

Description logic view: GFO-basic-RL

Classes

Abstract

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

Amount_of_substrate

Amount_of_substrate \sqsubseteq Presential

Axiom0

Axiom0 \sqsubseteq Presential

Category

Category $\sqsubseteq \neg$ Individual

Change

Change \sqsubseteq Occurrent
Change $\sqsubseteq \neg$ Event
Change $\sqsubseteq \neg$ History

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

Continuous_change

Continuous_change \sqsubseteq Change
Continuous_change $\sqsubseteq \neg$ Discrete_change

Continuous_process

Continuous_process \sqsubseteq Process

Discrete_change

Discrete_change \sqsubseteq Change

Discrete_change $\sqsubseteq \neg$ Continuous_change

Discrete_process

Discrete_process \sqsubseteq Process

Entity**Event**

Event \sqsubseteq Occurrent

Event $\sqsubseteq \neg$ History

Event $\sqsubseteq \neg$ Change

History

History \sqsubseteq Occurrent

History $\sqsubseteq \neg$ Event

History $\sqsubseteq \neg$ Change

Individual

Individual $\sqsubseteq \neg$ Category

Left_time_boundary

Left_time_boundary $\sqsubseteq \neg$ Right_time_boundary

Line

Line \sqsubseteq Spatial_boundary

Material_boundary

Material_boundary \sqsubseteq Presential

Material_boundary $\sqsubseteq \neg$ Material_object

Material_object

Material_object \sqsubseteq Presential

Material_object $\sqsubseteq \neg$ Material_boundary

Occurrent

Occurrent \sqsubseteq Processual_Structure

Occurrent \sqsubseteq \neg Process

Perpetuant

Perpetuant \sqsubseteq Concrete

Point

Point \sqsubseteq Spatial_boundary

Presential

Presential \sqsubseteq Concrete

Presential \sqsubseteq \neg Processual_Structure

Process

Process \sqsubseteq Processual_Structure

Process \sqsubseteq \neg Occurrent

Processual_sstructure

Processual_Structure \sqsubseteq Concrete

Processual_Structure \sqsubseteq \neg Presential

Processual_role

Processual_role \sqsubseteq Process

Processual_role \sqsubseteq Role

Processual_role \sqsubseteq \neg Social_role

Processual_role \sqsubseteq \neg Relational_role

Property

Property \sqsubseteq Individual

Property \sqsubseteq \neg Relator

Relational_role

Relational_role \sqsubseteq Property

Relational_role \sqsubseteq Role

Relational_role \sqsubseteq \neg Social_role

Relational_role \sqsubseteq \neg Processual_role

Relator

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

Right_{time}boundary

Right_time_boundary $\sqsubseteq \neg$ Left_time_boundary

Role

Role \sqsubseteq Individual

Social_{role}

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

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 \sqsubseteq Space
Spatial_boundary $\sqsubseteq \neg$ Spatial_region

Spatial_{region}

Spatial_region \sqsubseteq Space
Spatial_region $\sqsubseteq \neg$ Spatial_boundary

State

State \sqsubseteq Process

Surface

Surface \sqsubseteq Spatial_boundary

Symbol_s*structure*

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

Temporal_r*egion*

Temporal_region \sqsubseteq Time
Temporal_region $\sqsubseteq \neg$ Time_boundary

Thing

Time

Time \sqsubseteq Space_time
Time $\sqsubseteq \neg$ Space

Time_b*oundary*

Time_boundary \sqsubseteq Time
Time_boundary $\sqsubseteq \neg$ Temporal_region

Topoid

Topoid \sqsubseteq Spatial_region

Universal

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

Object properties

abstract_h*as*_p*art*

abstract_p*art*_o*f*

boundary_o*f*

\sqsubseteq depends_on

$\text{!http://www.onto-med.de/ontologies/gfo.owlhas}_b\text{oundary} > \equiv < \text{http://www.onto-med.de/ontologies/gfo.owlboun}$

$\top \sqsubseteq \leq 1$ boundary_of Thing

coincides_w*ith*

coincides_with \equiv coincides_with⁻

depends_{on}

exhibits

\exists exhibits Thing \sqsubseteq Perpetuant
 $\top \sqsubseteq \forall$ exhibits Presential

exists_{at}

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

framed_{by}

$\{ \text{http://www.onto-med.de/ontologies/gfo.owlframes}_i \} \equiv \{ \text{http://www.onto-med.de/ontologies/gfo.owlframed}_i \} >^-$
 \exists framed_by Thing \sqsubseteq Presential
 $\top \sqsubseteq \forall$ framed_by Space

frames

$\{ \text{http://www.onto-med.de/ontologies/gfo.owlframes}_i \} \equiv \{ \text{http://www.onto-med.de/ontologies/gfo.owlframed}_i \} >^-$
 \exists frames Thing \sqsubseteq Space
 $\top \sqsubseteq \forall$ frames Presential

has_{boundary}

\sqsubseteq necessary_for
 $\{ \text{http://www.onto-med.de/ontologies/gfo.owlhas}_i \text{boundary} > \} \equiv \{ \text{http://www.onto-med.de/ontologies/gfo.owlbound} > \}$
 $\top \sqsubseteq \leq 1$ has_boundary Thing

has_{left_time_boundary}

\sqsubseteq has_time_boundary
 $\{ \text{http://www.onto-med.de/ontologies/gfo.owlhas}_i \text{left_time}_i \text{boundary} > \} \equiv \{ \text{http://www.onto-med.de/ontologies/gfo} > \}$
 $\top \sqsubseteq \leq 1$ has_left_time_boundary Thing
 $\top \sqsubseteq \leq 1$ has_left_time_boundary Thing
 $\top \sqsubseteq \forall$ has_left_time_boundary Left_time_boundary

has_{part}

has_{participant}

$\{ \text{http://www.onto-med.de/ontologies/gfo.owlhas}_i \text{participant} > \} \equiv \{ \text{http://www.onto-med.de/ontologies/gfo.owlpa} > \}$
 \exists has_participant Thing \sqsubseteq Processual_Structure
 $\top \sqsubseteq \forall$ has_participant \neg Processual_Structure
 $\top \sqsubseteq \forall$ has_participant \neg Space_time

has_pproper_part

has_pproperty

$\text{!http://www.onto-med.de/ontologies/gfo.owlproperty}_of > \equiv < \text{http://www.onto-med.de/ontologies/gfo.owlhas}_p\text{ro}$
 $\top \sqsubseteq \leq 1 \text{ has_property}^- \text{ Thing}$
 $\exists \text{ has_property Thing} \sqsubseteq \text{Entity}$
 $\top \sqsubseteq \forall \text{ has_property Property}$

has_right_time_boundary

$\sqsubseteq \text{has_time_boundary}$
 $\text{!http://www.onto-med.de/ontologies/gfo.owlright}_b\text{oundary}_of > \equiv < \text{http://www.onto-med.de/ontologies/gfo.owlh}$
 $\top \sqsubseteq \leq 1 \text{ has_right_time_boundary Thing}$
 $\top \sqsubseteq \leq 1 \text{ has_right_time_boundary}^- \text{ Thing}$
 $\top \sqsubseteq \forall \text{ has_right_time_boundary Right_time_boundary}$

has_role

$\sqsubseteq \text{abstract_has_part}$
 $\text{!http://www.onto-med.de/ontologies/gfo.owlrole}_of > \equiv < \text{http://www.onto-med.de/ontologies/gfo.owlhas}_r\text{ole} >$
 $\exists \text{ has_role Thing} \sqsubseteq \text{Entity}$
 $\top \sqsubseteq \forall \text{ has_role Role}$

has_spatial_boundary

$\sqsubseteq \text{has_boundary}$
 $\text{!http://www.onto-med.de/ontologies/gfo.owlhas}_s\text{patial}_b\text{oundary} > \equiv < \text{http://www.onto-med.de/ontologies/gfo.o}$
 $\top \sqsubseteq \leq 1 \text{ has_spatial_boundary}^- \text{ Thing}$
 $\exists \text{ has_spatial_boundary Thing} \sqsubseteq \text{Space}$
 $\top \sqsubseteq \forall \text{ has_spatial_boundary Spatial_boundary}$

has_temporal_part

$\sqsubseteq \text{has_part}$

has_time_boundary

$\sqsubseteq \text{has_boundary}$
 $\text{!http://www.onto-med.de/ontologies/gfo.owlhas}_t\text{ime}_b\text{oundary} > \equiv < \text{http://www.onto-med.de/ontologies/gfo.owl}$
 $\top \sqsubseteq \leq 1 \text{ has_time_boundary}^- \text{ Thing}$
 $\exists \text{ has_time_boundary Thing} \sqsubseteq \text{Temporal_region}$
 $\top \sqsubseteq \forall \text{ has_time_boundary Time_boundary}$

has_token

$\sqsubseteq \text{instantiated_by}$
 $\text{!http://www.onto-med.de/ontologies/gfo.owlhas}_t\text{oken} > \equiv < \text{http://www.onto-med.de/ontologies/gfo.owltoken}_of$

\exists has_token Thing \sqsubseteq Symbol_structure
 $\top \sqsubseteq \forall$ has_token Concrete

instance_{of}

$\text{!http://www.onto-med.de/ontologies/gfo.owlinstantiated}_{by} > \equiv < \text{http://www.onto-med.de/ontologies/gfo.owlins}$
 \exists instance_of Thing \sqsubseteq Entity
 $\top \sqsubseteq \forall$ instance_of Category

instantiated_{by}

$\text{!http://www.onto-med.de/ontologies/gfo.owlinstantiated}_{by} > \equiv < \text{http://www.onto-med.de/ontologies/gfo.owlins}$
 \exists instantiated_by Thing \sqsubseteq Category
 $\top \sqsubseteq \forall$ instantiated_by Entity

left_{boundary}_{of}

\sqsubseteq time_boundary_of
 $\text{!http://www.onto-med.de/ontologies/gfo.owlhas}_{left}_{time}_{boundary} > \equiv < \text{http://www.onto-med.de/ontologies/gfo}$
 $\top \sqsubseteq \leq 1$ left_boundary_of Thing
 $\top \sqsubseteq \leq 1$ left_boundary_of⁻ Thing

necessary_{for}

occupied_{by}

\sqsubseteq frames
 $\text{!http://www.onto-med.de/ontologies/gfo.owloccupies}_{i} \equiv \text{!http://www.onto-med.de/ontologies/gfo.owloccupied}_{by} > ^-$
 $\top \sqsubseteq \leq 1$ occupied_by⁻ Thing
 \exists occupied_by Thing \sqsubseteq Space
 $\top \sqsubseteq \forall$ occupied_by Presential

occupies

\sqsubseteq framed_by
 $\text{!http://www.onto-med.de/ontologies/gfo.owloccupies}_{i} \equiv \text{!http://www.onto-med.de/ontologies/gfo.owloccupied}_{by} > ^-$
 $\top \sqsubseteq \leq 1$ occupies Thing
 \exists occupies Thing \sqsubseteq Presential
 $\top \sqsubseteq \forall$ occupies Space

part_{of}

\sqsubseteq abstract_part_of

participates_{in}

$\text{!http://www.onto-med.de/ontologies/gfo.owlhas}_{participant} > \equiv < \text{http://www.onto-med.de/ontologies/gfo.owlpa}$
 \exists participates_in Thing $\sqsubseteq \neg$ Space_time

\exists participates_in Thing \sqsubseteq \neg Processual_Structure
 $\top \sqsubseteq \forall$ participates_in Processual_Structure

played_{by}

$\langle \text{http://www.onto-med.de/ontologies/gfo.owlplayed}_{by} \rangle \equiv \langle \text{http://www.onto-med.de/ontologies/gfo.owlplays}_{role} \rangle$
 $\top \sqsubseteq \leq 1$ played_by Thing
 \exists played_by Thing \sqsubseteq Role
 $\top \sqsubseteq \forall$ played_by Entity

plays_{role}

$\langle \text{http://www.onto-med.de/ontologies/gfo.owlplayed}_{by} \rangle \equiv \langle \text{http://www.onto-med.de/ontologies/gfo.owlplays}_{role} \rangle$
 $\top \sqsubseteq \leq 1$ plays_role Thing
 \exists plays_role Thing \sqsubseteq Entity
 $\top \sqsubseteq \forall$ plays_role Role

projection_{of}

$\langle \text{http://www.onto-med.de/ontologies/gfo.owlprojection}_{of} \rangle \equiv \langle \text{http://www.onto-med.de/ontologies/gfo.owlproj} \rangle$
 $\top \sqsubseteq \leq 1$ projection_of Thing
 \exists projection_of Thing \sqsubseteq Time

projects_{to}

$\langle \text{http://www.onto-med.de/ontologies/gfo.owlprojection}_{of} \rangle \equiv \langle \text{http://www.onto-med.de/ontologies/gfo.owlproj} \rangle$
 $\top \sqsubseteq \leq 1$ projects_to Thing
 $\top \sqsubseteq \forall$ projects_to Time

proper_{part}_{of}

property_{of}

$\langle \text{http://www.onto-med.de/ontologies/gfo.owlproperty}_{of} \rangle \equiv \langle \text{http://www.onto-med.de/ontologies/gfo.owlhas}_{part} \rangle$
 \exists property_of Thing \sqsubseteq Property

right_{boundary}_{of}

\sqsubseteq time_boundary_of
 $\langle \text{http://www.onto-med.de/ontologies/gfo.owlright}_{boundary}_{of} \rangle \equiv \langle \text{http://www.onto-med.de/ontologies/gfo.owlh} \rangle$
 $\top \sqsubseteq \leq 1$ right_boundary_of Thing
 $\top \sqsubseteq \leq 1$ right_boundary_of Thing

role_{of}

\sqsubseteq abstract_part_of
 $\langle \text{http://www.onto-med.de/ontologies/gfo.owlrole}_{of} \rangle \equiv \langle \text{http://www.onto-med.de/ontologies/gfo.owlhas}_{role} \rangle$
 \exists role_of Thing \sqsubseteq Role
 $\top \sqsubseteq \forall$ role_of Entity

spatial_boundary_of

⊆ boundary_of

!http://www.onto-med.de/ontologies/gfo.owlhas_spatial_boundary > ≡ < http://www.onto-med.de/ontologies/gfo.o

⊤ ⊆ ≤ 1 spatial_boundary_of Thing

∃ spatial_boundary_of Thing ⊆ Spatial_boundary

⊤ ⊆ ∀ spatial_boundary_of Space

temporal_part_of

⊆ part_of

∃ temporal_part_of Thing ⊆ Time

⊤ ⊆ ∀ temporal_part_of (Time ⊓ ¬Time_boundary)

time_boundary_of

⊆ boundary_of

!http://www.onto-med.de/ontologies/gfo.owlhas_time_boundary > ≡ < http://www.onto-med.de/ontologies/gfo.owl

⊤ ⊆ ≤ 1 time_boundary_of Thing

∃ time_boundary_of Thing ⊆ Time_boundary

⊤ ⊆ ∀ time_boundary_of Temporal_region

token_of

⊆ instance_of

!http://www.onto-med.de/ontologies/gfo.owlhas_token > ≡ < http://www.onto-med.de/ontologies/gfo.owltoken_of

∃ token_of Thing ⊆ Concrete

⊤ ⊆ ∀ token_of Symbol_structure

Data properties

Individuals

Datatypes

PlainLiteral

string