOfProcessValue

Figures

- Figure 12.1

12.1.6 Asset

An asset is a valued object that is used by an agent in the context of a valued process. What distinguishes an asset from a mere valued object is the fact that the object is used by an agent in the context of a particular process.

Annotations

- **Label:** Asset

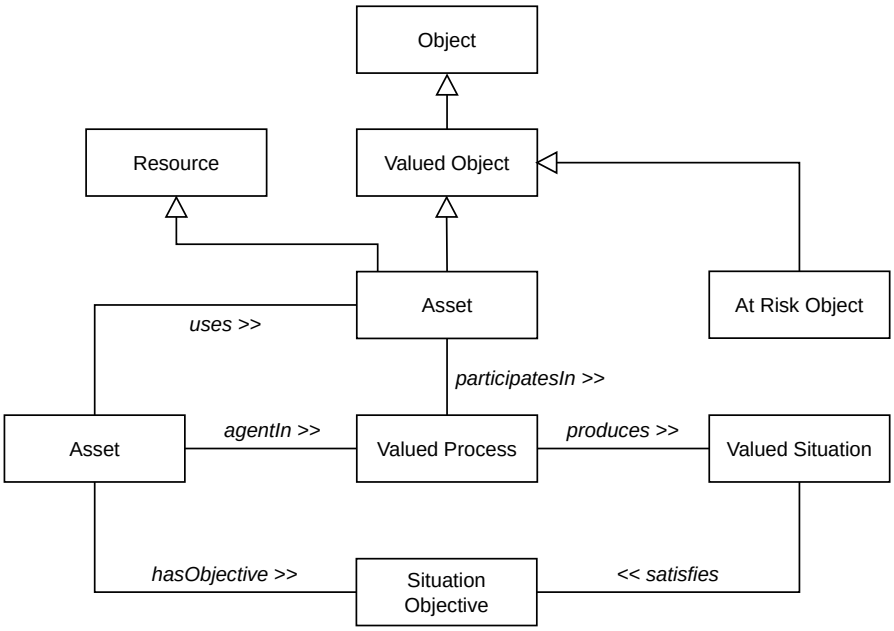


Figure 12.2: Assets are defined as resources used by agents in the context of valued processes.

- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#Asset

Hierarchy

Entity
└ Continuant
  └ Resource
    └ Asset

Direct Super Types

- Resource

Equivalent Classes

- (ValuedObject ⊓ ∃ isUsedBy (Agent ⊓ ∃ agentIn ValuedProcess))

Figures

- Figure 12.2
- Figure 12.4

12.1.7 Capability

A capability is a realizable entity that represents an ability or capacity of an agent.

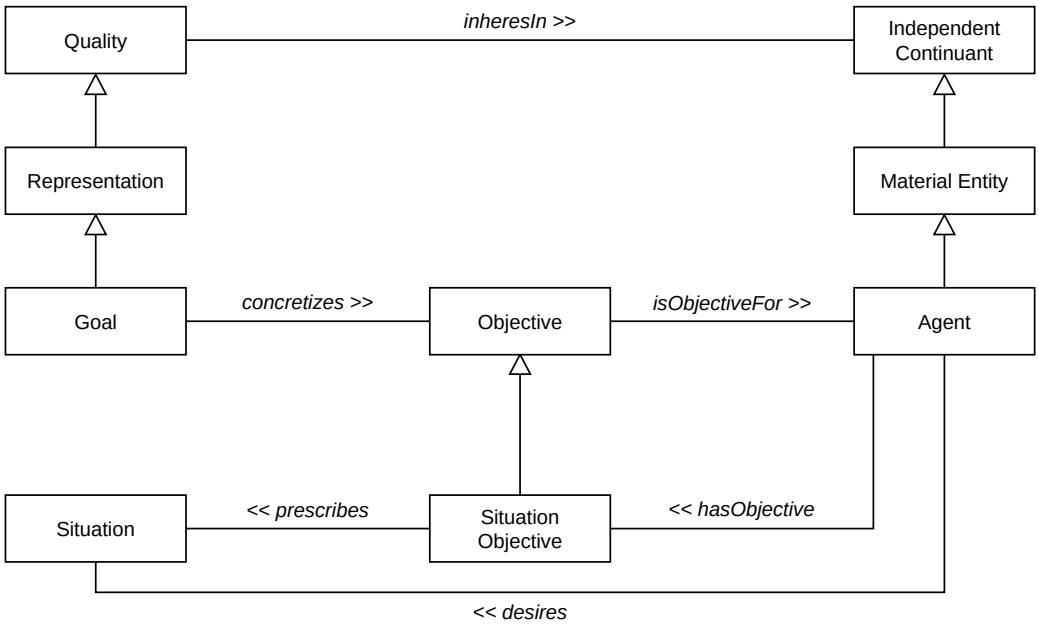


Figure 12.3: Goals are representation that concretize objectives.

Annotations

- **Label:** Capability
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#Capability

Hierarchy

- Entity
  - Continuant
    - SpecificallyDependentContinuant
      - RealizableEntity
        - Capability

Direct Super Types

- RealizableEntity

Direct Sub Types

- AgentCapability
- ControlCapability
- ThreatCapability

Figures

- Figure 13.6

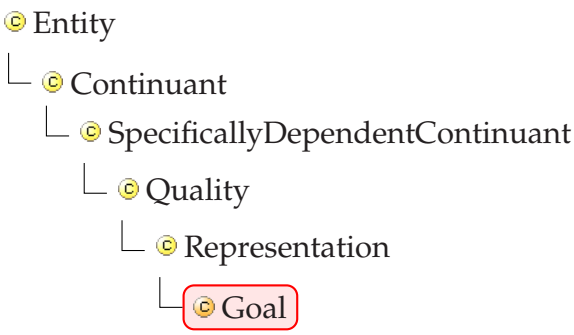
12.1.8 Goal

A goal is a representation that represents an agent's goal. Goal representations concretize objectives, which are a type of directive information content entity.The thing that is prescribed by the objective serves as the referent of the goal representation.

Annotations

- **Label:** Goal
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#Goal

Hierarchy



Direct Super Types

- Representation

Equivalent Classes

- (Representation ∩ ∃ concretizes Objective)

Figures

- Figure 12.3

12.1.9 ProcessValue

A process value is a process profile that reflects the value of a particular process.

Annotations

- **Label:** Process Value
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#ProcessValue

Hierarchy

- Entity
  - Occurrent
    - Process
      - ProcessProfile
        - ProcessValue

Direct Super Types

- ProcessProfile

Figures

- Figure 12.1

12.1.10 Representation

A representation is a quality that represents an entity.

Annotations

- **Label:** Representation
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#Representation

Hierarchy

- Entity
  - Continuant
    - SpecificallyDependentContinuant
      - Quality
        - Representation

Direct Super Types

- Quality

Direct Sub Types

- Appraisal
- Goal

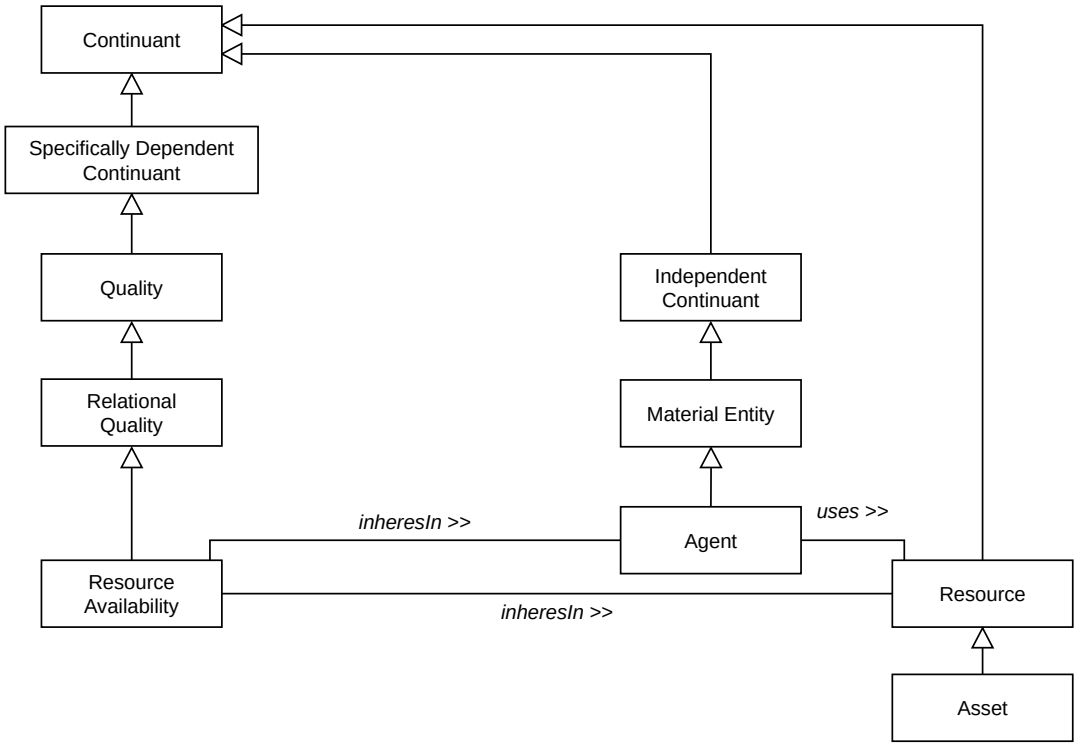


Figure 12.4: Relational qualities are shared qualities. That is to say, they inhere in two independent continuants. The resource availability quality specifies that a resource is available for use by an agent.

Figures

- Figure 12.1
- Figure 12.3

12.1.11 ResourceAvailability

Resource availability is a relational quality that indicates the availability of a given resource to a particular agent.

Annotations

- **Label:** Resource Availability
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#ResourceAvailability

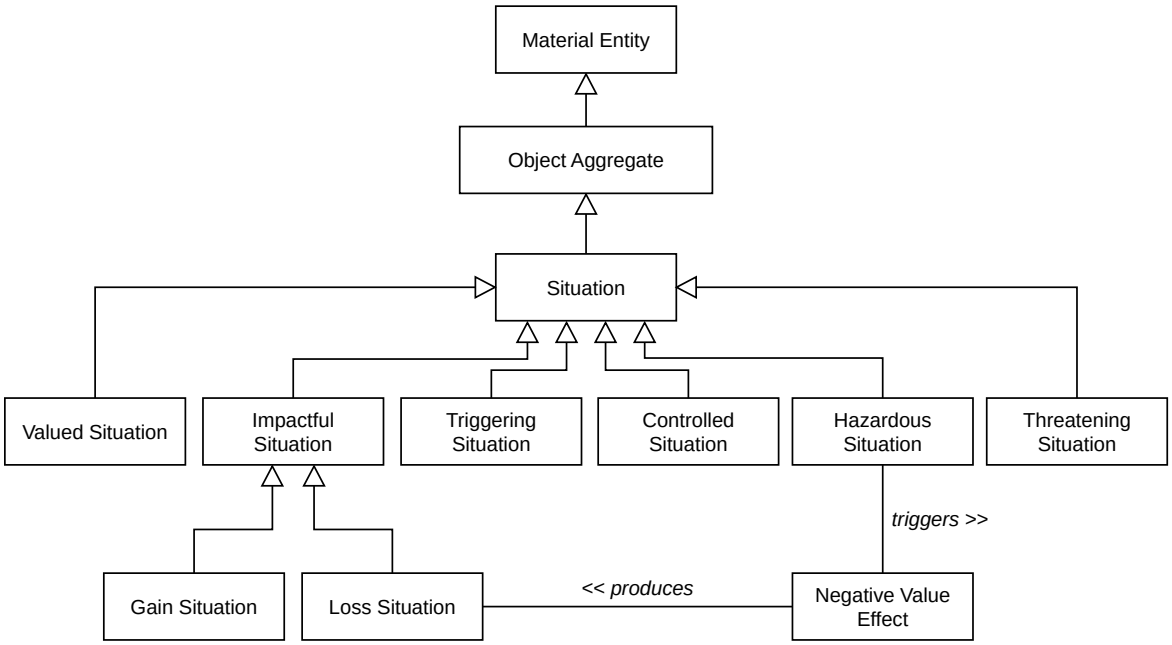


Figure 12.5: Situation hierarchy.

Hierarchy

- Entity
  - Continuant
    - SpecificallyDependentContinuant
      - Quality
        - RelationalQuality
          - ResourceAvailability

Direct Super Types

- RelationalQuality

Figures

- Figure 12.4

12.1.12 Situation

A situation is an object aggregate that represents a particular situation. A situation consists of one or objects.

Annotations

- **Label:** Situation

- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#Situation

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - MaterialEntity
        - ObjectAggregate
          - Situation

Direct Super Types

- ObjectAggregate

Direct Sub Types

- ControlledSituation
- HazardousSituation
- ImpactfulSituation
- RiskySituation
- ThreateningSituation
- TriggeringSituation
- ValuedSituation

Domain Of

- triggers

Range For

- produces

Figures

- Figure 12.3
- Figure 12.5
- Figure 12.6
- Figure 12.9
- Figure 13.1
- Figure 13.5
- Figure 13.9

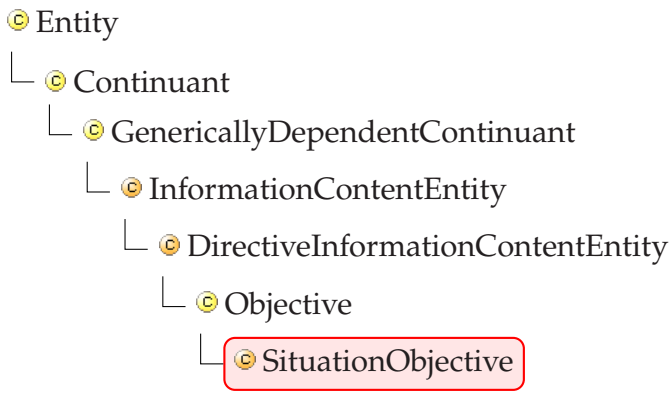
12.1.13 SituationObjective

A situation objective is an objective that refers to a particular situation. Situation objectives are the situations that agents desire to achieve via the performance of actions.

Annotations

- **Label:** Situation Objective
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#SituationObjective

Hierarchy



Direct Super Types

- Objective

Equivalent Classes

- (Objective ⊓ ∃ prescribes Situation)

Figures

- Figure 12.2
- Figure 12.3
- Figure 12.9
- Figure 13.2

12.1.14 TriggeringSituation

A triggering situation is a situation that triggers at least one process.

Annotations

- **Label:** Triggering Situation
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#TriggeringSituation

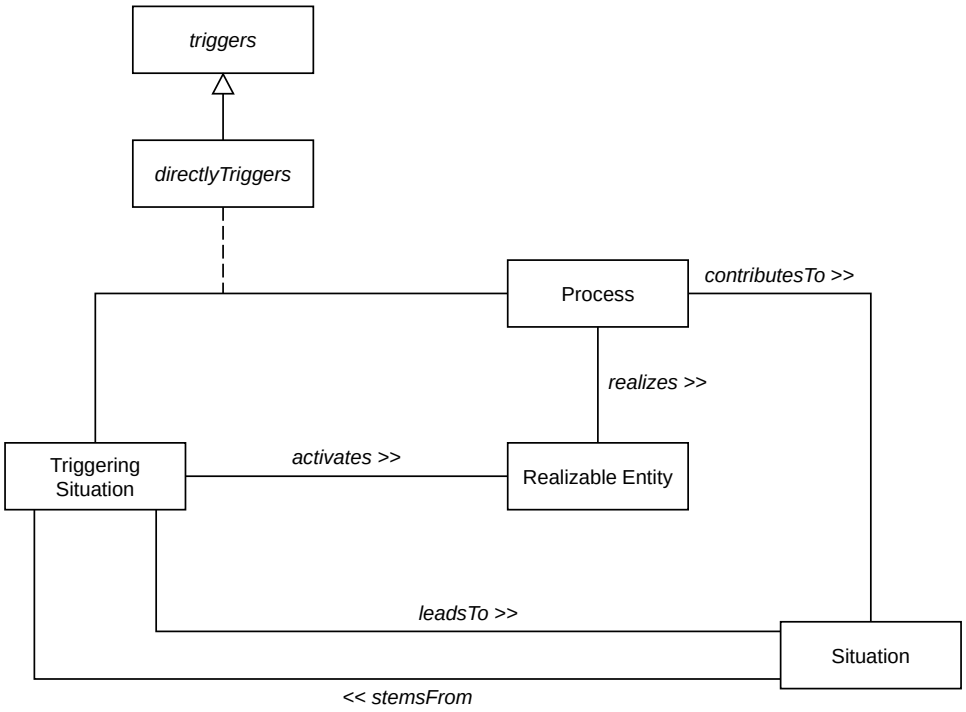


Figure 12.6: Triggering situations trigger processes that culminate in the production of new situations.

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - MaterialEntity
        - ObjectAggregate
          - Situation
            - TriggeringSituation

Direct Super Types

- Situation

Equivalent Classes

- (Situation ∩ ≥ triggers 1 Process)

Figures

- Figure 12.5
- Figure 12.6
- Figure 13.9

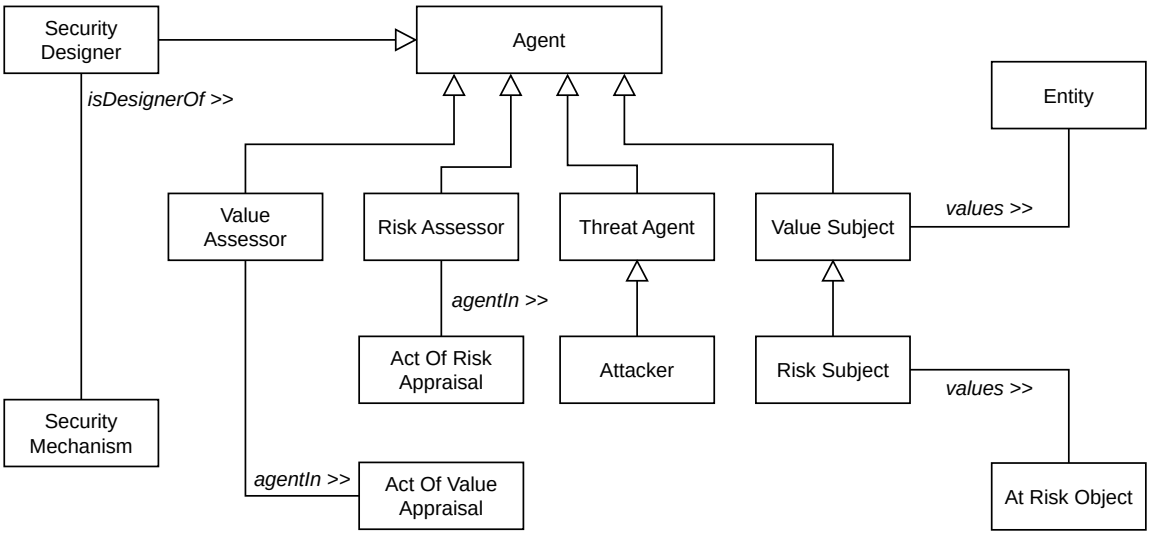


Figure 12.7: Agents relevant to the risk and security domain.

12.1.15 Value

Value is a quality (property) that represents the value assigned (or ascribed) to an object.

Annotations

- **Label:** Value
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#Value

Hierarchy

- Entity
  - Continuant
    - SpecificallyDependentContinuant
      - Quality
        - Value

Direct Super Types

- Quality

Figures

- Figure 12.1

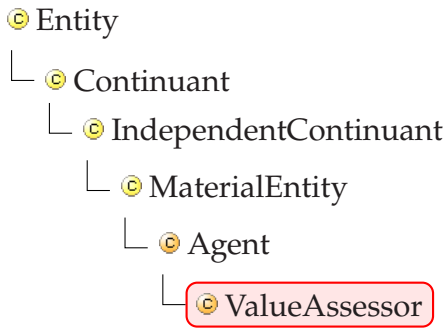
12.1.16 ValueAssessor

A value assessor is an agent that performs an act of value appraisal.

Annotations

- **Label:** Value Assessor
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#ValueAssessor

Hierarchy



Direct Super Types

- Agent

Equivalent Classes

- (Agent ⊓ ∃ agentIn ActOfValueAppraisal)

Figures

- Figure 12.7

12.1.17 ValuedObject

A valued object is an object that either 1) participates in a valued process or 2) is the bearer of a valued specifically dependent continuant (i.e., a valued quality or valued realizable entity).

Annotations

- **Label:** Valued Object
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#ValuedObject

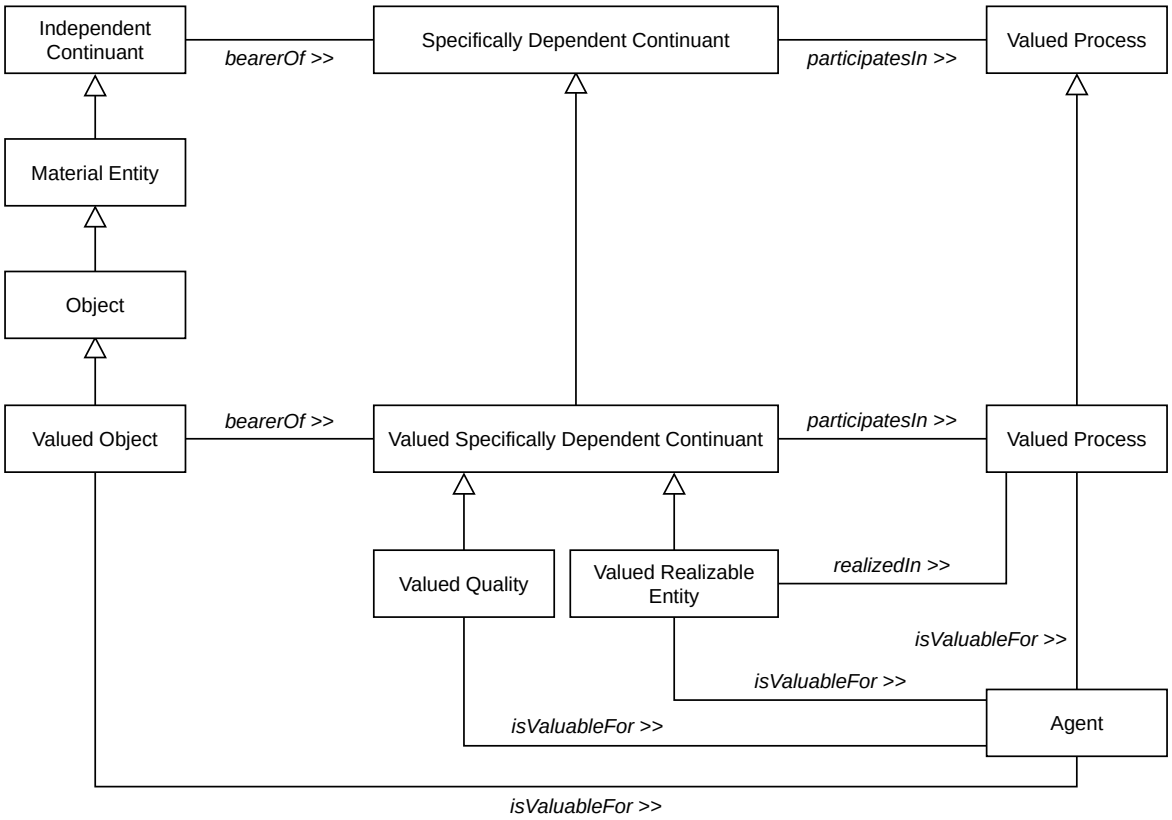


Figure 12.8: Any specifically dependent continuant that participates in a valued process is classified as a valued specifically dependent continuant. A valued object is an object that is the bearer of a valued specifically dependent continuant.

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - MaterialEntity
        - Object
          - ValuedObject

Direct Super Types

- ► Object

Direct Sub Types

- ► AtRiskObject

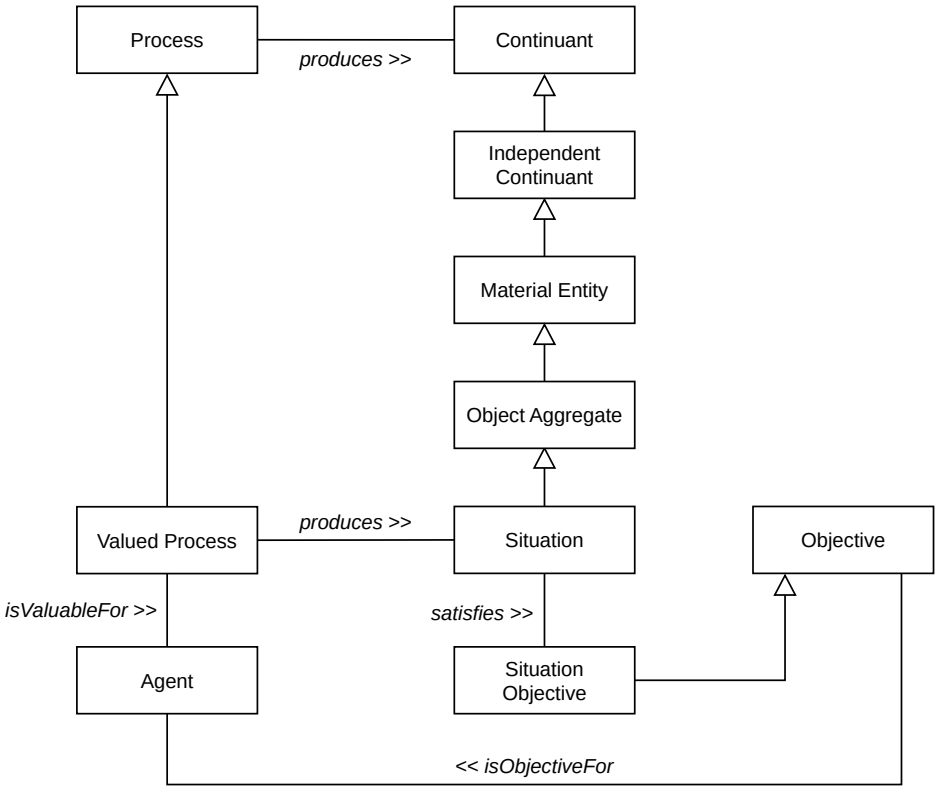


Figure 12.9: A valued process is a process that produces situations that satisfy a (situation) objective.

Equivalent Classes

- (Object ⊓ (∃ bearerOf ValuedSpecificallyDependentContinuant ⊔ ∃ participatesIn ValuedProcess))

Disjoint Classes

- ValuedSpecificallyDependentContinuant

Figures

- Figure 12.2
- Figure 12.8
- Figure 12.10
- Figure 13.1

12.1.18 ValuedProcess

A valued process is a process that produces a situation (or other output) that satisfies an objective.

Annotations

- **Label:** Valued Process

- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#ValuedProcess

Hierarchy

Entity
└ Occurrent
  └ Process
    └ ValuedProcess

Direct Super Types

- Process

Equivalent Classes

- (Process ⊓ ∃ produces ∃ satisfies Objective)

Figures

- Figure 12.2
- Figure 12.8
- Figure 12.9

12.1.19 ValuedQuality

A valued quality is any quality that is involved (as a participant) in a valued process.

Annotations

- **Label:** Valued Quality
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#ValuedQuality

Hierarchy

Entity
└ Continuant
  └ SpecificallyDependentContinuant
    └ Quality
      └ ValuedQuality

Direct Super Types

- Quality
- ValuedSpecificallyDependentContinuant

Equivalent Classes

- (Quality ∩ ∃ participatesIn ValuedProcess)

Figures

- Figure 12.8
- Figure 12.10

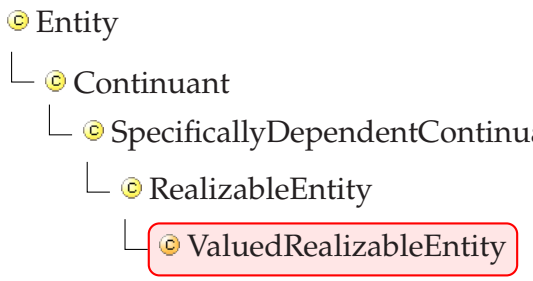
12.1.20 ValuedRealizableEntity

A valued realizable entity is any realizable entity that is realized in a valued process.

Annotations

- **Label:** Valued Realizable Entity
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#ValuedRealizableEntity

Hierarchy



Direct Super Types

- RealizableEntity
- ValuedSpecificallyDependentContinuant

Equivalent Classes

- (RealizableEntity ∩ (∃ realizedIn ValuedProcess ∪ ∃ participatesIn ValuedProcess))

Figures

- Figure 12.8
- Figure 12.10

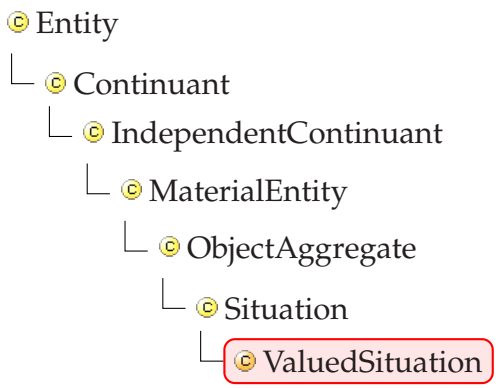
12.1.21 ValuedSituation

A valued situation is any situation that satisfies a situation objective.

Annotations

- **Label:** Valued Situation
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#ValuedSituation

Hierarchy



Direct Super Types

- Situation

Equivalent Classes

- (Situation ∩ ∃ satisfies SituationObjective)

Figures

- Figure 12.2
- Figure 12.5

12.1.22 ValuedSpecificallyDependentContinuant

A valued specifically dependent continuant is a specifically dependent continuant is involved (as a participant) in a valued process.

Annotations

- **Label:** Valued Specifically Dependent Continuant
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#ValuedSpecificallyDependentContinuant

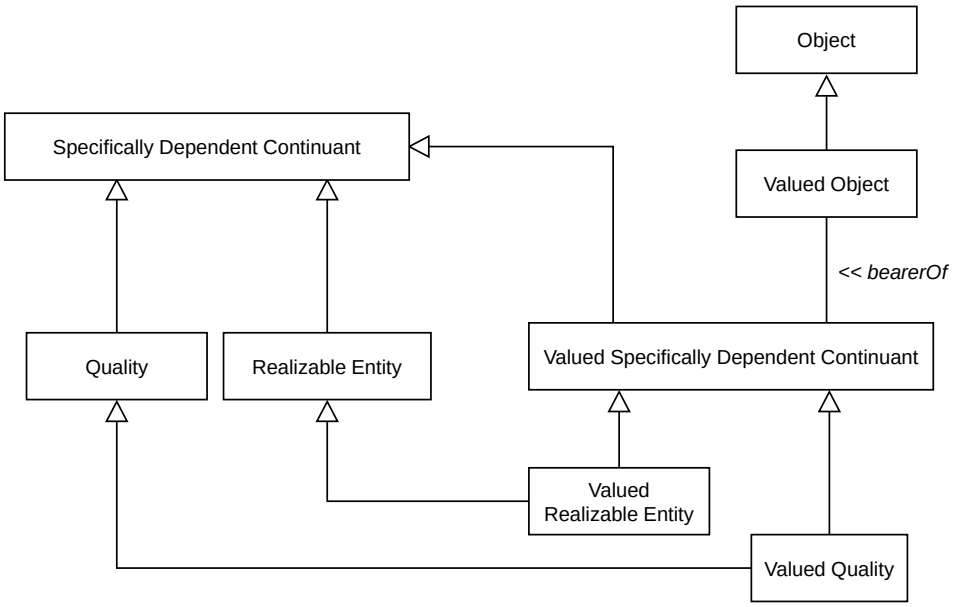


Figure 12.10: Value specifically dependent continuants specialize the standard category of specifically dependent continuants.

Hierarchy

- Entity
  - Continuant
    - SpecificallyDependentContinuant
      - ValuedSpecificallyDependentContinuant

Direct Super Types

- SpecificallyDependentContinuant

Direct Sub Types

- ValuedQuality
- ValuedRealizableEntity

Equivalent Classes

- (SpecificallyDependentContinuant ⊓ (∃ realizedIn ValuedProcess ⊔ ∃ participatesIn ValuedProcess))

Disjoint Classes

- ValuedObject

Figures

- Figure 12.8
- Figure 12.10
- Figure 13.1
- Figure 13.4

12.2 Properties

12.2.1 benefits

Specifies the agents and associated objectives that benefit from gain situations.

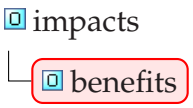
Annotations

- **Label:** benefits
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#benefits

Facets

- **Property Type:** ObjectProperty
- **Functional:** False

Hierarchy



Direct Super Types

- impacts

12.2.2 desires

Specifies the things that desired by an agent.

Annotations

- **Label:** desires
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#desires

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** isDesiredBy

SuperProperty Of (Chain)

- hasObjective o prescribes SubPropertyOf: desires

Figures

- Figure 12.3

12.2.3 harms

Specifies the agents and associated objectives that are harmed by loss situations.

Annotations

- **Label:** harms
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#harms

Facets

- **Property Type:** ObjectProperty
- **Functional:** False

Hierarchy

impacts
└ harms

Direct Super Types

- impacts

12.2.4 hasObjective

Specifies the objective of a given agent.

Annotations

- **Label:** has objective
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#hasObjective

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** isObjectiveFor

Figures

- Figure 12.2
- Figure 12.3

12.2.5 impacts

Specifies the agents and associated objectives that are impacted by impactful situations.

Annotations

- **Label:** impacts
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#impacts

Facets

- **Property Type:** ObjectProperty
- **Functional:** False

Direct Sub Types

- benefits
- harms

12.2.6 isDesiredBy

Specifies the agents that desire a particular entity.

Annotations

- **Label:** is desired by
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#isDesiredBy

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** desires

12.2.7 isDirectCauseOf

Specifies the process that is directly caused by another (preceding) process.

Annotations

- **Label:** is direct cause of
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#isDirectCauseOf

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** isDirectlyCausedBy

Hierarchy

isCauseOf
  isDirectCauseOf

Direct Super Types

- isCauseOf

12.2.8 isDirectlyCausedBy

Specifies the process that directly causes a process.

Annotations

- **Label:** is directly caused by
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#isDirectlyCausedBy

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** isDirectCauseOf

Hierarchy

causedBy
  isDirectlyCausedBy

Direct Super Types

- causedBy

12.2.9 isObjectiveFor

Specifies the agent that has a given objective.

Annotations

- **Label:** is objective for
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#isObjectiveFor

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** hasObjective

Domain

- Objective

Range

- Agent

Figures

- Figure 12.3
- Figure 12.9
- Figure 13.2

12.2.10 isPresentIn

Specifies the continuants that are present within a given situation.

Annotations

- **Label:** is present in
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#isPresentIn

Facets

- **Property Type:** ObjectProperty
- **Functional:** False

SuperProperty Of (Chain)

- partOf o isPresentIn SubPropertyOf: isPresentIn
- inheresIn o isPresentIn SubPropertyOf: isPresentIn

12.2.11 isSatisfiedBy

Specifies the situation that satisfies an objective.

Annotations

- **Label:** is satisfied by
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#isSatisfiedBy

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** satisfies

12.2.12 isValuableFor

Specifies the agent that a valued entity is valuable for.

Annotations

- **Label:** is valuable for
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#isValuableFor

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** values

SuperProperty Of (Chain)

- hasPart o isValuableFor SubPropertyOf: isValuableFor
- realizedIn o partOf o isValuableFor SubPropertyOf: isValuableFor
- realizedIn o isValuableFor SubPropertyOf: isValuableFor
- bearerOf o isValuableFor SubPropertyOf: isValuableFor
- participatesIn o partOf o isValuableFor SubPropertyOf: isValuableFor
- participatesIn o isValuableFor SubPropertyOf: isValuableFor
- produces o satisfies o isObjectiveFor SubPropertyOf: isValuableFor
- satisfies o isObjectiveFor SubPropertyOf: isValuableFor

Range

- Agent

Figures

- Figure 12.8
- Figure 12.9
- Figure 13.1

12.2.13 leadsTo

Specifies the situation that is produced by a chain of processes that are triggered by another situation.

Annotations

- **Label:** leads to
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#leadsTo

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** stemsFrom

Figures

- Figure 12.6

12.2.14 matches

Specifies that a real world situation matches or conforms to a particular situation objective.

Annotations

- **Label:** matches
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#matches

Facets

- **Property Type:** ObjectProperty
- **Functional:** False

12.2.15 producedBy

Specifies the process that produces a situation.

Annotations

- **Label:** produced by
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#producedBy

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** produces

12.2.16 produces

Specifies the situations that are produced or brought about by processes. If a process (p1) has another process (p2) as a part, and p2 produces a situation (s), then p1 also produces s.

Annotations

- **Label:** produces
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#produces

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** producedBy

SuperProperty Of (Chain)

- hasPart o produces SubPropertyOf: produces

Domain

- Process

Range

- Situation

Figures

- Figure 12.2
- Figure 12.5
- Figure 12.9
- Figure 13.2
- Figure 13.4
- Figure 13.6

12.2.17 satisfies

Specifies that a given situation satisfies a given (situation) objective.

Annotations

- **Label:** satisfies
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#satisfies

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** isSatisfiedBy

Figures

- Figure 12.2
- Figure 12.9

12.2.18 stemsFrom

Specifies the situation that lead to another situation. A situation (s1) stems from another situation (s2) if s2 triggers a chain of processes that culminate in the production of s2.

Annotations

- **Label:** stems from
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#stemsFrom

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** leadsTo

SuperProperty Of (Chain)

- producedBy o isTriggeredBy SubPropertyOf: stemsFrom

Figures

- Figure 12.6

12.2.19 values

Specifies the entities that are valued by an agent.

Annotations

- **Label:** values
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#values

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** isValuableFor

Domain

- Agent

Figures

- Figure 12.7

13

Risk and Security Ontology

The risk and security ontology is designed to represent risk- and security-related entities, such as threat processes, threat paths, hazardous situations, and security mechanisms.

13.1 Named Classes

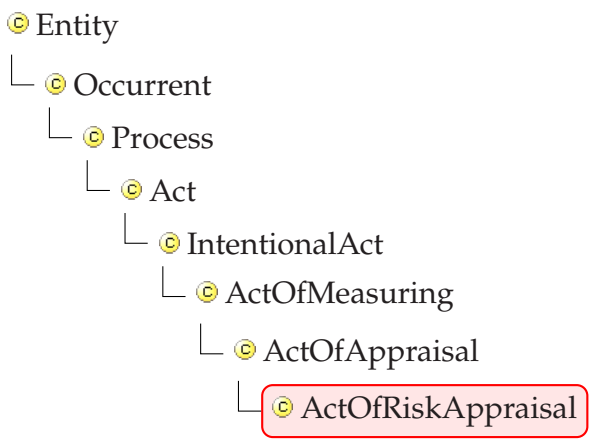
13.1.1 ActOfRiskAppraisal

An act of risk appraisal is an act of appraisal that involves the evaluation of risk. The outputs of this process are typically one or more representations that encode estimates of the risk assigned to either process profiles (i.e., the process risk) or qualities (i.e., the risk quality).

Annotations

- **Label:** Act Of Risk Appraisal
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#ActOfRiskAppraisal

Hierarchy



Direct Super Types

- ActOfAppraisal

Figures

- Figure 12.7

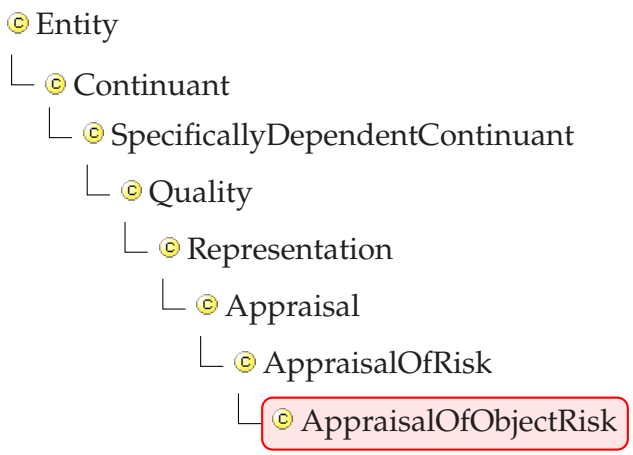
13.1.2 AppraisalOfObjectRisk

An appraisal of object risk is an appraisal of the risk associated with an object. In this case, the representation encodes the risk assigned to objects via the risk quality.

Annotations

- **Label:** Appraisal Of Object Risk
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#AppraisalOfObjectRisk

Hierarchy



Direct Super Types

- AppraisalOfRisk
- concretizes (MeasurementInformationContentEntity ∩ isAMeasurementOf Risk)

13.1.3 AppraisalOfProcessRisk

An appraisal of process risk is an appraisal of the risk associated with a process. In this case, the representation encodes the risk of a process via a process profile (i.e., the process risk process profile).

Annotations

- **Label:** Appraisal Of Process Risk
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#AppraisalOfProcessRisk

Hierarchy

- Entity
  - Continuant
    - SpecificallyDependentContinuant
      - Quality
        - Representation
          - Appraisal
            - AppraisalOfRisk
              - AppraisalOfProcessRisk

Direct Super Types

- AppraisalOfRisk
- concretizes (MeasurementInformationContentEntity ⊓ isAMeasurementOf ProcessRisk)

13.1.4 AppraisalOfRisk

An appraisal of risk is a representation that represents the results of an act of risk appraisal.

Annotations

- **Label:** Appraisal Of Risk
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#AppraisalOfRisk

Hierarchy

- Entity
  - Continuant
    - SpecificallyDependentContinuant
      - Quality
        - Representation
          - Appraisal
            - AppraisalOfRisk

Direct Super Types

- Appraisal
- isOutputOf ActOfRiskAppraisal

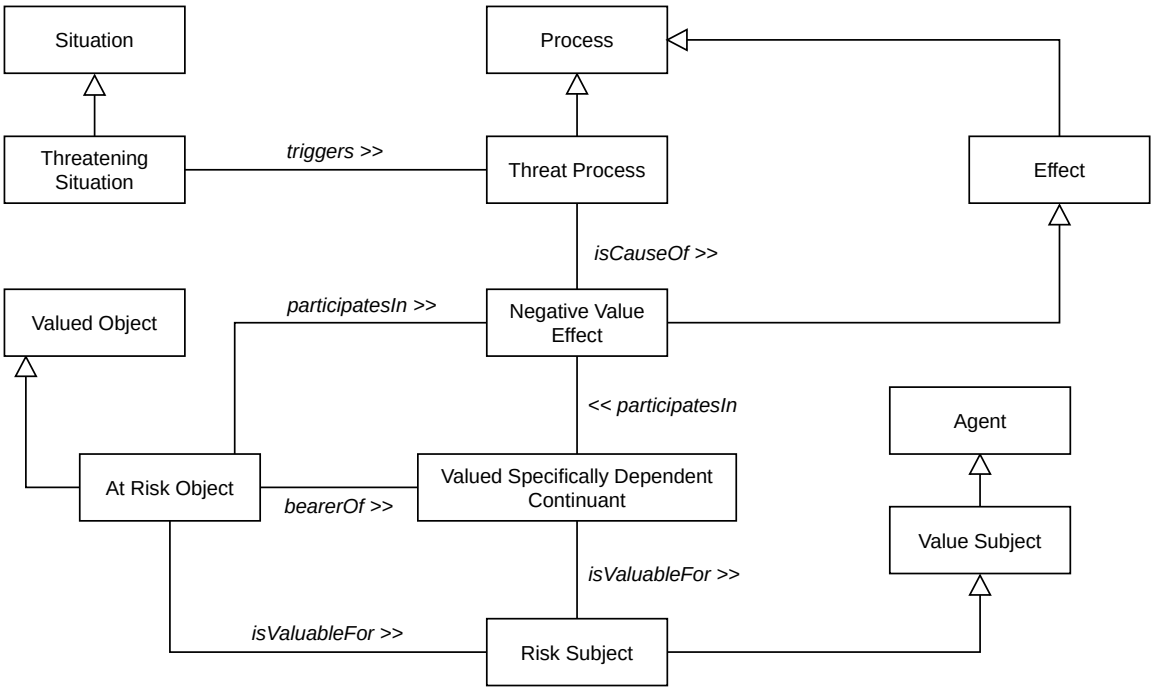


Figure 13.1: At risk objects are objects that participate in negative value effects.

Direct Sub Types

- AppraisalOfObjectRisk
- AppraisalOfProcessRisk

13.1.5 AtRiskObject

An at risk object is a valued object that is at risk of being compromised as the result of a threat process. An object (o) is at risk if o is the bearer of a valued specifically dependent continuant (c), c is lost as a result of the participation of o in a loss process (p), and p is caused by a process that is recognized as a threat process.

Annotations

- **Label:** At Risk Object
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#AtRiskObject

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - MaterialEntity
        - Object
          - ValuedObject
            - AtRiskObject

Direct Super Types

- ValuedObject

Equivalent Classes

- (ValuedObject ⊓ ∃ participatesIn (NegativeValueEffect ⊓ ∃ causedBy ThreatProcess))

Figures

- Figure 12.2
- Figure 12.7
- Figure 13.1

13.1.6 Attack

An attack is a threat process that qualifies as intentional act (i.e., an attack is a threat process that is performed with the intention of causing harm to one or more agents).

Annotations

- **Label:** Attack
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#Attack

Hierarchy

- Entity
  - Occurrent
    - Process
      - ThreatProcess
        - Attack

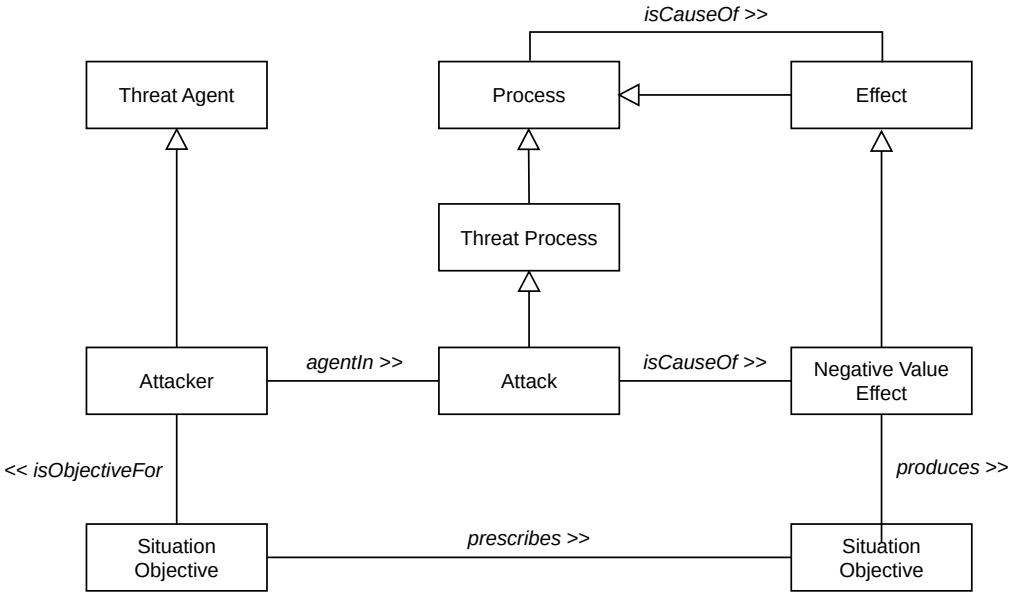


Figure 13.2: Attackers participcate in attack processes.

Direct Super Types

- ThreatProcess

Equivalent Classes

- (ThreatProcess hasAgent Attacker)

Figures

- Figure 13.2

13.1.7 Attacker

An attacker is a threat agent that is the perpetrator of an attack. An agent is an attacker if they are an agent in a process that qualifies as an attack.

Annotations

- **Label:** Attacker
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#Attacker

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - MaterialEntity
        - Agent
          - ThreatAgent
            - Attacker

Direct Super Types

- ThreatAgent

Equivalent Classes

- (ThreatAgent ∩ ∃ hasObjective (SituationObjective ∩ ∃ prescribes LossSituation))

Figures

- Figure 12.7
- Figure 13.2

13.1.8 CausalLikelihood

A causal likelihood is a process likelihood that specifies the likelihood that one process will follow another. The causal likelihood is the likelihood (or probability) of a causal relationship between two processes (p1 and p2), where p1 is the direct or indirect cause of p2. The likelihood is represented by a representational information content entity that forms a part of the causal likelihood information content entity.

Annotations

- **Label:** Causal Likelihood
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#CausalLikelihood

Hierarchy

- Entity
  - Continuant
    - GenericallyDependentContinuant
      - InformationContentEntity
        - DescriptiveInformationContentEntity
          - MeasurementInformationContentEntity
            - ProbabilityMeasurementInformationContentEntity
              - ProcessLikelihood
                - CausalLikelihood

Direct Super Types

- ProcessLikelihood
- hasPart (RepresentationalInformationContentEntity ∩ represents Process)

Figures

- Figure 13.5

13.1.9 ControlCapability

A control capability is any capability that is realized in a threat prevention process.

Annotations

- **Label:** Control Capability
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#ControlCapability

Hierarchy

- Entity
  - Continuant
    - SpecificallyDependentContinuant
      - RealizableEntity
        - Capability
          - ControlCapability

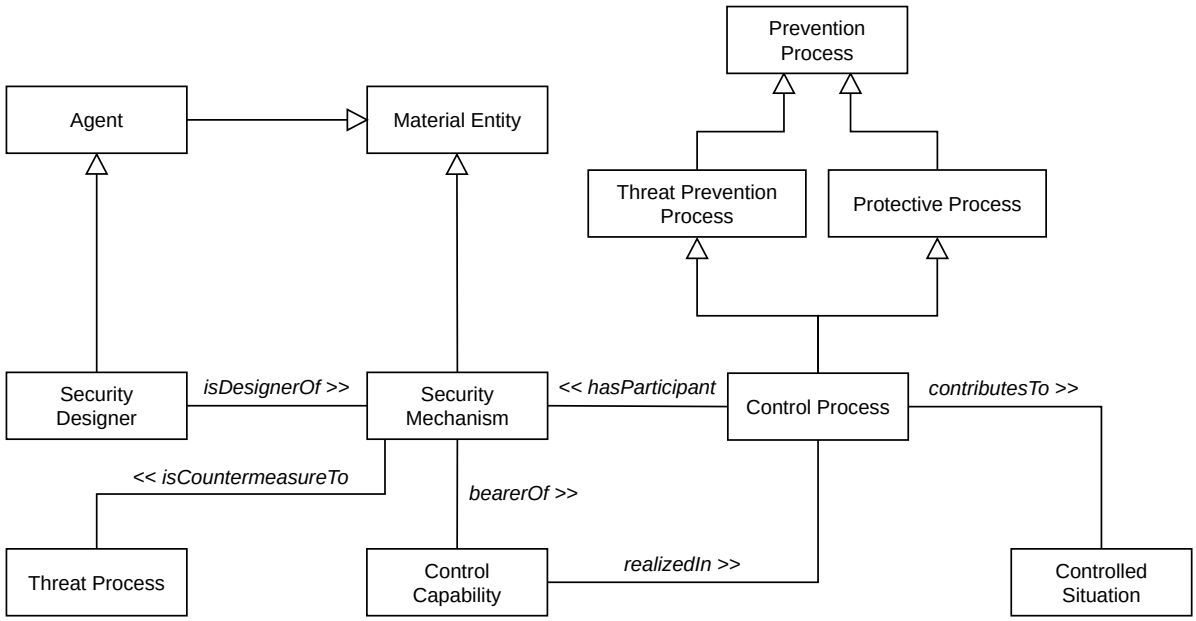


Figure 13.3: Control processes and security mechanisms.

Direct Super Types

- Capability

Equivalent Classes

- (Capability ∩ ∃ realizedIn ControlProcess)

Figures

- Figure 13.3

13.1.10 ControlProcess

A control process is a protective processing that involves a security mechanism as a participant. In addition, the process contributes to the production of a controlled situation.

Annotations

- **Label:** Control Process
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#ControlProcess

Hierarchy

- Entity
  - Occurrent
    - Process
      - PreventionProcess
        - ProtectiveProcess
          - ControlProcess

Direct Super Types

- ProtectiveProcess

Equivalent Classes

- (ProtectiveProcess ⊓ ∃ hasParticipant SecurityMechanism ⊓ ∃ contributesTo ControlledSituation)

Figures

- Figure 13.3

13.1.11 ControlledSituation

A controlled situation is a situation that is incompatible with situations that trigger threat processes (i.e., threatening situations).

Annotations

- **Label:** Controlled Situation
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#ControlledSituation

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - MaterialEntity
        - ObjectAggregate
          - Situation
            - ControlledSituation

Direct Super Types

- Situation

Equivalent Classes

- (Situation ∩ ∃ incompatibleWith ThreateningSituation)

Figures

- Figure 12.5
- Figure 13.3
- Figure 13.8

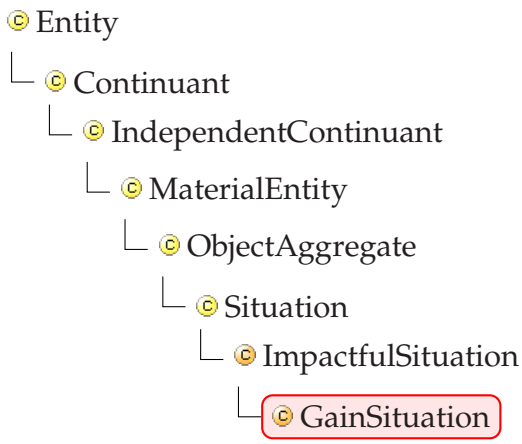
13.1.12 GainSituation

A gain situation is any situation that is produced by a positive value effect.

Annotations

- **Label:** Gain Situation
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#GainSituation

Hierarchy



Direct Super Types

- ImpactfulSituation

Equivalent Classes

- (Situation ∩ ∃ producedBy PositiveValueEffect)

Figures

- Figure 12.5
- Figure 13.4

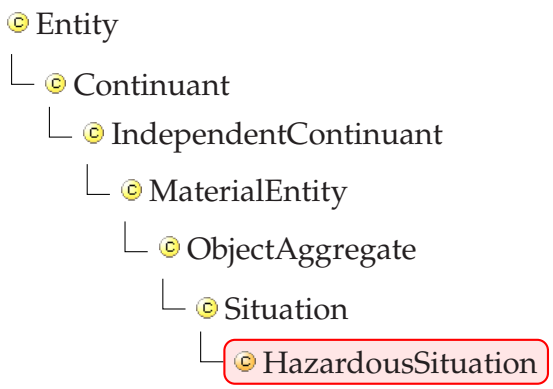
13.1.13 HazardousSituation

A hazardous situation is any situation that triggers a negative value effect (either directly or indirectly). A negative value effect entails the loss of some valued specifically dependent continuant.

Annotations

- **Label:** Hazardous Situation
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#HazardousSituation

Hierarchy



Direct Super Types

- Situation

Equivalent Classes

- (Situation ⊓ ∃ triggers NegativeValueEffect)

Figures

- Figure 12.5

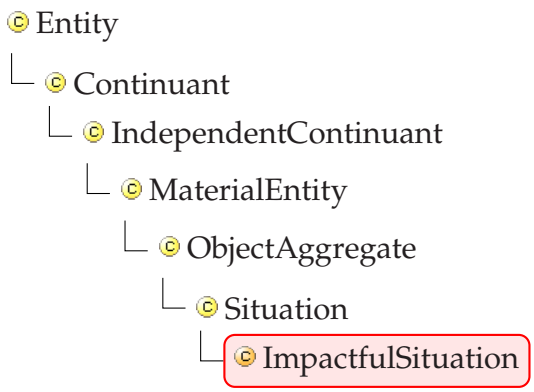
13.1.14 ImpactfulSituation

An impactful situation is a situation that qualifies as either a loss situation or a gain situation.

Annotations

- **Label:** Impactful Situation
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#ImpactfulSituation

Hierarchy



Direct Super Types

- Situation

Direct Sub Types

- GainSituation
- LossSituation

Equivalent Classes

- (GainSituation ⊔ LossSituation)

Figures

- Figure 12.5

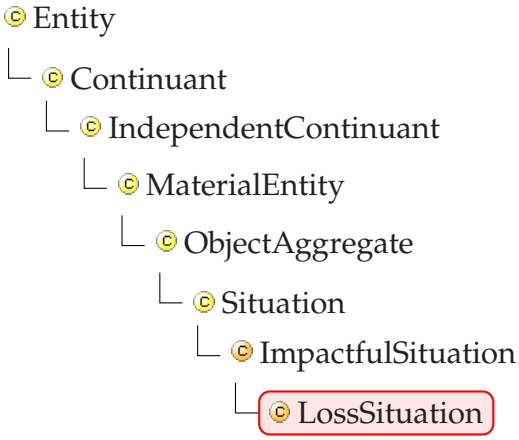
13.1.15 LossSituation

A loss situation is a situation that is produced by a negative value effect. A negative value effect entails the loss of some valuable specifically dependent continuant.

Annotations

- **Label:** Loss Situation
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#LossSituation

Hierarchy



Direct Super Types

- ImpactfulSituation

Equivalent Classes

- (Situation ∩ ∃ producedBy NegativeValueEffect)

Figures

- Figure 12.5
- Figure 13.4
- Figure 13.6

13.1.16 NegativeValueEffect

A negative value effect is an effect that involves the loss of a valued property (i.e., a valued specifically dependent continuant). The loss of such properties is indicated via their participation in LossOfSpecificallyDependentContinuant-type processes.

Annotations

- **Label:** Negative Value Effect
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#NegativeValueEffect

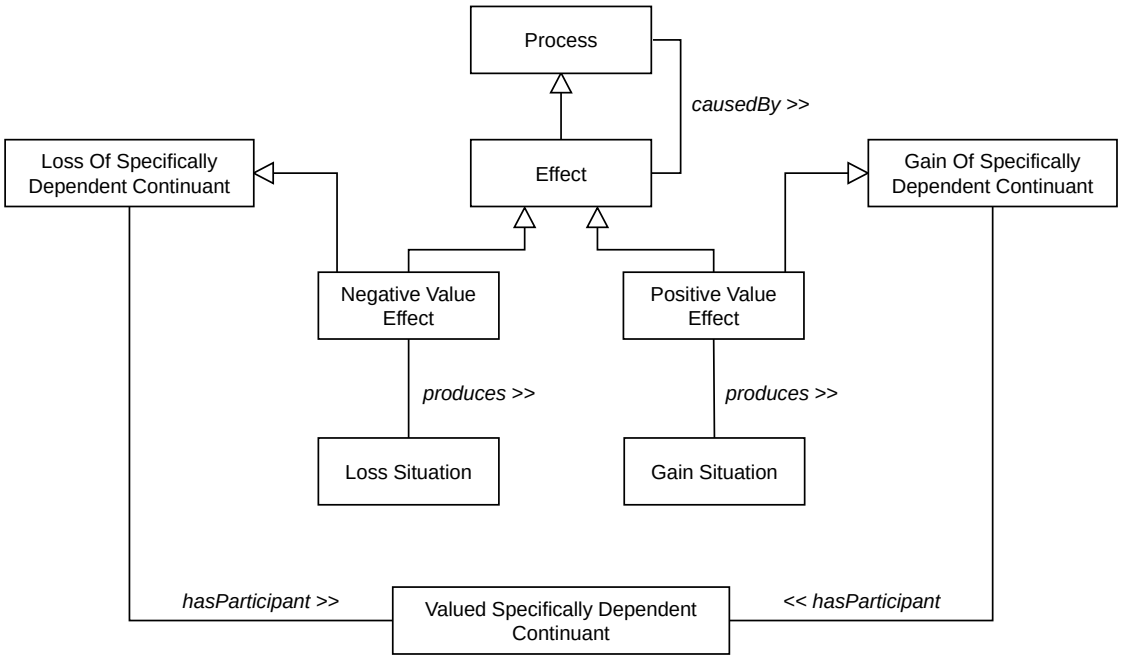


Figure 13.4: A loss situation is a situation that is produced by a negative value effect. A gain situation is a situation that is produced by a positive value effect.

Hierarchy

- Entity
  - Occurrent
    - Process
      - Effect
        - NegativeValueEffect

Direct Super Types

- Effect

Equivalent Classes

- (LossOfSpecificallyDependentContinuant ⊓ ∃ hasParticipant ValuedSpecificallyDependentContinuant)

Figures

- Figure 12.5
- Figure 13.1
- Figure 13.2
- Figure 13.4
- Figure 13.6

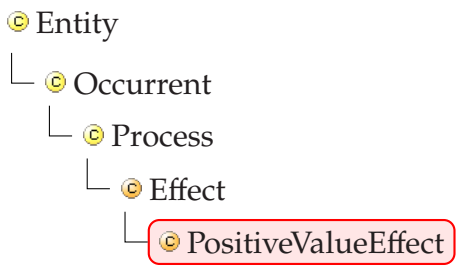
13.1.17 PositiveValueEffect

A positive value effect is an effect that involves the gain of a valued property (i.e., a valued specifically dependent continuant). The gain of such properties is indicated via their participation in GainOfSpecificallyDependentContinuant-type processes.

Annotations

- **Label:** Positive Value Effect
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#PositiveValueEffect

Hierarchy



Direct Super Types

- Effect

Equivalent Classes

- (GainOfSpecificallyDependentContinuant ∩ ∃ hasParticipant ValuedSpecificallyDependentContinuant)

Figures

- Figure 13.4

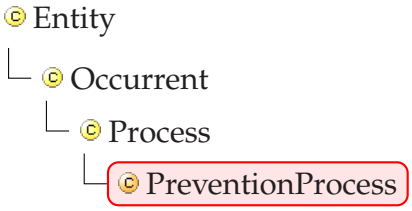
13.1.18 PreventionProcess

A prevention process is a process that prevents another process from occurring.

Annotations

- **Label:** Prevention Process
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#PreventionProcess

Hierarchy



Direct Super Types

- Process

Direct Sub Types

- ProtectiveProcess
- ThreatPreventionProcess

Equivalent Classes

- (Process ∩ ∃ prevents Process)

Figures

- Figure 13.3
- Figure 13.8
- Figure 13.9

13.1.19 ProcessLikelihood

A process likelihood is a probability information content entity that specifies the likelihood that a particular process will occur.

Annotations

- **Label:** Process Likelihood
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#ProcessLikelihood

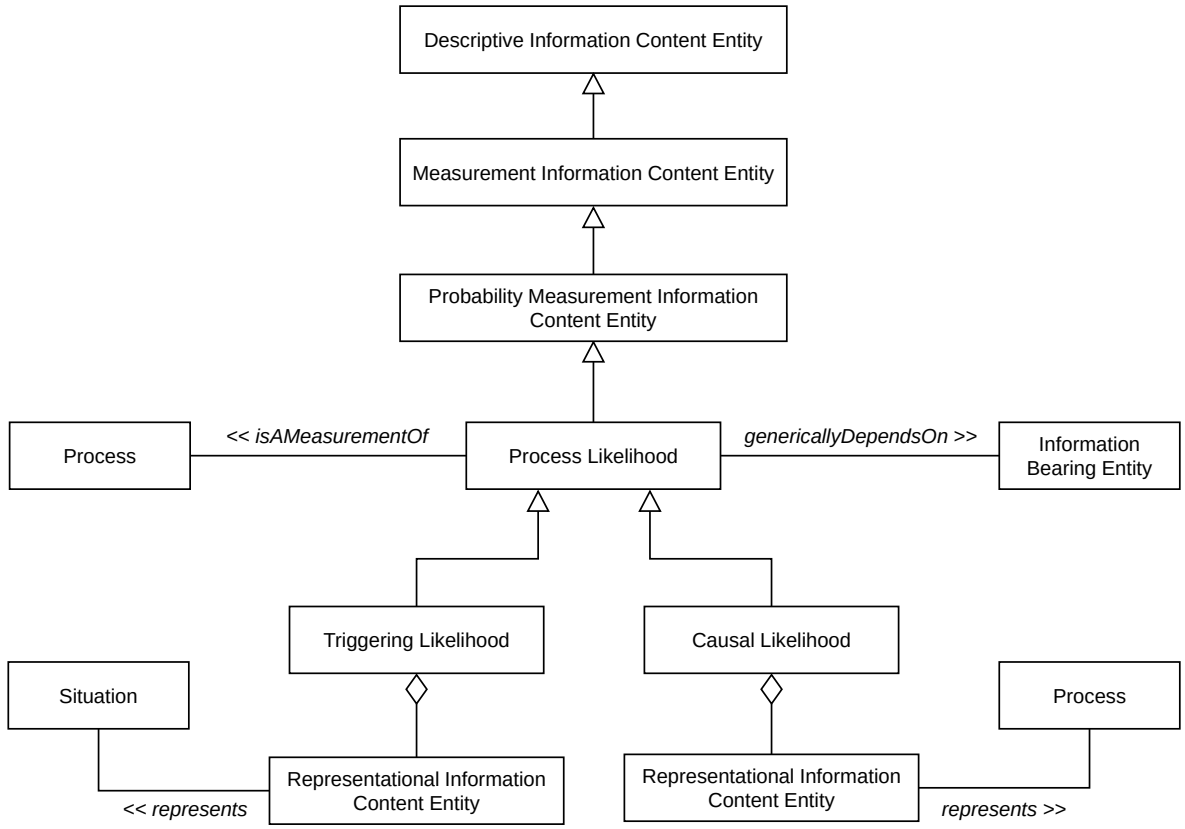


Figure 13.5: Likelihood information is represented via information content entities.

Hierarchy

- Entity
  - Continuant
    - GenericallyDependentContinuant
      - InformationContentEntity
        - DescriptiveInformationContentEntity
          - MeasurementInformationContentEntity
            - ProbabilityMeasurementInformationContentEntity
              - ProcessLikelihood

Direct Super Types

- ProbabilityMeasurementInformationContentEntity
- isAMeasurementOf Process
- isAMeasurementOf Process

Direct Sub Types

- CausalLikelihood
- TriggeringLikelihood

Figures

- Figure 13.5

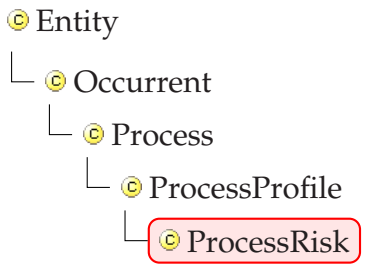
13.1.20 ProcessRisk

A process risk is a process profile that reflects the risk associated with a particular process.

Annotations

- **Label:** Process Risk
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#ProcessRisk

Hierarchy



Direct Super Types

- ProcessProfile

13.1.21 ProtectiveProcess

A protective process is a prevention process that prevents the occurrence of a threat process.

Annotations

- **Label:** Protective Process
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#ProtectiveProcess

Hierarchy

- Entity
  - Occurrent
    - Process
      - PreventionProcess
        - ProtectiveProcess

Direct Super Types

- PreventionProcess

Direct Sub Types

- ControlProcess

Equivalent Classes

- ThreatPreventionProcess

Figures

- Figure 13.3

13.1.22 Risk

Risk is a quality (a categorical property) that represents the risk assigned (or ascribed) to an object.

Annotations

- **Label:** Risk
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#Risk

Hierarchy

- Entity
  - Continuant
    - SpecificallyDependentContinuant
      - Quality
        - Risk

Direct Super Types

- Quality

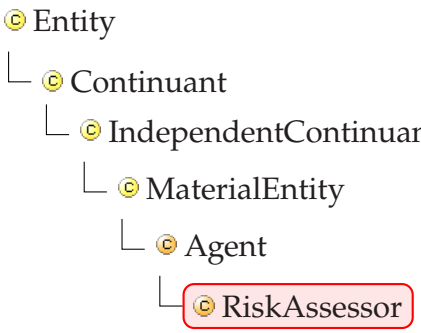
13.1.23 RiskAssessor

A risk assessor is an agent that performs an act of risk appraisal (or process of risk assessment).

Annotations

- **Label:** Risk Assessor
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#RiskAssessor

Hierarchy



Direct Super Types

- Agent

Equivalent Classes

- (Agent ∩ ∃ agentIn ActOfRiskAppraisal)

Figures

- Figure 12.7

13.1.24 RiskSubject

A risk subject is an agent that values an object that is deemed to be at risk.

Annotations

- **Label:** Risk Subject
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#RiskSubject

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - MaterialEntity
        - Agent
          - ValueSubject
            - RiskSubject

Direct Super Types

- ValueSubject

Equivalent Classes

- (ValueSubject ∩ ∃ values AtRiskObject)

Figures

- Figure 12.7
- Figure 13.1

13.1.25 RiskyProcess

A risky process is a process that has a certain likelihood of causing a negative value effect.

Annotations

- **Label:** Risky Process
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#RiskyProcess

Hierarchy

- Entity
  - Occurrent
    - Process
      - RiskyProcess

Direct Super Types

- Process

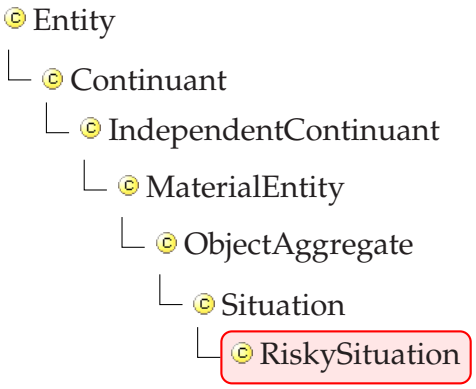
13.1.26 RiskySituation

A risky situation is a situation in which there is a certain likelihood of a negative value effect occurring.

Annotations

- **Label:** Risky Situation
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#RiskySituation

Hierarchy



Direct Super Types

- Situation

13.1.27 SecurityDesigner

A security designer is any agent that is the designer of a security mechanism.

Annotations

- **Label:** Security Designer
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#SecurityDesigner

Hierarchy

Direct Super Types

- Agent

Equivalent Classes

- (Agent ∩ ∃ isDesignerOf SecurityMechanism)

Figures

- Figure 12.7
- Figure 13.3

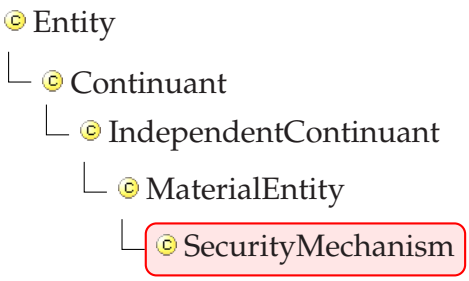
13.1.28 SecurityMechanism

A security mechanism is a material entity that is designed to prevent the occurrence of threat processes.

Annotations

- **Label:** Security Mechanism
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#SecurityMechanism

Hierarchy



Direct Super Types

- MaterialEntity
- ∃ isCountermeasureTo ThreatProcess

Figures

- Figure 12.7
- Figure 13.3

13.1.29 ThreatAgent

A threat agent is an agent that is responsible for a threat process.

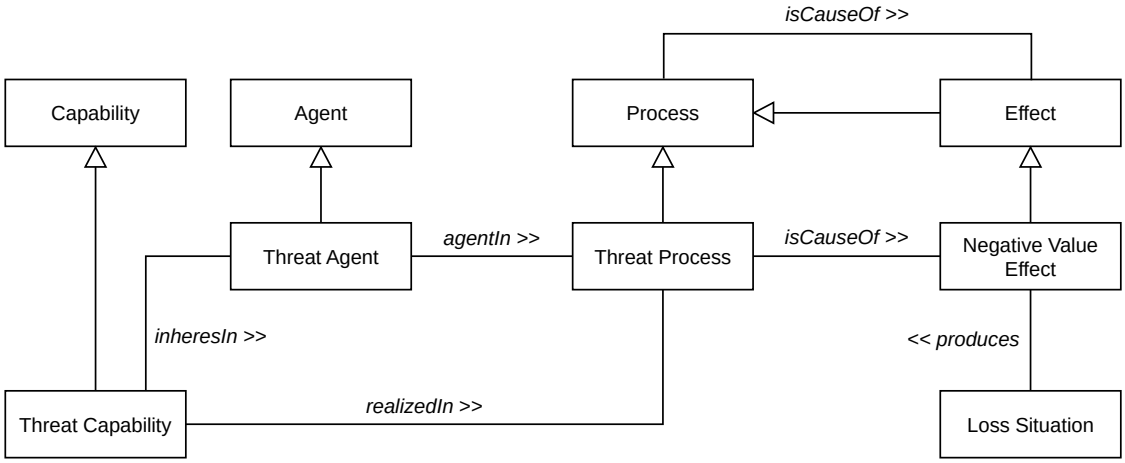


Figure 13.6: At risk objects are objects that participate in negative value effects.

Annotations

- **Label:** Threat Agent
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#ThreatAgent

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - MaterialEntity
        - Agent
          - ThreatAgent

Direct Super Types

- Agent

Direct Sub Types

- Attacker

Equivalent Classes

- (Agent ∩ ∃ agentIn ThreatProcess)

Figures

- Figure 12.7
- Figure 13.2

- Figure 13.6

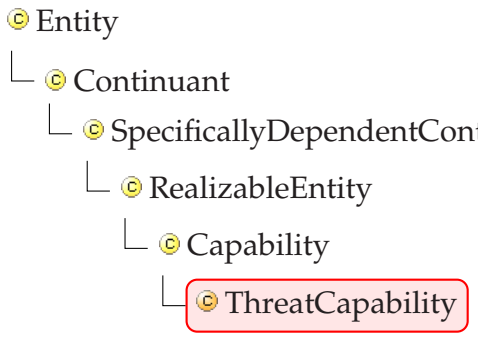
13.1.30 ThreatCapability

A threat capability is any capability that 1) inheres in a threat agent and 2) is realized in a threat process.

Annotations

- **Label:** Threat Capability
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#ThreatCapability

Hierarchy



Direct Super Types

- Capability

Equivalent Classes

- (Capability ∩ ∃ realizedIn ThreatProcess)
- (Capability ∩ ∃ inheresIn ThreatAgent)

Figures

- Figure 13.6
- Figure 13.7

13.1.31 ThreatPath

A threat path is a succession of processes that are causally-relevant to the occurrence of a threat process.

Annotations

- **Label:** Threat Path
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#ThreatPath

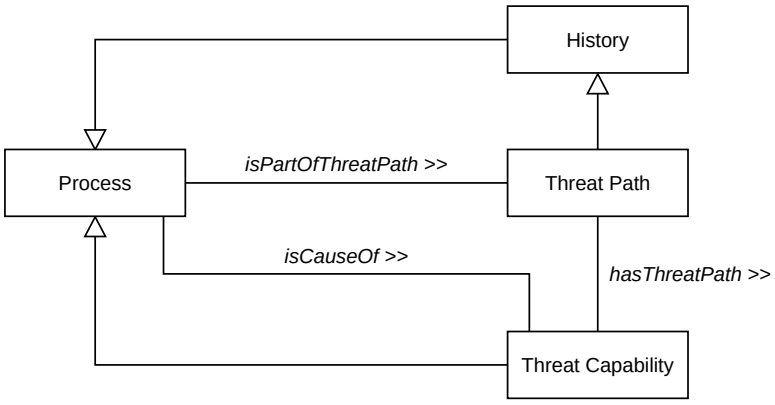


Figure 13.7: Threat paths represents the causal precursors of a threat process.

Hierarchy

- Entity
  - Occurrent
    - Process
      - History
        - ThreatPath

Direct Super Types

- History

Range For

- hasThreatPath

Figures

- Figure 13.7

13.1.32 ThreatPreventionProcess

A threat prevention process is any process that prevents a threat process.

Annotations

- **Label:** Threat Prevention Process
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#ThreatPreventionProcess

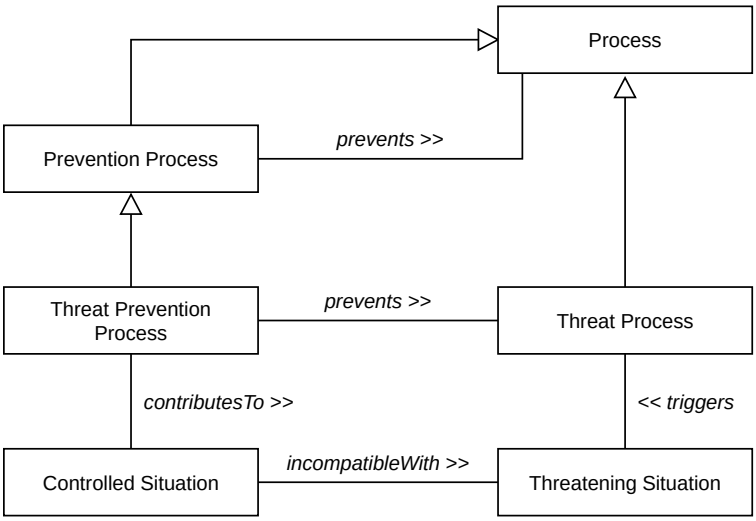


Figure 13.8: Threat prevention processes are specializations of prevention processes. Their distinguishing feature is that they prevent the occurrence of threat processes.

Hierarchy

- Entity
  - Occurrent
    - Process
      - PreventionProcess
        - ThreatPreventionProcess

Direct Super Types

- PreventionProcess

Equivalent Classes

- ProtectiveProcess
- (PreventionProcess ∩ ∃ prevents ThreatProcess)

Figures

- Figure 13.3
- Figure 13.8

13.1.33 ThreatProcess

A threat process is any process that is the direct cause of a negative value effect, where a negative value effect is a process that entails the loss of some valued property (quality or realizable entity).

SOfIoTs Note

Threat processes are deemed to cause negative value effects. In some cases, however, a negative value effect may be better understood as a process that occurs as part of a threat process. In this case, a threat process would be modelled as a process that is either the direct cause of a negative value effect or that is a process that has at least one negative value effect as a constituent. That is to say, a threat process would be modelled as a process that is the direct cause of a negative value effect OR a process that contains (hasProcessPart) at least one negative value effect.

Annotations

- **Label:** Threat Process
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#ThreatProcess

Hierarchy

- Entity
  - Occurrent
    - Process
      - ThreatProcess

Direct Super Types

- Process

Direct Sub Types

- Attack

Equivalent Classes

- (Process ∩ ∃ isCauseOf NegativeValueEffect)

Domain Of

- hasThreatPath

Figures

- Figure 13.1
- Figure 13.2
- Figure 13.3
- Figure 13.6
- Figure 13.8

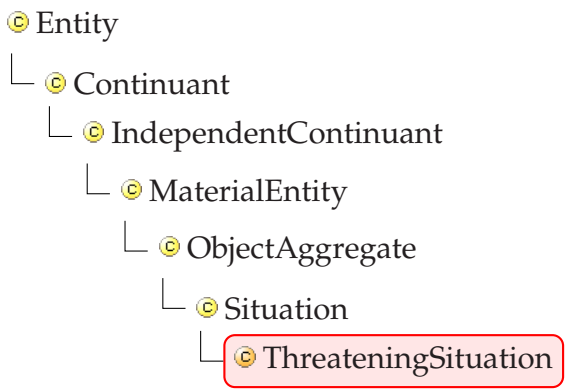
13.1.34 ThreateningSituation

A threatening situation is any situation that triggers a threat process.

Annotations

- **Label:** Threatening Situation
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#ThreateningSituation

Hierarchy



Direct Super Types

- Situation

Equivalent Classes

- (Situation ⊓ ∃ triggers ThreatProcess)

Figures

- Figure 12.5
- Figure 13.1
- Figure 13.8

13.1.35 TriggeringLikelihood

A triggering likelihood is a process likelihood that specifies the likelihood that a situation (s) will trigger a process (p).

Annotations

- **Label:** Triggering Likelihood
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#TriggeringLikelihood

Hierarchy

- Entity
  - Continuant
    - GenericallyDependentContinuant
      - InformationContentEntity
        - DescriptiveInformationContentEntity
          - MeasurementInformationContentEntity
            - ProbabilityMeasurementInformationContentEntity
              - ProcessLikelihood
                - TriggeringLikelihood

Direct Super Types

- ProcessLikelihood
- hasPart (RepresentationalInformationContentEntity ⊓ represents Situation)

Figures

- Figure 13.5

13.1.36 ValueSubject

A value subject is an agent that values at least one thing.

Annotations

- **Label:** Value Subject
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#ValueSubject

Hierarchy

- Entity
  - Continuant
    - IndependentContinuant
      - MaterialEntity
        - Agent
          - ValueSubject

Direct Super Types

- Agent

Direct Sub Types

- RiskSubject

Equivalent Classes

- (Agent values 1 Entity)

Figures

- Figure 12.7
- Figure 13.1

13.2 Properties

13.2.1 activates

Specifies the realizable entities that are activated by a triggering situation. A realizable entity (e) is activated by a situation (s) when s directly triggers a process (p) and e is realized in p.

Annotations

- **Label:** activates
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#activates

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** isActivatedBy

SuperProperty Of (Chain)

- directlyTriggers o hasPart o realizes SubPropertyOf: activates
- directlyTriggers o realizes SubPropertyOf: activates

Figures

- Figure 12.6

13.2.2 contributesTo

Specifies all the processes that contribute to the production of a situation.

Annotations

- **Label:** contributes to
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#contributesTo

Facets

- **Property Type:** ObjectProperty
- **Functional:** False

SuperProperty Of (Chain)

- isCauseOf o produces SubPropertyOf: contributesTo
- produces SubPropertyOf: contributesTo

Figures

- Figure 12.6
- Figure 13.3
- Figure 13.8
- Figure 13.9

13.2.3 designedBy

Specifies the artifacts that are designed by a designer.

Annotations

- **Label:** designed by
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#designedBy

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** isDesignerOf

13.2.4 directlyTriggers

Specifies the process that is directly triggered by a situation. A situation triggers a process when it establishes the conditions that required for the execution of a process.

SOfIoTs Note

Situations are produced by processes and they then trigger other processes. Schematically, a process (p1) produces a situation (s), which then directly triggers another process (p2). There is, of course, a sense in which p1 causes p2 via the production of s. For this reason,

it may be important (in future work) to infer an additional causal relationship between p1 and p2. This could be achieved via sub-property-of chain of the form produces o directlyTriggers: SubPropertyOf 'is cause of'.

Annotations

- **Label:** directly triggers
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#directlyTriggers

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** isDirectlyTriggeredBy

Hierarchy

triggers
directlyTriggers

Direct Super Types

- triggers

Figures

- Figure 12.6

13.2.5 exploitedBy

Specifies the threat capabilities that exploit a vulnerability.

Annotations

- **Label:** exploited by
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#exploitedBy

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** exploits

13.2.6 exploits

Specifies the vulnerabilities that are exploited by a threat capability.

Annotations

- **Label:** exploits
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#exploits

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** exploitedBy

13.2.7 hasThreatPath

Specifies the threat path for a threat process. A threat path consists of all the processes that are causally relevant to a given threat process.

Annotations

- **Label:** has threat path
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#hasThreatPath

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** isThreatPathOf

Domain

- ThreatProcess

Range

- ThreatPath

Figures

- Figure 13.7

13.2.8 hasThreatPathProcessPart

Specifies a process that is a constituent of a threat path.

Annotations

- **Label:** has threat path process part
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#hasThreatPathProcessPart

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** isPartOfThreatPath

Hierarchy

hasPart
└ hasProcessPart
  └ hasThreatPathProcessPart

Direct Super Types

- hasProcessPart

13.2.9 incompatibleWith

Specifies that one entity is incompatible with another. In the case of situations, the incompatibleWith relation expresses the fact that one type of situation is incompatible with another.

Annotations

- **Label:** incompatible with
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#incompatibleWith

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Symmetric:** True

Figures

- Figure 13.8
- Figure 13.9

13.2.10 isActivatedBy

Specifies the situations that activate a given realizable entity. A situation (s) activates a realizable entity (e) when e is realized in a process (p) that is triggered by s.

Annotations

- **Label:** is activated by
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#isActivatedBy

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** activates

13.2.11 isCountermeasureTo

Specifies the threat processes that a security mechanism acts as a countermeasure for.

Annotations

- **Label:** is countermeasure to
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#isCountermeasureTo

Facets

- **Property Type:** ObjectProperty
- **Functional:** False

Figures

- Figure 13.3

13.2.12 isDesignerOf

Specifies the agents that are responsible for the design of an artifact.

Annotations

- **Label:** is designer of
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#isDesignerOf

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** designedBy

Figures

- Figure 12.7
- Figure 13.3

13.2.13 isDirectlyTriggeredBy

Specifies the situation that triggers a process. A situation triggers a process, when it establishes the conditions that required for the execution of a process.

Annotations

- **Label:** is directly triggered by
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#isDirectlyTriggeredBy

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** directlyTriggers

Hierarchy

isTriggeredBy
└ isDirectlyTriggeredBy

Direct Super Types

- isTriggeredBy

13.2.14 isPartOfThreatPath

Specifies the threat paths that a process is a constituent of.

Annotations

- **Label:** is part of threat path
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#isPartOfThreatPath

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** hasThreatPathProcessPart

Hierarchy

partOf
└ isPartOfProcess
  └ isPartOfThreatPath

Direct Super Types

- isPartOfProcess

SuperProperty Of (Chain)

- isCauseOf o hasThreatPath SubPropertyOf: isPartOfThreatPath

Figures

- Figure 13.7

13.2.15 isThreatPathOf

Specifies the threat process of a given threat path. Threat processes can be associated with threat paths, which represent the chain of process that give rise to a threat process.

Annotations

- **Label:** is threat path of
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#isThreatPathOf

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** hasThreatPath

13.2.16 isTriggeredBy

Specifies the situations that trigger a process.

Annotations

- **Label:** is triggered by
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#isTriggeredBy

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** triggers

Direct Sub Types

- isDirectlyTriggeredBy

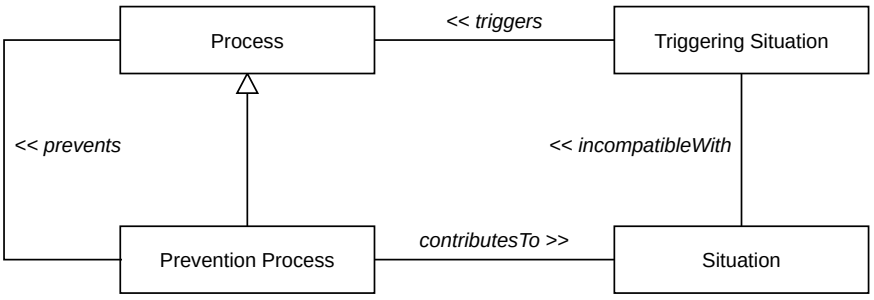


Figure 13.9: A prevention process prevents other types of processes from occurring. This is because it contributes to the production of a situation that is incompatible with the conditions required for the execution of the prevented process.

13.2.17 preventedBy

Specifies the processes that prevent a process from occurring.

Annotations

- **Label:** prevented by
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#preventedBy

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** prevents

13.2.18 prevents

Specifies the processes that are prevented by a process. A process (p1) is prevented by another process (p2) when p2 contributes to the production of a situation (s1) that is incompatible with another situation (s2) and s2 triggers p2.

Annotations

- **Label:** prevents
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#prevents

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** preventedBy

SuperProperty Of (Chain)

- contributesTo o incompatibleWith o triggers SubPropertyOf: prevents

Domain

- Occurrent

Range

- Occurrent

Figures

- Figure 13.8
- Figure 13.9

13.2.19 triggers

Specifies the processes that are triggered by a situation.

Annotations

- **Label:** triggers
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#triggers

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Inverse Of:** isTriggeredBy

Direct Sub Types

- directlyTriggers

SuperProperty Of (Chain)

- triggers o isCauseOf SubPropertyOf: triggers

Domain

- Situation

Range

- Occurrent

Figures

- Figure 12.5
- Figure 12.6
- Figure 13.1
- Figure 13.8
- Figure 13.9

14

Internet of Things Ontology

The IoT ontology is intended to represent IoT devices, digital twins, and IoT data flows.

14.1 Named Classes

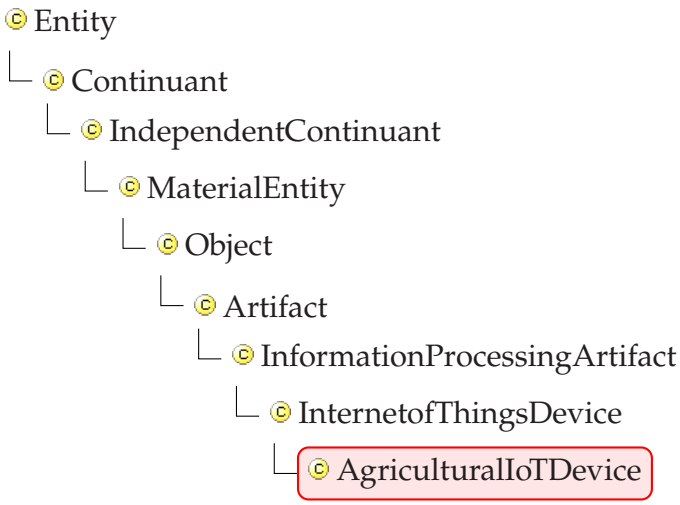
14.1.1 AgriculturalIoTDevice

Devices used in agricultural settings.

Annotations

- **Label:** Agricultural IoT Device
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#AgriculturalIoTDevice

Hierarchy



Direct Super Types

- InternetofThingsDevice

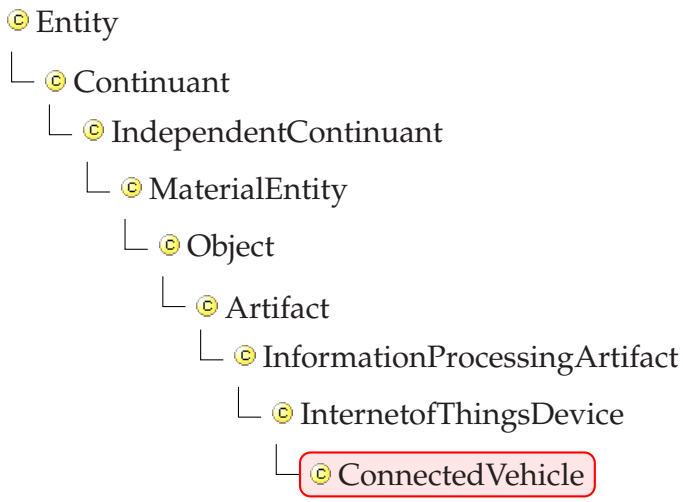
14.1.2 ConnectedVehicle

A vehicle that is equipped with advanced communication technologies and connectivity features that enable it to exchange data with external sources.

Annotations

- **Label:** Connected Vehicle
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#ConnectedVehicle

Hierarchy



Direct Super Types

- InternetofThingsDevice

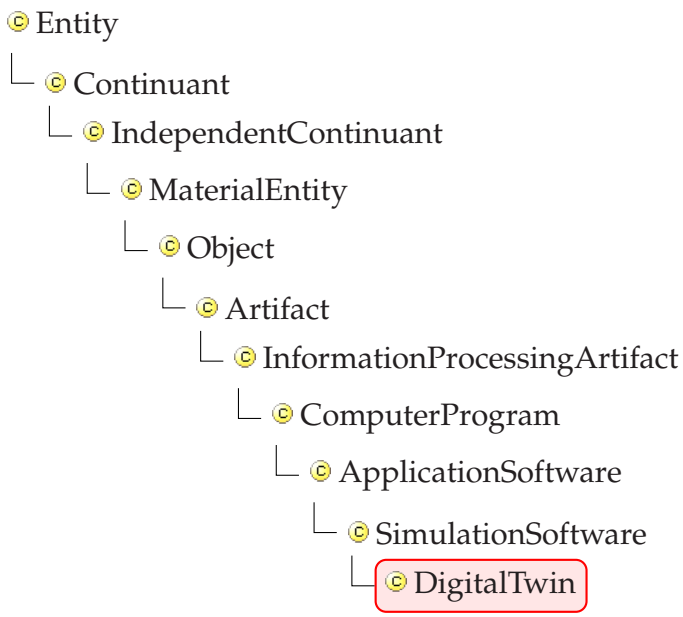
14.1.3 DigitalTwin

A digital twin is a type of simulation software that represents the properties of a real-world entity.

Annotations

- **Label:** Digital Twin
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#DigitalTwin

Hierarchy



Direct Super Types

- SimulationSoftware

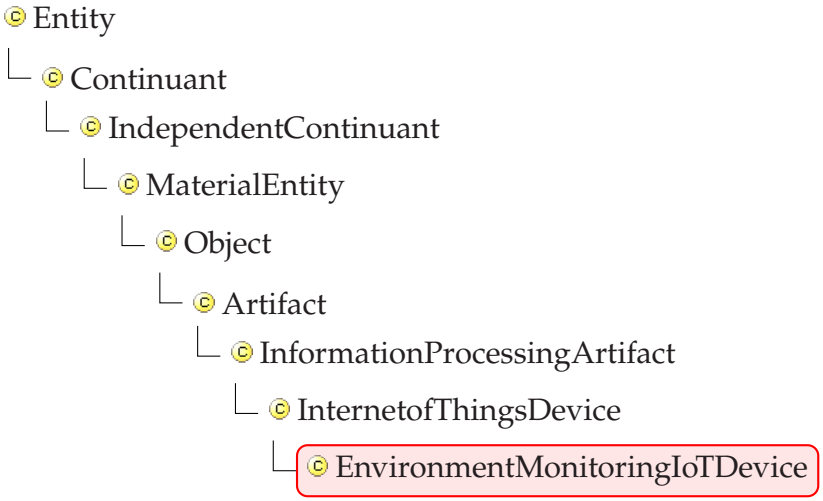
14.1.4 EnvironmentMonitoringIoTDevice

Devices that gather data from the physical environment, such as temperature, humidity, motion, light, or pressure sensors.

Annotations

- **Label:** Environment Monitoring IoT Device
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#EnvironmentMonitoringIoTDevice

Hierarchy



Direct Super Types

- InternetofThingsDevice

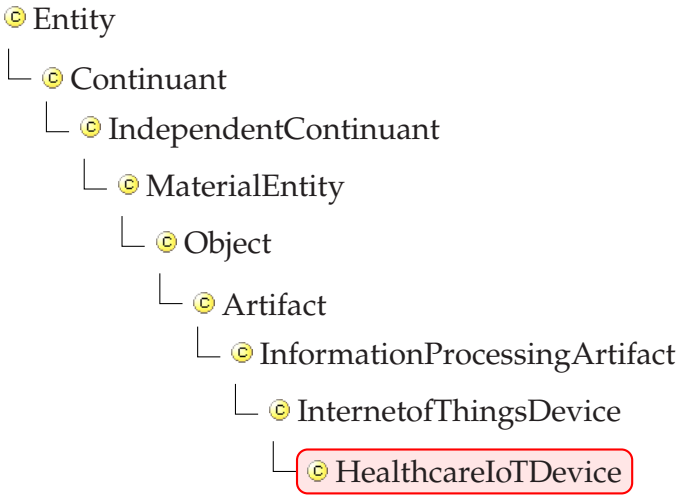
14.1.5 HealthcareIoTDevice

Devices used in biomedical and healthcare settings.

Annotations

- **Label:** Healthcare IoT Device
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#HealthcareIoTDevice

Hierarchy



Direct Super Types

- InternetofThingsDevice

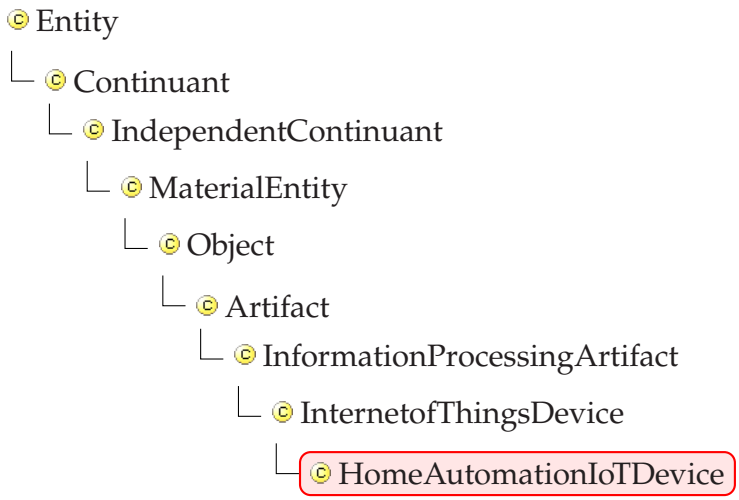
14.1.6 HomeAutomationIoTDevice

Devices used for automating and controlling home systems, such as smart thermostats, smart lighting, or smart locks.

Annotations

- **Label:** Home Automation IoT Device
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#HomeAutomationIoTDevice

Hierarchy



Direct Super Types

- InternetofThingsDevice

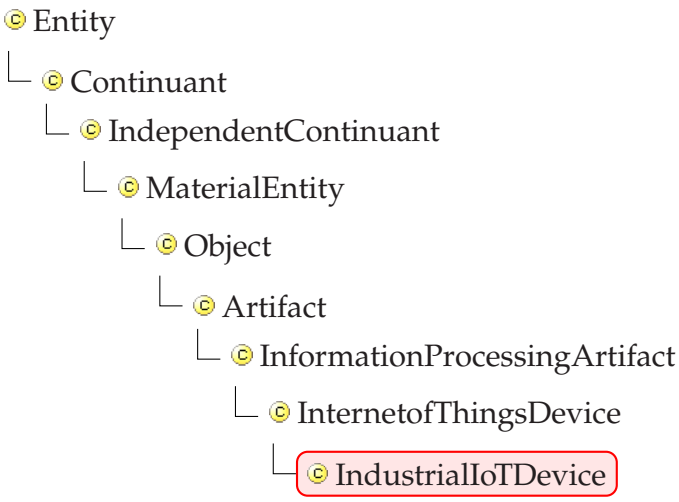
14.1.7 IndustrialIoTDevice

Devices used in industrial settings for monitoring and optimizing processes, such as machinery sensors, industrial control systems, or asset tracking devices.

Annotations

- **Label:** Industrial IoT Device
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#IndustrialIoTDevice

Hierarchy



Direct Super Types

- InternetofThingsDevice

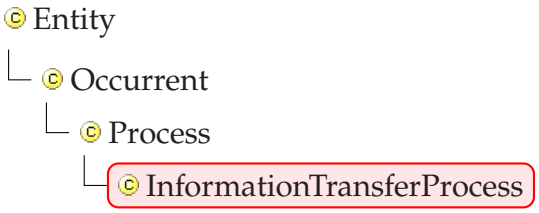
14.1.8 InformationTransferProcess

A process in which an information bearing entity is communicated from one entity (the sender) to another entity (the receiver).

Annotations

- **Label:** Information Transfer Process
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#InformationTransferProcess

Hierarchy



Direct Super Types

- Process

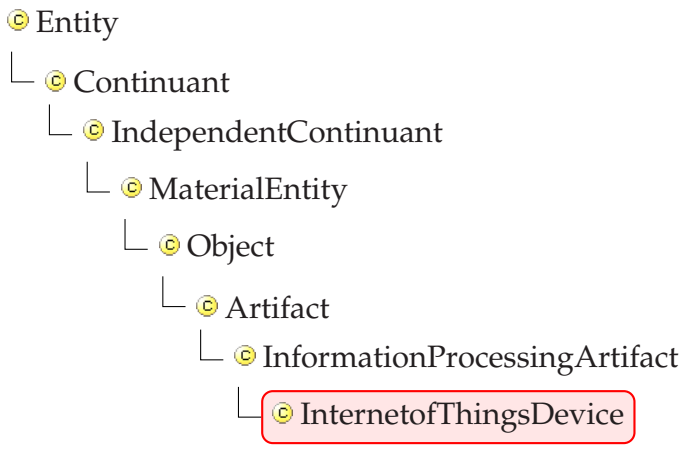
14.1.9 InternetofThingsDevice

A information processing artifact that bears both communication and computational functions and that is a member of a wide area network.

Annotations

- **Label:** Internet of Things Device
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#InternetofThingsDevice

Hierarchy



Direct Super Types

- InformationProcessingArtifact
- bearerOf 1 CommunicationArtifactFunction
- bearerOf 1 ComputingArtifactFunction
- memberOf 1 WideAreaNetwork

Direct Sub Types

- AgriculturalIoTDevice
- ConnectedVehicle
- EnvironmentMonitoringIoTDevice
- HealthcareIoTDevice
- HomeAutomationIoTDevice
- IndustrialIoTDevice
- RetailandLogisticsIoTDevice
- SmartApplianceIoTDevice
- SmartEnergyIoTDevice
- WearableIoTDevice

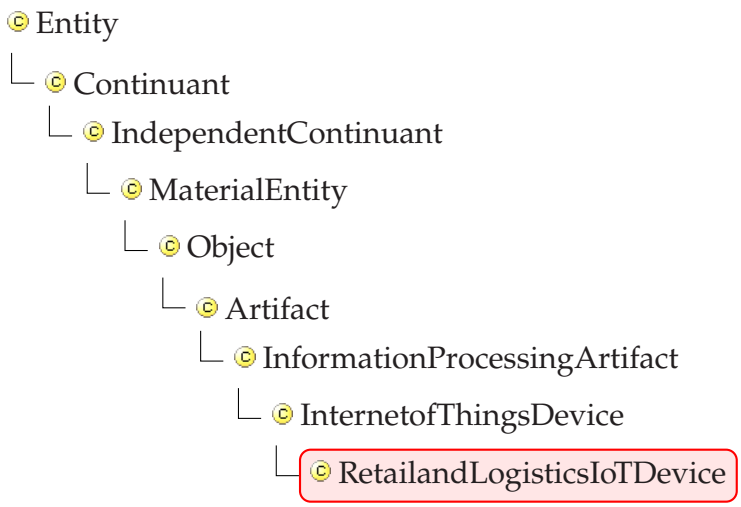
14.1.10 RetailandLogisticsIoTDevice

A device used in the retail industry to enhance operational efficiency, improve customer experience, and gather data for analysis and insights.

Annotations

- **Label:** Retail and Logistics IoT Device
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#RetailandLogisticsIoTDevice

Hierarchy



Direct Super Types

- InternetofThingsDevice

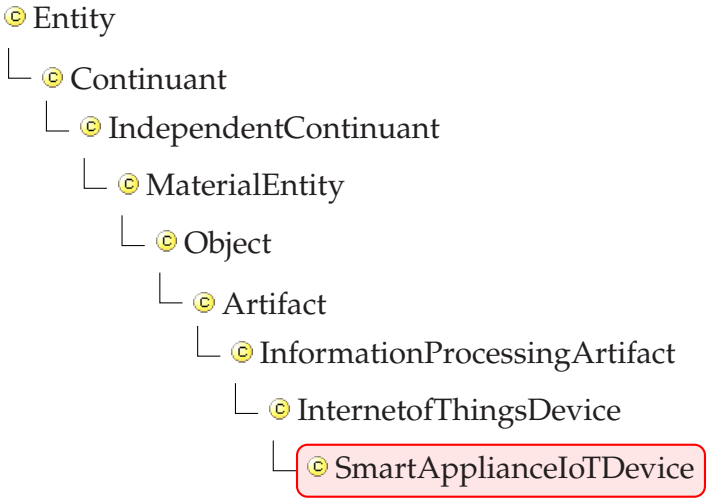
14.1.11 SmartApplianceIoTDevice

Internet-connected household appliances that can be controlled and monitored remotely, such as smart refrigerators, ovens, or washing machines.

Annotations

- **Label:** Smart Appliance IoT Device
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#SmartApplianceIoTDevice

Hierarchy



Direct Super Types

- InternetofThingsDevice

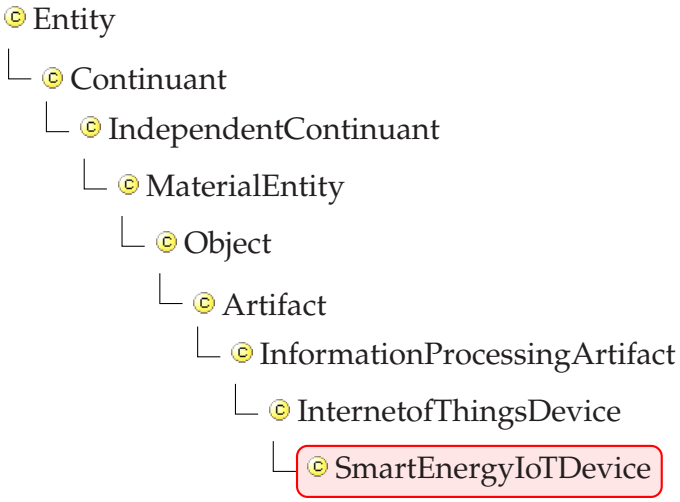
14.1.12 SmartEnergyIoTDevice

A device or appliance that incorporates advanced technologies and connectivity features to optimize energy usage, monitor consumption, and enable more efficient energy management.

Annotations

- **Label:** Smart Energy IoT Device
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#SmartEnergyIoTDevice

Hierarchy



Direct Super Types

- InternetofThingsDevice

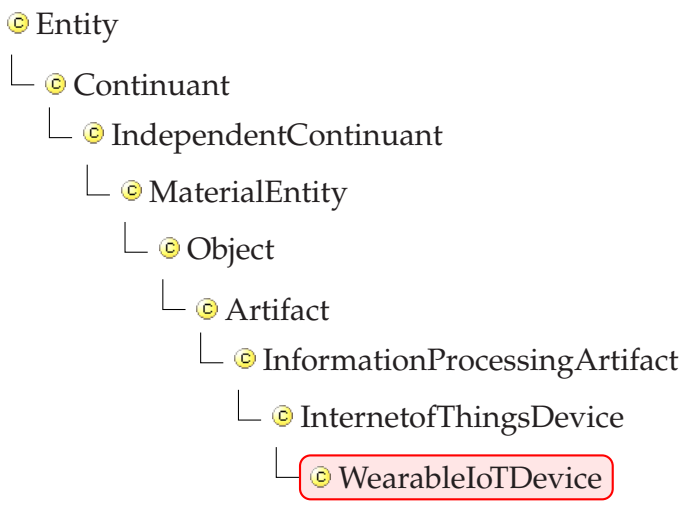
14.1.13 WearableIoTDevice

Devices that are worn or attached to the body, such as smartwatches, fitness trackers, or health monitoring devices.

Annotations

- **Label:** Wearable IoT Device
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#WearableIoTDevice

Hierarchy



Direct Super Types

- InternetofThingsDevice

14.2 Properties

14.2.1 deployed On

Specifies that a given object is deployed on another object. This property is used to specifiy that, for example, a wearable IoT device is deployed on the individual that wears the device.

Annotations

- **Label:** deployed on
- **ID:** http://www.semanticweb.org/ontologies/SOFIOTS#deployedOn

Facets

- **Property Type:** ObjectProperty
- **Functional:** False

Appendix

A

SOfIoTS Ontology

The SOfIoTs Ontology identifies core security concepts that are found throughout the IoT security literature. See Jarwar et al. (2022), for more information about the SOfIoTs Ontology.[1]

A.1 Named Classes

A.1.1 Asset

An Asset is an entity that is typically the target of an attack. In general, an asset is an entity that is deemed worthy of protecting via the implementation of security mechanisms. Human operators and users can also qualify as assets.

Annotations

- **Label:** asset
- **ID:** http://www.localhost.org/aslam/ontologies/SOfIoTS#Asset

Domain Of

- hasRisk

Range For

- appliedTo
- implementedThrough
- occur
- relatedTo

A.1.2 Attack

The Attack concept defines the metadata that characterises an unlawful action or set of unlawful actions against any asset, especially actions that undermine the safety, availability, integrity, confidentiality, accountability, productivity, and reputation of organisations and/or their operations.

[1] The SOfIoTs Ontology can be downloaded from: https://github.com/aslamjarwar/SOfIoTS.

Annotations

- **Label:** attack
- **ID:** http://www.localhost.org/aslam/ontologies/SOfIoTS#Attack

Domain Of

- aImpacts
- attackCapability
- develops
- exploit
- violate

Range For

- dueTo

A.1.3 Capability

The Capability concept represents metadata and data about the quality, strength, or state of skills of cyber-attacks and security mechanisms. The Capability concept's data and metadata provide answers to questions about the active or passive state of an attack. It can also help to indicate whether an attack has the capability to impact the functions of IoT devices, or whether it just monitors the exchange of data such as in an eavesdropping attack.

Annotations

- **Label:** capability
- **ID:** http://www.localhost.org/aslam/ontologies/SOfIoTS#Capability

Range For

- attackCapability
- secMechCapability

A.1.4 Criticality

The Criticality concept is mostly used as a synonym for Severity or SeverityScale. Accordingly, the Criticality concept characterises the criticality of devices with respect to a potential vulnerability and risk. The criticality data could be determined through the potential scale of damage to the critical system or infrastructure, as well as the impact of an attack on assets and security goals (i.e., confidentiality, availability, integrity, safety, resilience).

Annotations

- **Label:** criticality
- **ID:** http://www.localhost.org/aslam/ontologies/SOfIoTS#Criticality

Range For

- riskCriticality
- vulCriticality

A.1.5 Fault

The Fault concept represents faults, which act as triggers that may lead to a failure. The Fault concept represents the loss of a capability or function. Such capabilities and functions are typically the characteristics of things such as devices, sensors, actuators, and so on. It also applies to security mechanisms, which be be prevented from performing the functions they were designed to perform.

Annotations

- **Label:** fault
- **ID:** http://www.localhost.org/aslam/ontologies/SOfIoTS#Fault

Domain Of

- fImpacts
- occur

Range For

- develops

A.1.6 Risk

The Risk concept represents the likelihood of attacks and their cascading impacts on assets and security goals. Risks have criticality, and the greater this criticality, the greater the impact of an attack on assets and security goals.

Annotations

- **Label:** risk
- **ID:** http://www.localhost.org/aslam/ontologies/SOfIoTS#Risk

Domain Of

- dueTo
- riskCriticality

Range For

- hasRisk

A.1.7 SecurityGoal

The SecurityGoal concept characterises security parameters that ensure the protection of assets and thus the interests of asset stakeholders.

Annotations

- **Label:** security goal
- **ID:** http://www.localhost.org/aslam/ontologies/SOfIoTS#SecurityGoal

Range For

- aImpacts
- fImpacts
- secMechImpacts
- vulImpacts

A.1.8 SecurityMechanism

The SecurityMechanism concept characterises the practices that protect IoT devices from attacks.

Annotations

- **Label:** security mechanism
- **ID:** http://www.localhost.org/aslam/ontologies/SOfIoTS#SecurityMechanism

Domain Of

- appliedTo
- implementedThrough
- secMechCapability
- secMechImpacts

Range For

- mitigatedBy
- violate

A.1.9 Vulnerability

The Vulnerability concept represents a weakness in a targeted IoT asset that an attacker could exploit to gain illegitimate access to the asset.

Annotations

- **Label:** vulnerability
- **ID:** http://www.localhost.org/aslam/ontologies/SOfIoTS#Vulnerability

Domain Of

- mitigatedBy
- relatedTo
- vulCriticality
- vulImpacts

Range For

- exploit

A.2 Properties

A.2.1 aImpacts

Specifies the security goal that is impacted by a given attack.

Annotations

- **Label:** attack impacts
- **ID:** http://www.localhost.org/aslam/ontologies/SOfIoTS#aImpacts

Facets

- **Property Type:** ObjectProperty
- **Functional:** False

Domain

- Attack

Range

- SecurityGoal

A.2.2 appliedTo

Specifies the asset that a given security mechanism is applied to.

Annotations

- **Label:** applied to
- **ID:** http://www.localhost.org/aslam/ontologies/SOfIoTS#appliedTo

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Asymmetric:** True

Domain

- SecurityMechanism

Range

- Asset

A.2.3 attackCapability

Specifies the capability of a given attack.

Annotations

- **Label:** attack capability
- **ID:** http://www.localhost.org/aslam/ontologies/SOfIoTS#attackCapability

Facets

- **Property Type:** ObjectProperty
- **Functional:** False

Domain

- Attack

Range

- Capability

A.2.4 develops

Specifies the fault that is produced by (or developed by) a given attack.

Annotations

- **Label:** develops
- **ID:** http://www.localhost.org/aslam/ontologies/SOfIoTS#develops

Facets

- **Property Type:** ObjectProperty
- **Functional:** False

Domain

- Attack

Range

- Fault

A.2.5 dueTo

Specifies the attack that is the source of a given risk.

Annotations

- **Label:** due to
- **ID:** http://www.localhost.org/aslam/ontologies/SOfIoTS#dueTo

Facets

- **Property Type:** ObjectProperty
- **Functional:** False

Domain

- Risk

Range

- Attack

A.2.6 exploit

Specifies the vulnerability that is exploited by attack.

Annotations

- **Label:** exploit
- **ID:** http://www.localhost.org/aslam/ontologies/SOfIoTS#exploit

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Asymmetric:** True

Domain

- Attack

Range

- Vulnerability

A.2.7 fImpacts

Specifies the security goal that is impacted by a fault.

Annotations

- **Label:** fault impacts
- **ID:** http://www.localhost.org/aslam/ontologies/SOfIoTS#fImpacts

Facets

- **Property Type:** ObjectProperty
- **Functional:** False

Domain

- Fault

Range

- SecurityGoal

A.2.8 hasRisk

Specifies the risk associated with an asset.

Annotations

- **Label:** has risk
- **ID:** http://www.localhost.org/aslam/ontologies/SOfIoTS#hasRisk

Facets

- **Property Type:** ObjectProperty
- **Functional:** False

Domain

- Asset

Range

- Risk

A.2.9 implementedThrough

Specifies the asset through which an a security mechanism is implemented.

Annotations

- **Label:** implemented through
- **ID:** http://www.localhost.org/aslam/ontologies/SOfIoTS#implementedThrough

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Asymmetric:** True

Domain

- SecurityMechanism

Range

- Asset

A.2.10 mitigatedBy

Specifies the security mechanism that mitigates a given vulnerability.

Annotations

- **Label:** mitigated by
- **ID:** http://www.localhost.org/aslam/ontologies/SOfIoTS#mitigatedBy

Facets

- **Property Type:** ObjectProperty
- **Functional:** False

Domain

- Vulnerability

Range

- SecurityMechanism

A.2.11 occur

Specifies the asset in which a fault occurs

Annotations

- **Label:** occur
- **ID:** http://www.localhost.org/aslam/ontologies/SOfIoTS#occur

Facets

- **Property Type:** ObjectProperty
- **Functional:** False

Domain

- Fault

Range

- Asset

A.2.12 relatedTo

Specifies the asset that bears a given vulnerability.

Annotations

- **Label:** related to
- **ID:** http://www.localhost.org/aslam/ontologies/SOfIoTS#relatedTo

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Asymmetric:** True

Domain

- Vulnerability

Range

- Asset

A.2.13 riskCriticality

Specifies the criticality of an identified risk.

Annotations

- **Label:** risk criticality
- **ID:** http://www.localhost.org/aslam/ontologies/SOfIoTS#riskCriticality

Facets

- **Property Type:** ObjectProperty
- **Functional:** False

Domain

- Risk

Range

- Criticality

A.2.14 secMechCapability

Specifies the capability of a given security mechanism.

Annotations

- **Label:** security mechanism capability
- **ID:** http://www.localhost.org/aslam/ontologies/SOfIoTS#secMechCapability

Facets

- **Property Type:** ObjectProperty
- **Functional:** False

Domain

- SecurityMechanism

Range

- Capability

A.2.15 secMechImpacts

Specifies the security goal that is impacted by a given security mechanism.

Annotations

- **Label:** security mechanism impacts
- **ID:** http://www.localhost.org/aslam/ontologies/SOfIoTS#secMechImpacts

Facets

- **Property Type:** ObjectProperty
- **Functional:** False

Domain

- SecurityMechanism

Range

- SecurityGoal

A.2.16 violate

Specifies the security mechanism that is violated by a given attack.

Annotations

- **Label:** violates
- **ID:** http://www.localhost.org/aslam/ontologies/SOfIoTS#violate

Facets

- **Property Type:** ObjectProperty
- **Functional:** False
- **Asymmetric:** True

Domain

- Attack

Range

- SecurityMechanism

A.2.17 vulCriticality

Specifies the criticality of a vulnerability.

Annotations

- **Label:** vulnerability criticality
- **ID:** http://www.localhost.org/aslam/ontologies/SOfIoTS#vulCriticality

Facets

- **Property Type:** ObjectProperty
- **Functional:** False

Domain

- Vulnerability

Range

- Criticality

A.2.18 vulImpacts

Specifies the security goal that is impacted by a given security goal.

Annotations

- **Label:** vulnerability impacts
- **ID:** http://www.localhost.org/aslam/ontologies/SOfIoTS#vulImpacts

Facets

- **Property Type:** ObjectProperty
- **Functional:** False

Domain

- Vulnerability

Range

- SecurityGoal

Bibliography

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Acronyms & Abbreviations

B
BFO Basic Formal Ontology. 1–3

C
C3O Common Core Cyber Ontology. 1
CCO Common Core Ontologies. 1

I
IoT Internet of Things. 1, 2, 770, 771, 773

O
OWL Web Ontology Language. 2

S
SOfIoTS Secure Ontologies for the Internet of Things. 1

Sheffield Hallam University

Secure ontologies for the Internet of Things: representing risk and security concepts using basic formal ontology

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