

Description logic view: GFO

Classes

Abstract

Abstract \sqsubseteq Individual
Abstract $\sqsubseteq \neg$ Space_time
Abstract $\sqsubseteq \neg$ Concrete

Action

Action \sqsubseteq Occurrent
Action $\sqsubseteq \exists$ has_agent Presential

Amount_{of}substrate

Amount_of_substrate \equiv Mass_entity
Amount_of_substrate \sqsubseteq Presential
Amount_of_substrate \sqsubseteq Continuous

Awareness_{level}

Awareness_level $\sqsubseteq \exists$ abstract_part_of Mental_stratum
Awareness_level \sqsubseteq Level

Biological_{level}

Biological_level $\sqsubseteq \exists$ abstract_part_of Material_stratum
Biological_level \sqsubseteq Level

Category

Category \sqsubseteq Item
Category $\sqsubseteq \neg$ Individual

Change

Change \sqsubseteq Occurrent
Change $\sqsubseteq \neg$ History
Change $\sqsubseteq \neg$ Process

Chemical_{level}

Chemical_level \sqsubseteq Level
Chemical_level $\sqsubseteq \exists$ abstract_part_of Material_stratum

Chronoid

Chronoid \sqsubseteq Temporal_region

Concept

Concept \sqsubseteq Category

Concept $\sqsubseteq \neg$ Universal

Concept $\sqsubseteq \neg$ Symbol_structure

Concrete

Concrete \sqsubseteq Individual

Concrete $\sqsubseteq \neg$ Space_time

Concrete $\sqsubseteq \neg$ Abstract

Configuration

Configuration \sqsubseteq Presential

Configuration $\sqsubseteq \neg$ Material_object

Configuration $\sqsubseteq \neg$ Material_boundary

Configuroid

Configuroid \sqsubseteq Process

Continuous

Continuous \equiv Individual $\sqcap \neg$ Discrete

Continuous \sqsubseteq Individual

Continuous_change

Continuous_change \equiv Intrinsic_change

Continuous_change \sqsubseteq Change

Continuous_process

Continuous_process \sqsubseteq Process

Continuous_process \sqsubseteq Continuous

Continuous_process $\sqsubseteq \neg$ Discrete_process

Dependent

Dependent $\equiv \exists$ depends_on Item

Dependent \sqsubseteq Individual

Dependent $\sqsubseteq \neg$ Independent

Discrete

Discrete \sqsubseteq Individual

Discrete_{presential}

Discrete_presential \sqsubseteq Discrete

Discrete_presential \sqsubseteq \exists instance_of Persistent

Discrete_presential \sqsubseteq Presential

Discrete_presential \sqsubseteq \neg Mass_entity

Discrete_{process}

Discrete_process \sqsubseteq Process

Discrete_process \sqsubseteq Discrete

Discrete_process \sqsubseteq \neg Continuous_process

Entity

Entity \equiv Item \sqcup Set

Extrinsic_{change}

Extrinsic_change \equiv Instantaneous_change

Extrinsic_change \sqsubseteq Change

Extrinsic_change \sqsubseteq \neg Intrinsic_change

Function

Function \sqsubseteq Concept

History

History \sqsubseteq Occurrent

History \sqsubseteq \neg Process

History \sqsubseteq \neg Change

Independent

Independent \sqsubseteq Individual

Independent \sqsubseteq \neg Dependent

Individual

Individual \equiv Abstract \sqcup Concrete \sqcup Space_time \sqcap Dependent \sqcup Independent \sqcap Role \sqcup Individual \sqcap \neg Role

Individual \sqsubseteq $\neg(\exists$ instantiated_by Item)

Individual \sqsubseteq Item

Individual \sqsubseteq \neg Category

Instantaneous_{change}

Instantaneous_change \equiv Extrinsic_change

Instantaneous_change \sqsubseteq Change

Intrinsic_{change}

Intrinsic_change \equiv Continuous_change

Intrinsic_change \sqsubseteq Change

Intrinsic_change $\sqsubseteq \neg$ Extrinsic_change

Item

Item \equiv Category \sqcup Individual

Item \sqsubseteq Entity

Item $\sqsubseteq \neg(\exists \text{ has_member Entity})$

Item $\sqsubseteq \neg$ Set

Level

Level \sqsubseteq Ontological_layer

Level $\sqsubseteq \exists$ abstract_part_of Stratum

Level $\sqsubseteq \neg$ Stratum

Line

Line $\equiv \exists$ spatial_boundary_of Surface

Line \sqsubseteq Spatial_boundary

Mass_{entity}

Mass_entity \equiv Amount_of_substrate

Mass_entity \sqsubseteq Continuous

Mass_entity \sqsubseteq Presential

Mass_entity $\sqsubseteq \neg$ Discrete_presential

Material_{boundary}

Material_boundary $\sqsubseteq \exists$ depends_on Material_object

Material_boundary \sqsubseteq Presential

Material_boundary \sqsubseteq Dependent

Material_boundary $\sqsubseteq \neg$ Material_object

Material_boundary $\sqsubseteq \neg$ Configuration

Material_{line}

Material_line $\sqsubseteq \exists$ boundary_of Material_surface

Material_line \sqsubseteq Material_boundary

Material_line $\sqsubseteq \neg$ Material_point
Material_line $\sqsubseteq \neg$ Material_surface

Material_object

Material_object \equiv Material_structure
Material_object $\sqsubseteq \exists$ framed_by Topoid
Material_object $\sqsubseteq =$ framed_by Thing
Material_object \sqsubseteq Discrete_presential
Material_object $\sqsubseteq \neg$ Configuration
Material_object $\sqsubseteq \neg$ Material_boundary

Material_persistent

Material_persistent $\sqsubseteq \forall$ instantiated_by Material_object
Material_persistent \sqsubseteq Persistent

Material_point

Material_point $\sqsubseteq \exists$ boundary_of Material_line
Material_point \sqsubseteq Material_boundary
Material_point $\sqsubseteq \neg$ Material_line
Material_point $\sqsubseteq \neg$ Material_surface

Material_stratum

Material_stratum \sqsubseteq Stratum

Material_structure

Material_structure \equiv Material_object
Material_structure \sqsubseteq Discrete_presential

Material_surface

Material_surface $\sqsubseteq \exists$ boundary_of Material_object
Material_surface \sqsubseteq Material_boundary
Material_surface $\sqsubseteq \neg$ Material_point
Material_surface $\sqsubseteq \neg$ Material_line

Mental_stratum

Mental_stratum \sqsubseteq Stratum

Occurrent

Occurrent \sqsubseteq Concrete
Occurrent $\sqsubseteq \neg$ Presential

Ontological_{layer}

Ontological_layer \sqsubseteq Category

Persistent

Persistent $\sqsubseteq \exists$ instantiated_by Presential

Persistent \sqsubseteq Universal

Personality_{level}

Personality_level \sqsubseteq Level

Personality_level $\sqsubseteq \exists$ abstract_part_of Mental_stratum

Physical_{level}

Physical_level $\sqsubseteq \exists$ abstract_part_of Material_stratum

Physical_level \sqsubseteq Level

Point

Point $\equiv \exists$ spatial_boundary_of Line

Point \sqsubseteq Spatial_boundary

Presential

Presential \sqsubseteq Individual

Presential $\sqsubseteq =$ exists_at Thing

Presential \sqsubseteq Concrete

Presential $\sqsubseteq \exists$ exists_at Time_boundary

Presential $\sqsubseteq \neg$ Occurrent

Process

Process \sqsubseteq Occurrent

Process $\sqsubseteq \neg$ History

Process $\sqsubseteq \neg$ Change

Processual_{role}

Processual_role $\sqsubseteq \exists$ role_of Process

Processual_role \sqsubseteq Process

Processual_role \sqsubseteq Role

Processual_role $\sqsubseteq \neg$ Social_role

Processual_role $\sqsubseteq \neg$ Relational_role

Property

Property \sqsubseteq Concrete
Property \sqsubseteq Dependent
Property $\sqsubseteq \neg$ Relator

Property_{value}

Property_value $\equiv \exists$ value_of Property
Property_value \sqsubseteq Dependent
Property_value \sqsubseteq Concrete

Relational_{role}

Relational_role \sqsubseteq Dependent
Relational_role $\sqsubseteq \exists$ role_of Relator
Relational_role \sqsubseteq Role
Relational_role $\sqsubseteq \neg$ Social_role
Relational_role $\sqsubseteq \neg$ Processual_role

Relator

Relator \sqsubseteq Individual
Relator $\sqsubseteq \neg$ Property

Role

Role \sqsubseteq Concrete

Set

Set \sqsubseteq Entity
Set $\sqsubseteq \neg$ Item

Situation

Situation \sqsubseteq Configuration

Situoid

Situoid \sqsubseteq Configuroid

Social_{role}

Social_role \sqsubseteq Role
Social_role \sqsubseteq Independent
Social_role $\sqsubseteq \neg$ Relational_role
Social_role $\sqsubseteq \neg$ Processual_role

Social_{stratum}

Social_stratum \sqsubseteq Stratum

Space

Space \sqsubseteq Space_time

Space $\sqsubseteq \neg$ Time

Space_{time}

Space_time \sqsubseteq Individual

Space_time $\sqsubseteq \neg$ Abstract

Space_time $\sqsubseteq \neg$ Concrete

Spatial_{boundary}

Spatial_boundary $\equiv \exists$ spatial_boundary_of Space

Spatial_boundary \sqsubseteq Space

Spatial_boundary $\sqsubseteq \neg$ Spatial_region

Spatial_{region}

Spatial_region \sqsubseteq Space

Spatial_region $\sqsubseteq \neg$ Spatial_boundary

State

State \sqsubseteq Process

Stratum

Stratum \sqsubseteq Ontological_layer

Stratum $\sqsubseteq \neg$ Level

Surface

Surface $\equiv \exists$ spatial_boundary_of Topoid

Surface \sqsubseteq Spatial_boundary

Symbol

Symbol \sqsubseteq Symbol_structure

Symbol_{sequence}

Symbol_sequence \sqsubseteq Symbol_structure

Symbol_sstructure

Symbol_structure \sqsubseteq Category
Symbol_structure \sqsubseteq \neg Concept
Symbol_structure \sqsubseteq \neg Universal

Temporal_region

Temporal_region \sqsubseteq Time
Temporal_region \sqsubseteq \neg Time_boundary

Thing

Time

Time \sqsubseteq Space_time
Time \sqsubseteq \neg Space

Time_boundary

Time_boundary \sqsubseteq Time
Time_boundary \sqsubseteq \exists time_boundary_of Chronoid
Time_boundary \sqsubseteq \neg Temporal_region

Token

Token \sqsubseteq Concrete
Token \sqsubseteq \exists instance_of Symbol_structure

Topoid

Topoid \sqsubseteq Spatial_region

Universal

Universal \sqsubseteq Category
Universal \sqsubseteq \exists instantiated_by Item
Universal \sqsubseteq \neg Concept
Universal \sqsubseteq \neg Symbol_structure

Value_space

Value_space \sqsubseteq Universal

Object properties

abstract_has_part

$\text{jhttp://www.onto-med.de/ontologies/gfo.owlabstract}_{h\text{as}_p\text{art}} > \equiv < \text{http://www.onto-med.de/ontologies/gfo.owl}$

TransitivePropertyabstract_has_part
 \exists abstract_has_part Thing \sqsubseteq Item
 $\top \sqsubseteq \forall$ abstract_has_part Item

abstract_{part_of}

$\text{jhttp://www.onto-med.de/ontologies/gfo.owl}\text{abstract}_{has_part} > \equiv < \text{http://www.onto-med.de/ontologies/gfo.owl}\text{abstract}_{part_of}$
TransitivePropertyabstract_part_of
 \exists abstract_part_of Thing \sqsubseteq Item
 $\top \sqsubseteq \forall$ abstract_part_of Item

agent_{in}

\sqsubseteq participates_in
 \sqsubseteq causes
 $\text{jhttp://www.onto-med.de/ontologies/gfo.owl}\text{agent}_{in} > \equiv < \text{http://www.onto-med.de/ontologies/gfo.owl}\text{has}_{agent}$

boundary_{of}

\sqsubseteq depends_on
 $\text{jhttp://www.onto-med.de/ontologies/gfo.owl}\text{has}_{boundary} > \equiv < \text{http://www.onto-med.de/ontologies/gfo.owl}\text{boundary}$

categorial_{part_of}

\sqsubseteq abstract_part_of
 $\text{jhttp://www.onto-med.de/ontologies/gfo.owl}\text{categorial}_{part_of} > \equiv < \text{http://www.onto-med.de/ontologies/gfo.owl}\text{categorial}$

category_{inlayer}

\sqsubseteq categorial_part_of
 $\text{jhttp://www.onto-med.de/ontologies/gfo.owl}\text{has}_{category} > \equiv < \text{http://www.onto-med.de/ontologies/gfo.owl}\text{category}$

caused_{by}

$\text{jhttp://www.onto-med.de/ontologies/gfo.owl}\text{caused}_{by} > \equiv < \text{http://www.onto-med.de/ontologies/gfo.owl}\text{causes}$
 \exists caused_by Thing \sqsubseteq Occurrent \sqcup Presential
 $\top \sqsubseteq \forall$ caused_by (Occurrent \sqcup Presential)

causes

$\text{jhttp://www.onto-med.de/ontologies/gfo.owl}\text{caused}_{by} > \equiv < \text{http://www.onto-med.de/ontologies/gfo.owl}\text{causes}$

constituent_{part_of}

\sqsubseteq proper_part_of
 $\text{jhttp://www.onto-med.de/ontologies/gfo.owl}\text{constituent}_{part_of} > \equiv < \text{http://www.onto-med.de/ontologies/gfo.owl}\text{constituent}$

depends_{on}

$\{ \text{http://www.onto-med.de/ontologies/gfo.owl} \text{necessary_for} \} \equiv \{ \text{http://www.onto-med.de/ontologies/gfo.owl} \text{depends_on} \}$
 $\exists \text{ depends_on Thing} \sqsubseteq \text{Item}$
 $\top \sqsubseteq \forall \text{ depends_on Item}$

exists_{at}

$\top \sqsubseteq \leq 1 \text{ exists_at Thing}$
 $\exists \text{ exists_at Thing} \sqsubseteq \text{Presential}$
 $\top \sqsubseteq \forall \text{ exists_at Time_boundary}$

framed_{by}

$\sqsubseteq \text{occupies}$
 $\{ \text{http://www.onto-med.de/ontologies/gfo.owl} \text{framed_by} \} \equiv \{ \text{http://www.onto-med.de/ontologies/gfo.owl} \text{frames} \}$
 $\top \sqsubseteq \leq 1 \text{ framed_by Thing}$
 $\exists \text{ framed_by Thing} \sqsubseteq \text{Material_object}$
 $\top \sqsubseteq \forall \text{ framed_by Topoid}$

frames

$\{ \text{http://www.onto-med.de/ontologies/gfo.owl} \text{framed_by} \} \equiv \{ \text{http://www.onto-med.de/ontologies/gfo.owl} \text{frames} \}$
 $\top \sqsubseteq \leq 1 \text{ frames}^- \text{ Thing}$
 $\exists \text{ frames Thing} \sqsubseteq \text{Topoid}$
 $\top \sqsubseteq \forall \text{ frames Material_object}$

function_{determinant}of

$\{ \text{http://www.onto-med.de/ontologies/gfo.owl} \text{has_function_determinant} \} \equiv \{ \text{http://www.onto-med.de/ontologies/gfo.owl} \text{function_determinant_of} \}$
 $\top \sqsubseteq \forall \text{ function_determinant_of Function}$

function_{of}

$\{ \text{http://www.onto-med.de/ontologies/gfo.owl} \text{has_function} \} \equiv \{ \text{http://www.onto-med.de/ontologies/gfo.owl} \text{function_of} \}$

functional_{item}of

$\sqsubseteq \text{function_determinant_of}$
 $\{ \text{http://www.onto-med.de/ontologies/gfo.owl} \text{has_functional_item} \} \equiv \{ \text{http://www.onto-med.de/ontologies/gfo.owl} \text{functional_item_of} \}$
 $\exists \text{ functional_item_of Thing} \sqsubseteq \text{Role}$

goal_{of}

$\sqsubseteq \text{function_determinant_of}$
 $\{ \text{http://www.onto-med.de/ontologies/gfo.owl} \text{has_goal} \} \equiv \{ \text{http://www.onto-med.de/ontologies/gfo.owl} \text{goal_of} \}$
 $\exists \text{ goal_of Thing} \sqsubseteq \text{Configuration} \sqcup \text{Configuroid}$

has_agent

!http://www.onto-med.de/ontologies/gfo.owlagent_in > ≡ < http://www.onto-med.de/ontologies/gfo.owlhas_agent

has_boundary

!http://www.onto-med.de/ontologies/gfo.owlhas_boundary > ≡ < http://www.onto-med.de/ontologies/gfo.owlbound
 ⊤ ⊆ ≤ 1 has_boundary⁻ Thing

has_categorial_part

⊆ abstract_has_part
 !http://www.onto-med.de/ontologies/gfo.owlcategorial_part_of > ≡ < http://www.onto-med.de/ontologies/gfo.owlh
 ∃ has_categorial_part Thing ⊆ Category
 ⊤ ⊆ ∀ has_categorial_part Category

has_category

!http://www.onto-med.de/ontologies/gfo.owlhas_category > ≡ < http://www.onto-med.de/ontologies/gfo.owlcateg
 ∃ has_category Thing ⊆ Ontological_layer
 ⊤ ⊆ ∀ has_category Category

has_constituent_part

⊆ has_proper_part
 !http://www.onto-med.de/ontologies/gfo.owlconstituent_part_of > ≡ < http://www.onto-med.de/ontologies/gfo.owl
 ∃ has_constituent_part Thing ⊆ Configuration ⊔ Configuroid

has_function

!http://www.onto-med.de/ontologies/gfo.owlhas_function > ≡ < http://www.onto-med.de/ontologies/gfo.owlfunc
 ∃ has_function Thing ⊆ Individual
 ⊤ ⊆ ∀ has_function Function

has_function_determinant

!http://www.onto-med.de/ontologies/gfo.owlhas_function_determinant > ≡ < http://www.onto-med.de/ontologies/
 ∃ has_function_determinant Thing ⊆ Function
 ⊤ ⊆ ∀ has_function_determinant Individual

has_functional_item

⊆ has_function_determinant
 !http://www.onto-med.de/ontologies/gfo.owlhas_functional_item > ≡ < http://www.onto-med.de/ontologies/gfo.ov
 ⊤ ⊆ ≤ 1 has_functional_item Thing
 ∃ has_functional_item Thing ⊆ Function
 ⊤ ⊆ ∀ has_functional_item Role

has_{goal}

⊆ has_function_determinant

!http://www.onto-med.de/ontologies/gfo.owlhas_{goal} > ≡ < http://www.onto-med.de/ontologies/gfo.owlgoal_of >
∃ has_goal Thing ⊆ Function

has_{left_time_boundary}

⊆ has_time_boundary

!http://www.onto-med.de/ontologies/gfo.owlhas_{left_time_boundary} > ≡ < http://www.onto-med.de/ontologies/gfo.owlhas_left_time_boundary >
⊆ ≤ 1 has_left_time_boundary Thing

has_{member}

!http://www.onto-med.de/ontologies/gfo.owlmember_of > ≡ < http://www.onto-med.de/ontologies/gfo.owlhas_member_of >
∃ has_member Thing ⊆ Set
⊆ ∀ has_member Entity

has_{part}

⊆ abstract_has_part

!http://www.onto-med.de/ontologies/gfo.owlpart_of > ≡ < http://www.onto-med.de/ontologies/gfo.owlhas_part_of >
TransitivePropertyhas_part
∃ has_part Thing ⊆ Concrete
⊆ ∀ has_part Concrete

has_{participant}

!http://www.onto-med.de/ontologies/gfo.owlparticipates_in > ≡ < http://www.onto-med.de/ontologies/gfo.owlhas_participant >
∃ has_participant Thing ⊆ Occurrent
⊆ ∀ has_participant Presential

has_{proper_part}

⊆ has_part

!http://www.onto-med.de/ontologies/gfo.owlhas_{proper_part} > ≡ < http://www.onto-med.de/ontologies/gfo.owlproper_part_of >
TransitivePropertyhas_proper_part

has_{requirement}

⊆ has_function_determinant

!http://www.onto-med.de/ontologies/gfo.owlrequirement_of > ≡ < http://www.onto-med.de/ontologies/gfo.owlhas_requirement_of >
∃ has_requirement Thing ⊆ Function

has_{right_time_boundary}

⊆ has_time_boundary

!http://www.onto-med.de/ontologies/gfo.owlright_{time_boundary}_of > ≡ < http://www.onto-med.de/ontologies/gfo.owlhas_right_time_boundary_of >
⊆ ≤ 1 has_right_time_boundary Thing

has_ssequence_cconstituent

$\text{[http://www.onto-med.de/ontologies/gfo.owlhas}_{s}\text{sequence}_{c}\text{constituent} > \equiv < \text{http://www.onto-med.de/ontologies/gfo.owlhas}_{s}\text{sequence}_{c}\text{constituent} >$

has_sspatial_boundary

$\sqsubseteq \text{has_boundary}$

$\text{[http://www.onto-med.de/ontologies/gfo.owlhas}_{s}\text{spatial}_{b}\text{boundary} > \equiv < \text{http://www.onto-med.de/ontologies/gfo.owlhas}_{s}\text{spatial}_{b}\text{boundary} >$

$\top \sqsubseteq \forall \text{has_spatial_boundary Spatial_boundary}$

has_time_boundary

$\sqsubseteq \text{has_boundary}$

$\text{[http://www.onto-med.de/ontologies/gfo.owlhas}_{t}\text{ime}_{b}\text{boundary} > \equiv < \text{http://www.onto-med.de/ontologies/gfo.owlhas}_{t}\text{ime}_{b}\text{boundary} >$

$\exists \text{has_time_boundary Thing} \sqsubseteq \text{Chronoid}$

$\top \sqsubseteq \forall \text{has_time_boundary Time_boundary}$

has_token

$\sqsubseteq \text{instance_of}$

$\text{[http://www.onto-med.de/ontologies/gfo.owltoken}_{o}f > \equiv < \text{http://www.onto-med.de/ontologies/gfo.owlhas}_{t}\text{oken} >$

$\exists \text{has_token Thing} \sqsubseteq \text{Symbol_structure}$

$\top \sqsubseteq \forall \text{has_token Concrete}$

has_value

$\text{[http://www.onto-med.de/ontologies/gfo.owlvalue}_{o}f > \equiv < \text{http://www.onto-med.de/ontologies/gfo.owlhas}_{v}\text{alue} >$

$\exists \text{has_value Thing} \sqsubseteq \text{Property}$

$\top \sqsubseteq \forall \text{has_value Property_value}$

instance_of

$\text{[http://www.onto-med.de/ontologies/gfo.owlinstance}_{o}f > \equiv < \text{http://www.onto-med.de/ontologies/gfo.owlinstance}_{o}f >$

$\exists \text{instance_of Thing} \sqsubseteq \text{Entity}$

$\top \sqsubseteq \forall \text{instance_of Category}$

instantiated_by

$\text{[http://www.onto-med.de/ontologies/gfo.owlinstance}_{o}f > \equiv < \text{http://www.onto-med.de/ontologies/gfo.owlinstantiated}_{b}y >$

$\exists \text{instantiated_by Thing} \sqsubseteq \text{Category}$

layer_of

$\text{[http://www.onto-med.de/ontologies/gfo.owllayer}_{o}f > \equiv < \text{http://www.onto-med.de/ontologies/gfo.owlon}_{l}\text{ayer}_{o}f >$

$\exists \text{layer_of Thing} \sqsubseteq \text{Ontological_layer}$

$\top \sqsubseteq \forall \text{layer_of Individual}$

left_boundary_of

$\text{!http://www.onto-med.de/ontologies/gfo.owlhas_left_time_boundary} > \equiv < \text{http://www.onto-med.de/ontologies/gfo} >$
 $\top \sqsubseteq \leq 1 \text{ left_boundary_of}^- \text{ Thing}$

level_of

$\sqsubseteq \text{ layer_of}$
 $\text{!http://www.onto-med.de/ontologies/gfo.owlon_level} > \equiv < \text{http://www.onto-med.de/ontologies/gfo.owllevel_of} >$
 $\exists \text{ level_of Thing} \sqsubseteq \text{ Level}$

member_of

$\text{!http://www.onto-med.de/ontologies/gfo.owlmember_of} > \equiv < \text{http://www.onto-med.de/ontologies/gfo.owlhas_member_of} >$
 $\exists \text{ member_of Thing} \sqsubseteq \text{ Entity}$
 $\top \sqsubseteq \forall \text{ member_of Set}$

necessary_for

$\text{!http://www.onto-med.de/ontologies/gfo.owlnecessary_for} > \equiv < \text{http://www.onto-med.de/ontologies/gfo.owldepends_on} >$
 $\exists \text{ necessary_for Thing} \sqsubseteq \text{ Item}$
 $\top \sqsubseteq \forall \text{ necessary_for Item}$

occupied_by

$\text{!http://www.onto-med.de/ontologies/gfo.owloccupies} \sqsubseteq \text{!http://www.onto-med.de/ontologies/gfo.owloccupied_by} >$
 $\top \sqsubseteq \leq 1 \text{ occupied_by}^- \text{ Thing}$
 $\exists \text{ occupied_by Thing} \sqsubseteq \text{ Space}$
 $\top \sqsubseteq \forall \text{ occupied_by Presential}$

occupies

$\text{!http://www.onto-med.de/ontologies/gfo.owloccupies} \sqsubseteq \text{!http://www.onto-med.de/ontologies/gfo.owloccupied_by} >$
 $\top \sqsubseteq \leq 1 \text{ occupies Thing}$
 $\exists \text{ occupies Thing} \sqsubseteq \text{ Presential}$
 $\top \sqsubseteq \forall \text{ occupies Space}$

on_layer

$\text{!http://www.onto-med.de/ontologies/gfo.owllayer_of} > \equiv < \text{http://www.onto-med.de/ontologies/gfo.owlon_layer} >$
 $\exists \text{ on_layer Thing} \sqsubseteq \text{ Individual}$
 $\top \sqsubseteq \forall \text{ on_layer Ontological_layer}$

on_level

$\sqsubseteq \text{ on_layer}$
 $\text{!http://www.onto-med.de/ontologies/gfo.owlon_level} > \equiv < \text{http://www.onto-med.de/ontologies/gfo.owllevel_of} >$
 $\top \sqsubseteq \forall \text{ on_level Level}$

on_sstratum

\sqsubseteq on_layer
|http://www.onto-med.de/ontologies/gfo.owlon_sstratum > \equiv < http://www.onto-med.de/ontologies/gfo.owlstratum >
 $\top \sqsubseteq \forall$ on_stratum Stratum

part_of

\sqsubseteq abstract_part_of
|http://www.onto-med.de/ontologies/gfo.owlpart_of > \equiv < http://www.onto-med.de/ontologies/gfo.owlhas_part >
TransitiveProperty part_of
 \exists part_of Thing \sqsubseteq Concrete
 $\top \sqsubseteq \forall$ part_of Concrete

participates_in

|http://www.onto-med.de/ontologies/gfo.owlparticipates_in > \equiv < http://www.onto-med.de/ontologies/gfo.owlhas_in >
 \exists participates_in Thing \sqsubseteq Presential
 $\top \sqsubseteq \forall$ participates_in Occurrent

plays_role

\exists plays_role Thing \sqsubseteq Thing
 $\top \sqsubseteq \forall$ plays_role Role

projection_of

|http://www.onto-med.de/ontologies/gfo.owlprojects_to > \equiv < http://www.onto-med.de/ontologies/gfo.owlproject_to >
 $\top \sqsubseteq \leq 1$ projection_of⁻ Thing

projects_to

|http://www.onto-med.de/ontologies/gfo.owlprojects_to > \equiv < http://www.onto-med.de/ontologies/gfo.owlproject_to >
 $\top \sqsubseteq \leq 1$ projects_to Thing
 \exists projects_to Thing \sqsubseteq Occurrent
 $\top \sqsubseteq \forall$ projects_to Temporal_region

proper_part_of

\sqsubseteq part_of
|http://www.onto-med.de/ontologies/gfo.owlhas_pproper_part > \equiv < http://www.onto-med.de/ontologies/gfo.owlprope_prt >
TransitiveProperty proper_part_of

realized_ty

|http://www.onto-med.de/ontologies/gfo.owlrealized_ty > \equiv < http://www.onto-med.de/ontologies/gfo.owlrealizes_ty >

realizes

$\text{[http://www.onto-med.de/ontologies/gfo.owlrealized_by]} > \equiv < \text{http://www.onto-med.de/ontologies/gfo.owlrealizes}$
 $\exists \text{ realizes Thing} \sqsubseteq \text{Individual}$
 $\top \sqsubseteq \forall \text{ realizes Function}$

requirement_{of}

$\sqsubseteq \text{function_determinant_of}$
 $\text{[http://www.onto-med.de/ontologies/gfo.owlrequirement_of]} > \equiv < \text{http://www.onto-med.de/ontologies/gfo.owlhas}$
 $\exists \text{ requirement_of Thing} \sqsubseteq \text{Configuration} \sqcup \text{Configuroid}$

right_{boundary}_{of}

$\text{[http://www.onto-med.de/ontologies/gfo.owlright_boundary_of]} > \equiv < \text{http://www.onto-med.de/ontologies/gfo.owl}$
 $\top \sqsubseteq \leq 1 \text{ right_boundary_of}^- \text{ Thing}$

role_{of}

$\exists \text{ role_of Thing} \sqsubseteq \text{Role}$
 $\top \sqsubseteq \forall \text{ role_of Individual}$

sequence_{constituent}_{of}

$\sqsubseteq \text{part_of}$
 $\text{[http://www.onto-med.de/ontologies/gfo.owlhas_sequence_constituent]} > \equiv < \text{http://www.onto-med.de/ontologies/gfo}$
 $\exists \text{ sequence_constituent_of Thing} \sqsubseteq \text{Token}$
 $\top \sqsubseteq \forall \text{ sequence_constituent_of Symbol_sequence}$

spatial_{boundary}_{of}

$\sqsubseteq \text{boundary_of}$
 $\text{[http://www.onto-med.de/ontologies/gfo.owlhas_spatial_boundary]} > \equiv < \text{http://www.onto-med.de/ontologies/gfo}$
 $\exists \text{ spatial_boundary_of Thing} \sqsubseteq \text{Spatial_boundary}$
 $\top \sqsubseteq \forall \text{ spatial_boundary_of Space}$

stratum_{of}

$\sqsubseteq \text{layer_of}$
 $\text{[http://www.onto-med.de/ontologies/gfo.owlon_stratum]} > \equiv < \text{http://www.onto-med.de/ontologies/gfo.owlstratum}$
 $\exists \text{ stratum_of Thing} \sqsubseteq \text{Stratum}$

time_{boundary}_{of}

$\sqsubseteq \text{boundary_of}$
 $\text{[http://www.onto-med.de/ontologies/gfo.owlhas_time_boundary]} > \equiv < \text{http://www.onto-med.de/ontologies/gfo.owl}$
 $\exists \text{ time_boundary_of Thing} \sqsubseteq \text{Time_boundary}$
 $\top \sqsubseteq \forall \text{ time_boundary_of Chronoid}$

token_{of}

$\text{http://www.onto-med.de/ontologies/gfo.owltoken}_{of} > \equiv < \text{http://www.onto-med.de/ontologies/gfo.owlhas}_{token}$

value_{of}

$\text{http://www.onto-med.de/ontologies/gfo.owlvalue}_{of} > \equiv < \text{http://www.onto-med.de/ontologies/gfo.owlhas}_{value}$

$\exists \text{ value_of Thing} \sqsubseteq \text{Property_value}$

$\top \sqsubseteq \forall \text{ value_of Property}$

Data properties

Individuals

empty_{set}

empty_set : Set

Datatypes

PlainLiteral

string