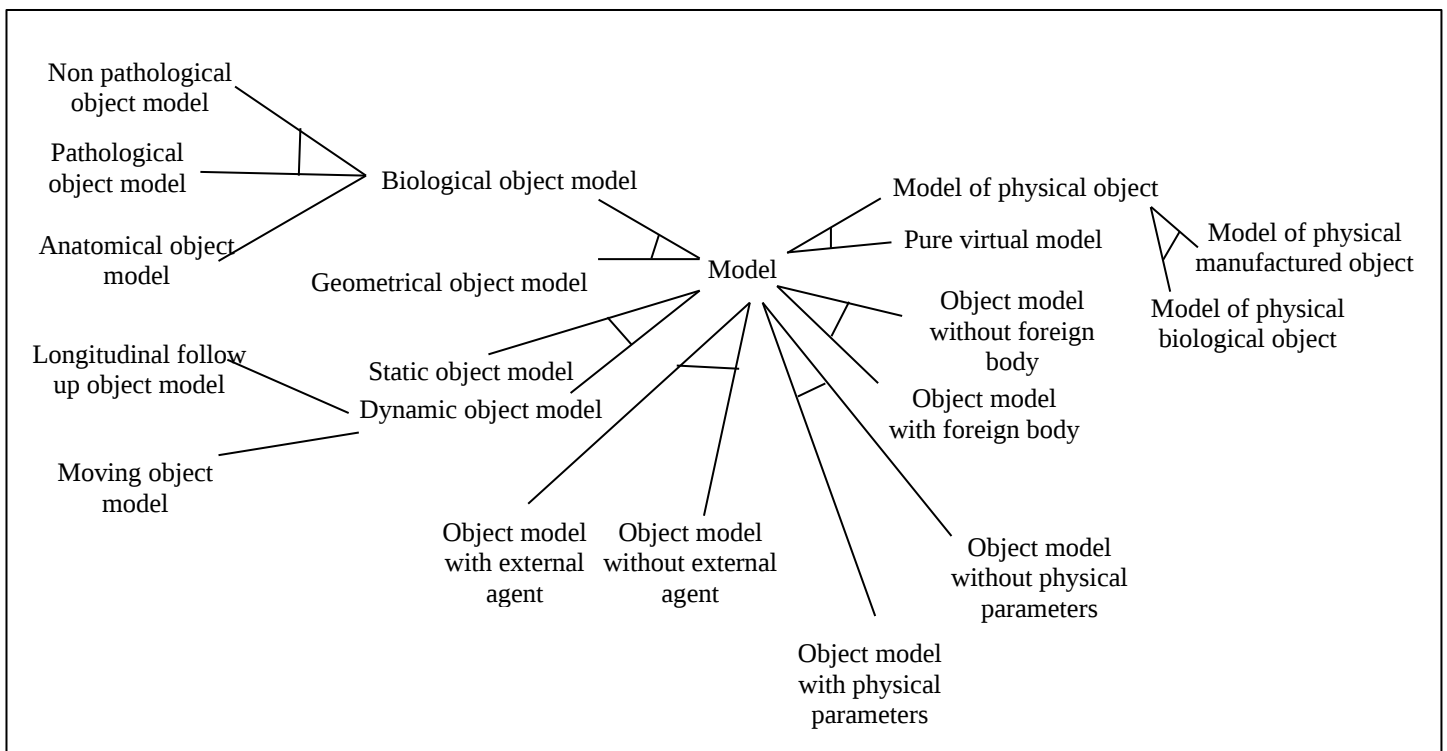


Model

// Metadata

Name	Model
Keywords	Model
Creation date	February 2nd, 2011
Has contributor	Germain Forestier, Bernard Gibaud
Used ontology engineering methodology	OntoSpec
Is of type	Domain ontology
Natural language	English
Has ontology language	OntoSpec
Has formality level	Semi informal
Has reference	
Ressource locator	
Version	3.2
Number of concepts (classes)	
Number of relations (properties)	

// Concepts



Medical image simulation object model

Meta Properties

GEOMETRICAL OBJECT MODEL and BIOLOGICAL OBJECT MODEL *is a disjunctive sub division of* MEDICAL IMAGE SIMULATION OBJECT MODEL. STATIC OBJECT MODEL and DYNAMIC OBJECT MODEL *is a disjunctive sub division of* MEDICAL IMAGE SIMULATION OBJECT MODEL. OBJECT MODEL WITH EXTERNAL AGENT and OBJECT MODEL WITHOUT EXTERNAL AGENT *is a disjunctive sub division of* MEDICAL IMAGE SIMULATION OBJECT MODEL. OBJECT MODEL WITH FOREIGN BODY and OBJECT MODEL WITHOUT FOREIGN BODY *is a disjunctive sub division of* MEDICAL IMAGE SIMULATION OBJECT MODEL. OBJECT MODEL WITH PHYSICAL PARAMETERS and OBJECT MODEL WITHOUT PHYSICAL PARAMETERS *is a disjunctive sub division of* MEDICAL IMAGE SIMULATION OBJECT MODEL. MODEL OF PHYSICAL OBJECT and PURE VIRTUAL MODEL *is a disjunctive sub division of* MEDICAL IMAGE SIMULATION OBJECT MODEL.

Properties

[EP/SL] A MEDICAL IMAGE SIMULATION OBJECT MODEL is a DATASET

Comment

[DEF] A Medical image simulation object model is a generic and virtual representation of a set of objects dedicated to image simulation. The represented objects can be different according to the different types of models. A Biological object model will represent biological objects which can, for example, depict their anatomy and/or physiology.

Geometrical object model

Properties

[EP/SL] A GEOMETRICAL OBJECT MODEL is a MEDICAL IMAGE SIMULATION OBJECT MODEL

Comment

[DEF] A Geometrical object model is a model which represents a set of virtual geometrical objects like spheres or cubes. This kind of model is generally used for testing and/or calibration.

Biological object model

Meta Properties

PATHOLOGICAL OBJECT MODEL and NON PATHOLOGICAL OBJECT MODEL *is a disjunctive sub division of* BIOLOGICAL OBJECT MODEL.

Properties

[EP/SL] A BIOLOGICAL OBJECT MODEL is a MEDICAL IMAGE SIMULATION OBJECT MODEL

Comment

[DEF] A Biological object model is a model which represents a biological object and/or biological/physiological process.

Anatomical object model

Properties

[EP/SL] An ANATOMICAL OBJECT MODEL is a BIOLOGICAL OBJECT MODEL.

[EP/ER] An ANATOMICAL OBJECT MODEL *has for proper part* at least one ANATOMICAL OBJECT LAYER *during a* TIME INTERVAL

Comment

[DEF] An Anatomical object model is a model which represents anatomical objects. An Anatomical object model is composed of at least one Anatomical object layer.

Object model without foreign body

Properties

[EP/SL] An OBJECT MODEL WITHOUT FOREIGN BODY *is a* MEDICAL IMAGE SIMULATION OBJECT MODEL. No OBJECT MODEL WITHOUT FOREIGN BODY *has for proper part* some FOREIGN BODY OBJECT LAYER *during a* TIME INTERVAL

Comment

[DEF] An Object model without foreign body is a model which does not contain any foreign body.

Object model with foreign body

Properties

[EP/SL] An OBJECT MODEL WITH FOREIGN BODY *is a* MEDICAL IMAGE SIMULATION OBJECT MODEL. [EP/ER] An OBJECT MODEL WITH FOREIGN BODY *has for proper part* at least one FOREIGN BODY OBJECT LAYER *during a* TIME INTERVAL

Comment

[DEF] A Biological model with foreign body is a model which contains at least one foreign body.

Static object model

Properties

[EP/SL] A STATIC OBJECT MODEL is a MEDICAL IMAGE SIMULATION OBJECT MODEL

Comment

[DEF] A Static object model is a model which represents objects which do not evolve through time.

Dynamic object model

Properties

[EP/SL] A DYNAMIC OBJECT MODEL is a MEDICAL IMAGE SIMULATION OBJECT MODEL. LONGITUDINAL FOLLOW UP OBJECT MODEL and MOVING OBJECT MODEL *is a disjunctive sub division of* DYNAMIC OBJECT MODEL

Comment

[DEF] A Dynamic object model is a model which represents objects which evolve through time. This evolution can either be the consequence of a longitudinal follow up (e.g. follow up of a subject through several exams at T0, T+6 months, T+12 months, etc.) or the consequence of a physiological evolution (e.g. respiratory movement).

Longitudinal follow up object model

Properties

[EP/SL] A LONGITUDINAL FOLLOW UP OBJECT MODEL is a DYNAMIC OBJECT MODEL

Comment

[DEF] A Longitudinal follow up object model is a model which models the evolution of a subject through a relatively long period of time (T0, T+6 months, T+12 months, etc.).

Moving object model

Properties

[EP/SL] A MOVING OBJECT MODEL is a DYNAMIC OBJECT MODEL

Comment

[DEF] A Moving object model is a model which contains the information of the evolution of the object through very short period of time (e.g. respiratory movement).

Object model with external agent

Properties

[EP/SL] An OBJECT MODEL WITH EXTERNAL AGENT is a MEDICAL IMAGE SIMULATION OBJECT MODEL. [EP/ER] An OBJECT MODEL WITH EXTERNAL AGENT *has for proper part* at least one EXTERNAL AGENT OBJECT LAYER *during a* TIME INTERVAL

Comment

[DEF] An Object model with external agent is a model which uses an external agent. External agents can be for example a contrast agent or a marker.

Object model without external agent

Properties

[EP/SL] An OBJECT MODEL WITHOUT EXTERNAL AGENT is a MEDICAL IMAGE SIMULATION OBJECT MODEL. No OBJECT MODEL WITHOUT EXTERNAL AGENT *has for proper part some* EXTERNAL AGENT OBJECT LAYER

Comment

[DEF] An Object model without contrast agent is a model where no external agent is used.

Non pathological object model

Properties

[EP/SL] A NON PATHOLOGICAL OBJECT MODEL is a BIOLOGICAL OBJECT MODEL. No NON PATHOLOGICAL OBJECT MODEL *has for proper part some* PATHOLOGICAL OBJECT LAYER *during a* TIME INTERVAL

Comment

[DEF] A Non pathological object model is a model whose related biological objects are not affected by any pathology.

Pathological object model

Properties

[EP/SL] A PATHOLOGICAL OBJECT MODEL is a BIOLOGICAL OBJECT MODEL. [EP/NSMC]. [EP/ER] A PATHOLOGICAL OBJECT *has for proper part* at least one PATHOLOGICAL OBJECT LAYER *during a* TIME INTERVAL

Comment

[DEF] A Pathological object model is a model whose at least one related biological object is affected by at least one pathology.

Pure virtual model

Properties

[EP/SL] A PURE VIRTUAL MODEL is a MEDICAL IMAGE SIMULATION OBJECT MODEL

Comment

[DEF] A Pure virtual model is a model which does not represent any physical object in the real world.

Model of physical object

Meta Properties

MODEL OF PHYSICAL MANUFACTURED OBJECT and MODEL OF PHYSICAL BIOLOGICAL OBJECT *is a disjunctive sub division of* MODEL OF PHYSICAL OBJECT.

Properties

[EP/SL] A MODEL OF PHYSICAL OBJECT is a MEDICAL IMAGE SIMULATION OBJECT MODEL

Comment

[DEF] A Model of physical object is a model which represents a physical object in the real world.

Model of physical manufactured object

Properties

[EP/SL] A MODEL OF PHYSICAL MANUFACTURED OBJECT is a MEDICAL IMAGE SIMULATION OBJECT MODEL. [EP/ER] A MODEL OF PHYSICAL MANUFACTURED OBJECT *refers to* at least one MANUFACTURED OBJECT

Comment

[DEF] A Model of physical manufactured object is a model which represents a manufactured object in the real world.

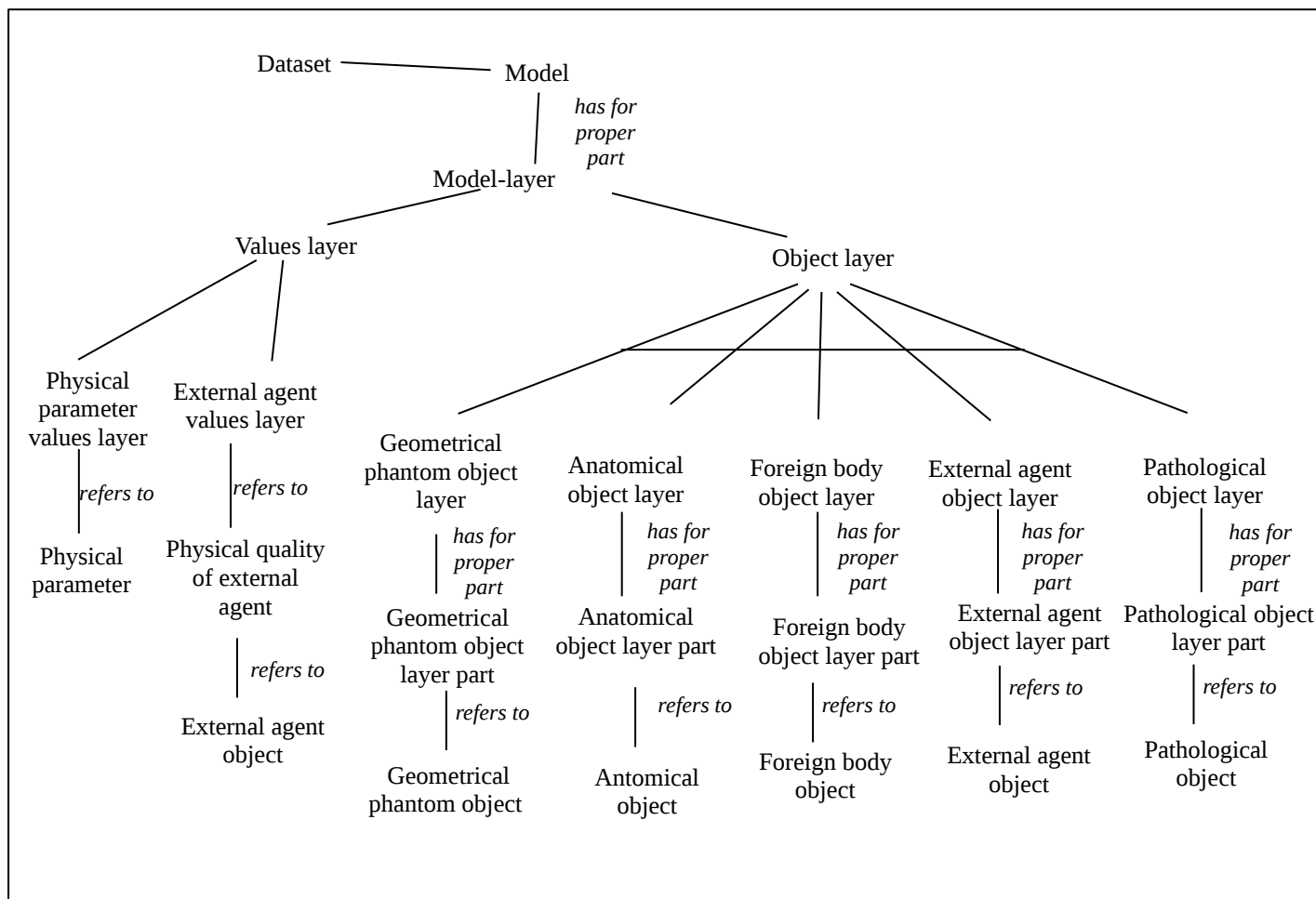
Model of physical biological object

Properties

[EP/SL] A MODEL OF PHYSICAL BIOLOGICAL OBJECT is a MEDICAL IMAGE SIMULATION OBJECT MODEL

Comment

[DEF] A Model of physical biological object is a model which represents a physical biological object in the real world.



Model-Layer

Properties

[EP/SL] A LAYER is a PROPOSITION

Comment

[DEF] A layer represents a specific part of a model, it is used to describe the different information about the composition of a model.

Values layer

Properties

[EP/SL] A VALUES LAYER is a LAYER

Comment

[DEF] A Values layer represents a part of a model as a exhaustive description of the values for each pixel/voxel of the model.

Object layer

Properties

[EP/SL] An OBJECT LAYER is a LAYER

Comment

[DEF] An Object layer represents a part of a model and refers to the different objects represented in a layer.

Physical parameter values layer

Properties

[EP/SL] A PHYSICAL PARAMETER VALUES LAYER is a VALUES LAYER. [EP/ER] A PHYSICAL PARAMETER VALUES LAYER *refers to* exactly one PHYSICAL PARAMETER

Comment

[DEF] Physical parameter values layers are used when physical parameters are embedded within a model. This is typically the case when the user provides its own physical parameters.

External agent values layer

Properties

[EP/SL] An EXTERNAL AGENT VALUES LAYER is a VALUES LAYER. [EP/ER] A EXTERNAL AGENT VALUES LAYER *refers to* exactly one PHYSICAL QUALITY OF EXTERNAL AGENT

Comment

[DEF] An External agent values layer is a layer which represents the information about an external agent as an exhaustive map of values.

Geometrical phantom object layer

Properties

[EP/SL] A GEOMETRICAL PHANTOM OBJECT LAYER is an OBJECT LAYER. [EP/ER] A GEOMETRICAL PHANTOM OBJECT LAYER *has for proper part* at least one GEOMETRICAL PHANTOM OBJECT LAYER PART *during a* TIME INTERVAL

Comment

[DEF] A Geometrical phantom object layer is an object layer which refers to some Geometrical phantom object. These Geometrical phantom objects are generally made of simple geometrical shapes (e.g. sphere, cube, etc.) and used for test and calibration.

Geometrical phantom object

Properties

[EP/SL] A GEOMETRICAL PHANTOM OBJECT *is a* PHYSICAL ENDURANT

Comment

[DEF] Geometrical phantom objects are generally made of simple geometrical shapes (e.g. sphere, cube, etc.) and used for test and calibration

Anatomical object layer

Properties

[EP/SL] An ANATOMICAL OBJECT LAYER is an OBJECT LAYER. [EP/ER] An ANATOMICAL OBJECT LAYER *has for proper part* at least one ANATOMICAL OBJECT LAYER PART *during a* TIME INTERVAL

Comment

[DEF] An Anatomical object layer is a layer which refers to some Anatomical object

Anatomical object

Properties

[EP/SL] An ANATOMICAL OBJECT *is a* PHYSICAL ENDURANT

Comment

[DEF & CIT] An Anatomical object is an object referring to the anatomy. *“Physical anatomical entity which has mass. Examples: hemoglobin molecule, mitochondrion,*

hepatocyte, erythrocyte, heart, head, blood, urine.” Source : FMA definition of “Material_anatomical_entity”

Foreign body object layer

Properties

[EP/SL] A FOREIGN BODY OBJECT LAYER *is an* OBJECT LAYER. [EP/ER] A FOREIGN BODY OBJECT LAYER *has for proper part* at least one FOREIGN BODY OBJECT PART *during a* TIME INTERVAL

Comment

[DEF] A Foreign body object layer is a layer which refers to some Foreign body object.

Foreign body object

Properties

[EP/SL] A FOREIGN BODY OBJECT *is a* PHYSICAL ENDURANT

Comment

[DEF & CIT] “*In physiology, a foreign body (Latin: corpus alienum) is any object originating outside the body. “ source : http://en.wikipedia.org/wiki/Foreign_body . “Objects that inadvertently enter the body or body cavities from the environment.” source : MeSH. Example : needles.*

External agent object layer

Properties

[EP/SL] An EXTERNAL AGENT OBJECT LAYER *is an* OBJECT LAYER. [EP/ER] An EXTERNAL AGENT OBJECT LAYER *has for proper part* at least one EXTERNAL AGENT OBJECT PART *during a* TIME INTERVAL

Comment

[DEF] An External agent object layer is an Object layer which refers to some External agent.

External agent object

Properties

[EP/SL] An EXTERNAL AGENT OBJECT *is a* PHYSICAL ENDURANT

Comment

[DEF] An External agent object represents an external agent which can be for example a contrast agent or a marker (e.g. iodine or a radiopharmaceutical injected into the patient vasculature). It can also contain the concentration information.

Pathological object layer

Properties

[EP/SL] A PATHOLOGICAL OBJECT LAYER *is an* OBJECT LAYER. [EP/ER] A PATHOLOGICAL OBJECT LAYER *has for proper part* at least one PATHOLOGICAL OBJECT PART *during a* TIME INTERVAL

Comment

[DEF] A Pathological object layer is composed of one or more Pathological object part

Pathological object

Properties

[EP/SL] A PATHOLOGICAL OBJECT *is a* PHYSICAL ENDURANT

Comment

[DEF] A Pathological object is an abnormal biological object: examples of such abnormalities are : atrophy, presence of a tumor, presence of hyper of hypo-metabolism.

Geometrical phantom object layer part

Properties

[EP/SL] A GEOMETRICAL PHANTOM OBJECT LAYER PART *is a* LAYER PART.

[EP/ER] A GEOMETRICAL PHANTOM OBJECT LAYER PART *refers to* exactly one GEOMETRICAL PHANTOM OBJECT

Comment

[DEF] A Geometrical phantom object layer part is a part of a Geometrical phantom object layer which refers to a Geometrical phantom object.

Anatomical object layer part

Properties

[EP/SL] An ANATOMICAL OBJECT LAYER PART *is a* LAYER PART. [EP/ER] An ANATOMICAL OBJECT LAYER PART *refers to* exactly one ANATOMICAL OBJECT

Comment

[DEF] An Anatomical object layer part is a part of a Anatomical object layer which refers to an Anatomical object.

Foreign body object layer part

Properties

[EP/SL] FOREIGN BODY OBJECT LAYER PART *is a* LAYER PART. [EP/ER] A FOREIGN BODY OBJECT LAYER PART *refers to* exactly one FOREIGN BODY OBJECT

Comment

[DEF] A Foreign body object layer part is a part of a Foreign body object layer which refers to a Foreign body object.

External agent object layer part

Properties

[EP/SL] EXTERNAL AGENT OBJECT LAYER PART *is a* LAYER PART. [EP/ER] An EXTERNAL AGENT OBJECT LAYER PART *refers to* exactly one EXTERNAL AGENT OBJECT

Comment

[DEF] A External agent object layer part is a part of a External agent object layer which refers to a External agent object.

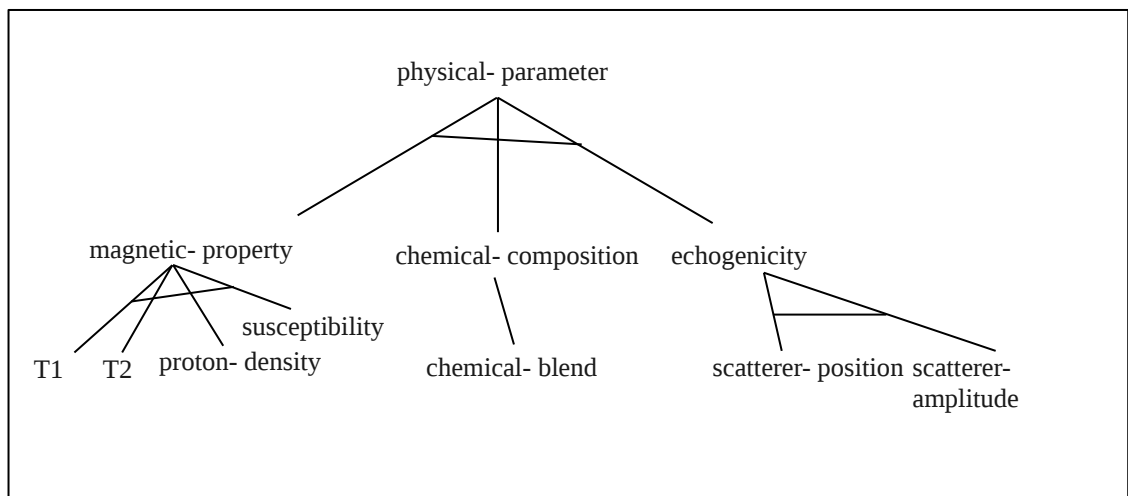
Pathological object layer part

Properties

[EP/SL] A PATHOLOGICAL OBJECT LAYER PART *is a* LAYER PART. [EP/ER] A PATHOLOGICAL OBJECT LAYER PART *refers to* exactly one PATHOLOGICAL OBJECT

Comment

[DEF] A Pathological object layer part is a part of a Pathological object layer which refers to a Pathological object.



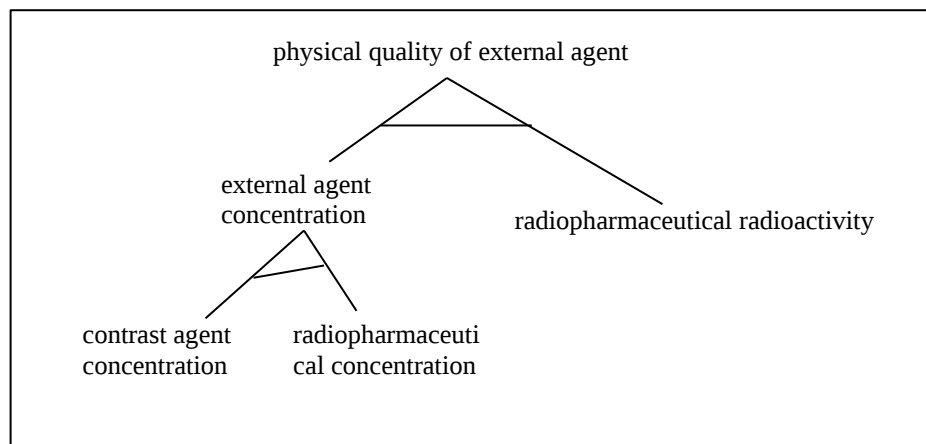
Physical parameter

Properties

[EP/SL] A PHYSICAL PARAMETER is a PHYSICAL QUALITY

Comment

[DEF] A Physical parameters represents a type of physical parameters (e.g. T1, T2, etc.).



Physical quality of external agent

Properties

[EP/SL] A PHYSICAL QUALITY OF EXTERNAL AGENT is a PHYSICAL QUALITY.

[EP/ER] A PHYSICAL QUALITY OF EXTERNAL AGENT *is a quality of* exactly one EXTERNAL AGENT

Comment

[DEF] A Physical quality of external agent represents the quality represented by an external agent, for example : the concentration.

External agent concentration

Properties

[EP/SL] An EXTERNAL AGENT CONCENTRATION *is a* PHYSICAL QUALITY OF EXTERNAL AGENT

Comment

[DEF]

Contrast agent concentration

Properties

[EP/SL] A CONTRAST AGENT CONCENTRATION *is a* EXTERNAL AGENT CONCENTRATION

Comment

[DEF]

Radiopharmaceutical concentration

Properties

[EP/SL] A RADIOPHARMACEUTICAL CONCENTRATION *is a* EXTERNAL AGENT CONCENTRATION

Comment

[DEF]

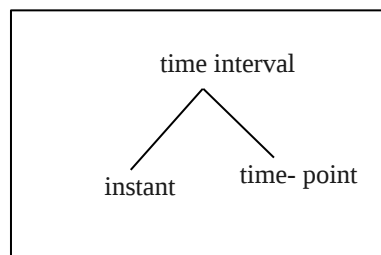
Radiopharmaceutical radioactivity

Properties

[EP/SL] A RADIOPHARMACEUTICAL RADIOACTIVITY *is a* PHYSICAL QUALITY OF EXTERNAL AGENT

Comment

[DEF]



Time point

Properties

[EP/SL] A TIME POINT *is a* TIME INTERVAL. [EP/ER] A TIME POINT *has for part* at least one INSTANT

Comment

[DEF] A Time point is composed of at least one instant. It is used to represent time changes in the models. A Time point is typically used in Longitudinal follow up object models to identify the different points in time where the composition of the model is known.

Instant

Properties

[EP/SL] An INSTANT *is a* TIME INTERVAL. [EP/ER]

Comment

[DEF] A Instant is used to represent time changes in Moving object models.

