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Model Documentation

Model Detail

This document provides a complete overview of all element details. For simpler and more focused reports, simply copy this initial template and turn off the sections not required.

cim

Type: **Package**
Status: Proposed. Version 1.0. Phase 1.0.
Package: Domain Model
Detail: *Created on 12/17/2014. Last modified on 12/17/2014*
GUID: {03FABA6B-8DF7-41db-8FE3-80E6303260E4}

CIM - *(Logical diagram)*
Created By: Allyn.Treshansky *on* 1/11/2006
Last Modified: 3/6/2011
Version: 1.0. *Locked:* False
GUID: {D49769EB-3575-4ad7-9A02-B9FE32EC4D55}

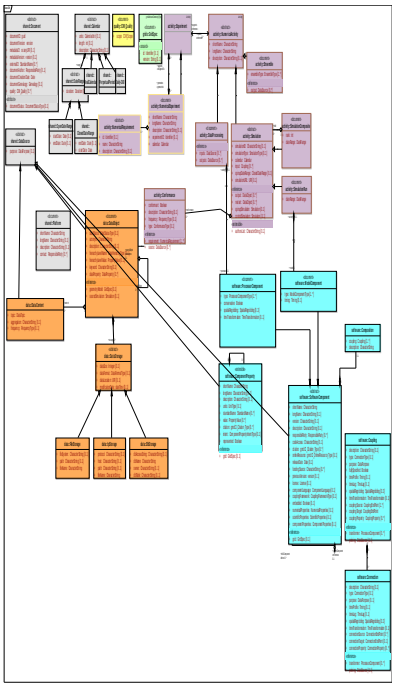

Figure: 1

activity

Type: **Package**
Status: Proposed. Version 1.0. Phase 1.0.
Package: cim
Detail: *Created on 11/27/2008. Last modified on 12/9/2008*
GUID: {979488DA-0149-4c4b-B458-9C5D1C4741F1}
The Activity package contains classes that are most closely associated with the "human" side of the climate modelling process. They describe tasks.

Activity - *(Logical diagram)*
Created By: bnl *on* 9/9/2008
Last Modified: 3/20/2014
Version: 1.0. *Locked:* False
GUID: {C004A3F6-DC41-42f6-BFCB-2A9DE9A69B72}

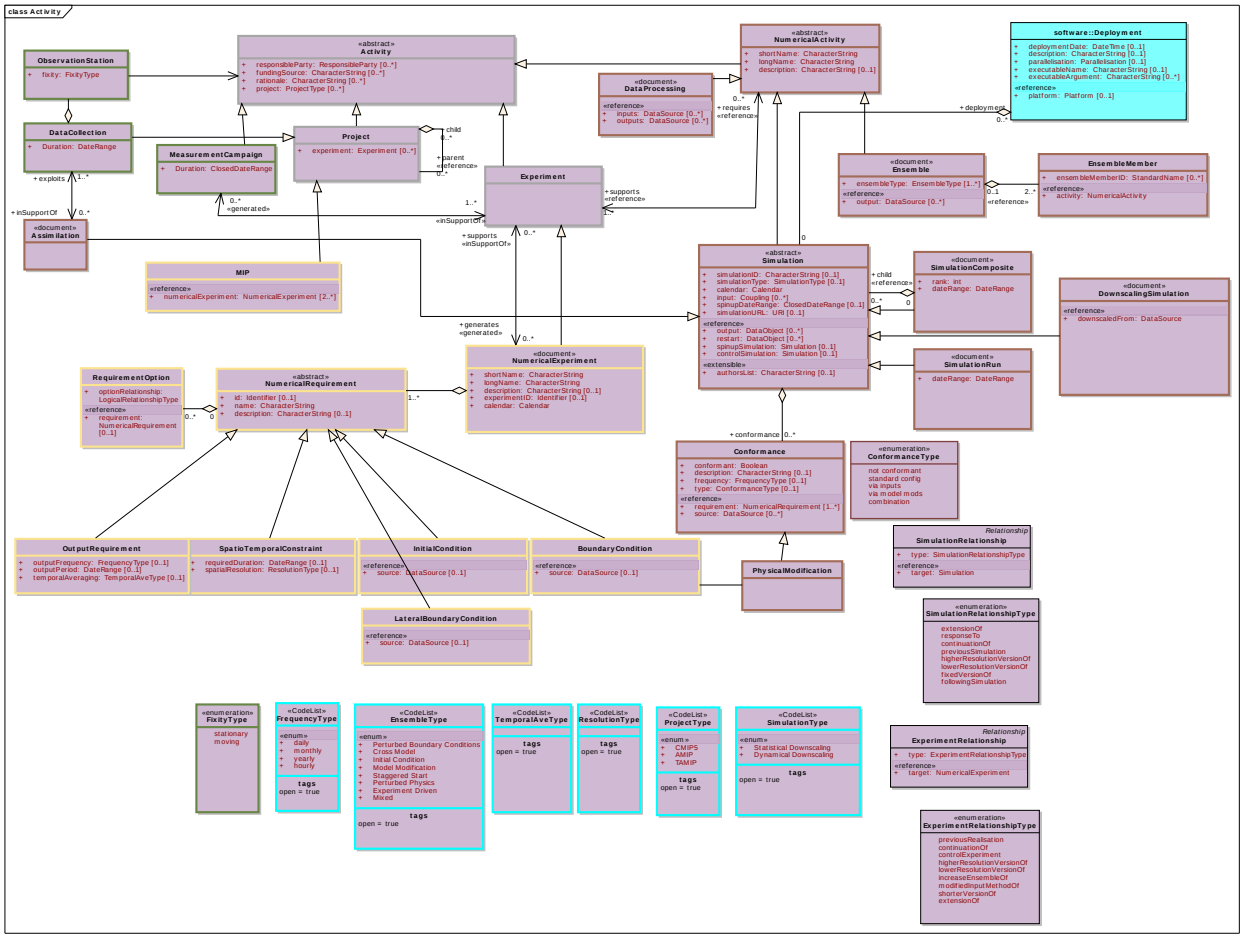

Figure: 2

Brown: Implementation - *(Logical diagram)*
Created By: clp73 *on* 9/29/2008
Last Modified: 1/16/2009
Version: 1.0. *Locked:* False
GUID: {BC75DF04-3DC7-42cc-9A6B-36ADAFAC7245}

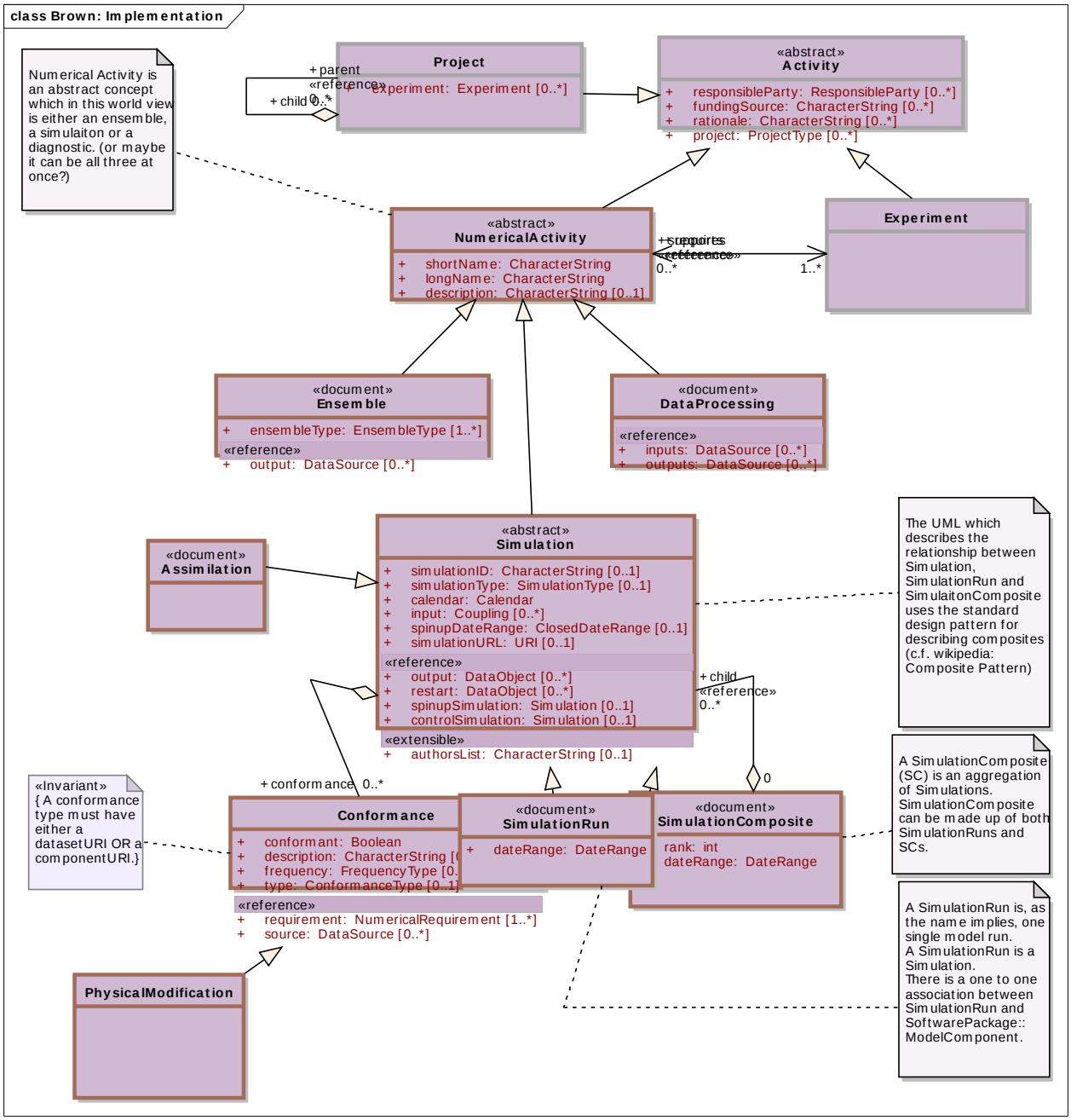

Figure: 3

Green: Observations - *(Logical diagram)*
Created By: clp73 *on* 9/29/2008
Last Modified: 10/9/2008
Version: 1.0. *Locked:* False
GUID: {14CB3B9C-3FA7-4e37-8919-DF23E3786EC0}
The green observation classes are on this UML diagram to ensure that the metafor ConCIM will fit in with existing (MOLES) data structures at the BADC.

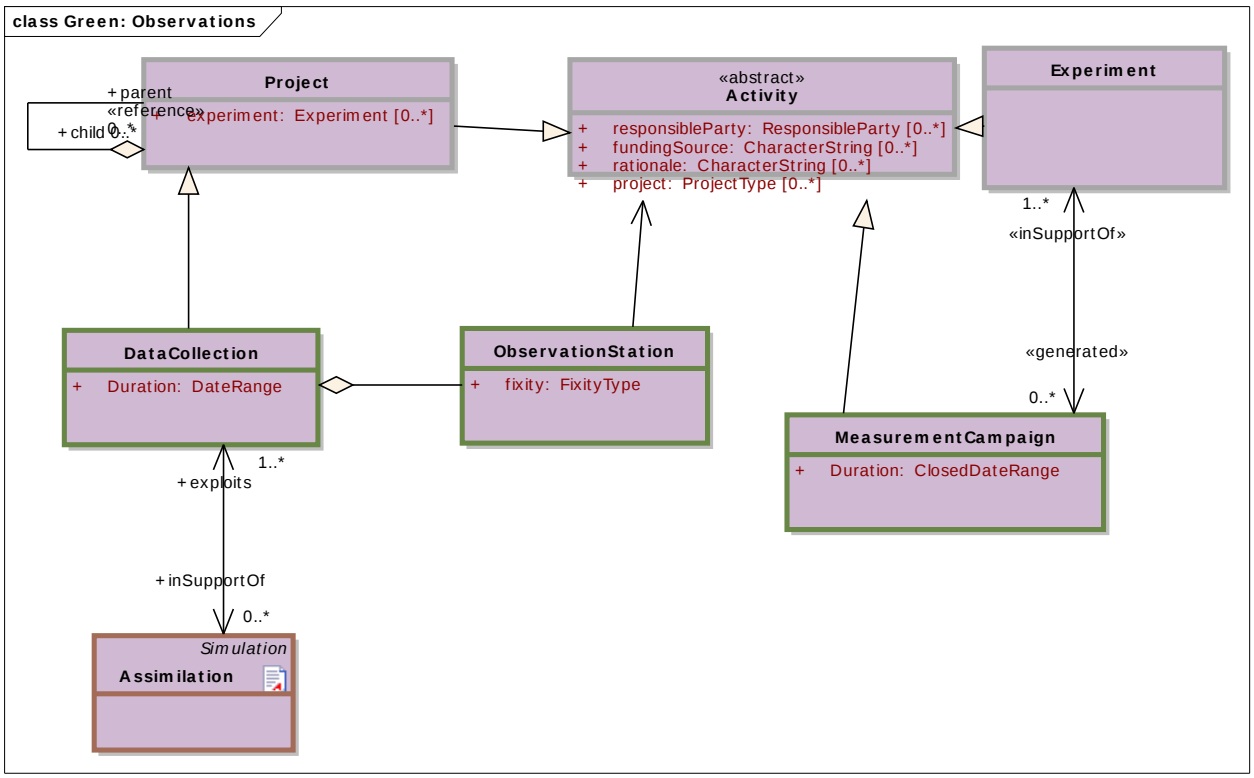

Figure: 4

Yellow: Requirements - *(Logical diagram)*
Created By: lawrence *on* 9/23/2008
Last Modified: 10/22/2008
Version: 1.0. *Locked:* False
GUID: {6BF53CD6-986B-414a-89A5-20DBCF5690BE}

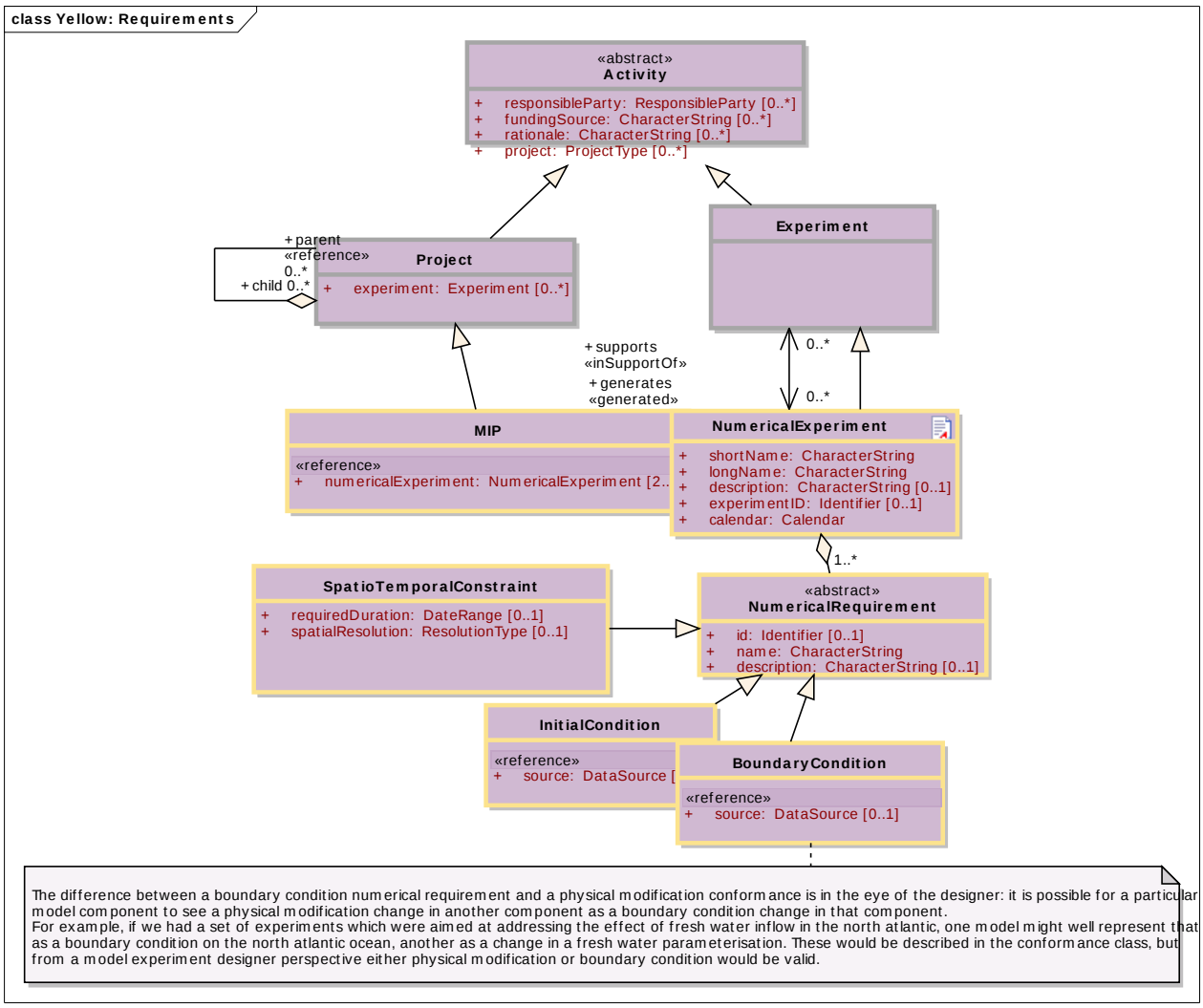

Figure: 5

Activity

Type: **Abstract**
Status: Proposed. Version 1.0. Phase 1.0.
Package: activity *Keywords:*
Detail: *Created on 2/15/2008. Last modified on 8/12/2009.*
GUID: {1944903A-BD94-402f-8D11-C38E55412D3A}

An abstract class used as the parent of MeasurementCampaigns, Projects, Experiments, and NumericalActivities.

Custom Properties

- isActive = False

Connections

Connector	Source	Target	Notes
Generalization Source -> Destination	Public Experiment	Public Activity	
Generalization Source -> Destination	Public NumericalActivity	Public Activity	
Generalization Source -> Destination	Public MeasurementCampaign	Public Activity	
Generalization Source -> Destination	Public Project	Public Activity	
Association Source -> Destination	Public ObservationStation	Public Activity	

Attributes

Attribute	Notes	Constraints and tags
responsibleParty ResponsibleParty Public [0..*]	The point of contact(s) for this activity.This includes, among others, the principle investigator.	*Default:*
fundingSource CharacterString Public [0..*]	The entities that funded this activity.	*Default:*
rationale CharacterString Public [0..*]	For what purpose is this activity being performed?	*Default:*
project ProjectType Public [0..*]	The project(s) that this activity is associated with (ie: CMIP5, AMIP, etc.)	*Default:*

Assimilation

Type: **Class** **Simulation**
Status: Proposed. Version 1.0. Phase 1.0.
Package: activity *Keywords:*
Detail: *Created on 9/18/2008. Last modified on 3/14/2011.*
GUID: {66B9B544-A02A-4194-A504-6C7D6CD6CCF8}

An assimilation is a simulation that is constrained by observations. It is representative of an actual period in the past eg ERA-40.

Custom Properties

- isActive = False

Connections

Connector	Source	Target	Notes
Association Bi-Directional	Public inSupportOf Assimilation	Public exploits DataCollection	
Generalization Source -> Destination	Public Assimilation	Public Simulation	

BoundaryCondition

Type: **Class** **NumericalRequirement**
Status: Proposed. Version 1.0. Phase 1.0.
Package: activity *Keywords:*
Detail: *Created on 9/22/2008. Last modified on 11/3/2008.*
GUID: {734152A8-3164-41b5-AF30-817FF19D143C}

A boundary condition is a numerical requirement which looks like a variable imposed on the model evolution (i.e. it might - or might not - evolve with time, but is seen by the model at various times during its evolution) as opposed to an initial condition (at model time zero).

Custom Properties

- isActive = False

Connections

Connector	Source	Target	Notes

NoteLink	Public <anonymous>	Public BoundaryCondition	
Generalization Source -> Destination	Public BoundaryCondition	Public NumericalRequirement	
Association Unspecified	Public PhysicalModification	Public BoundaryCondition	

Attributes

Attribute	Notes	Constraints and tags
source DataSource Public [0..1] «reference»		*Default:*

Conformance

Type: **Class**
Status: Proposed. Version 1.0. Phase 1.0.
Package: activity *Keywords:*
Detail: *Created on 10/7/2008. Last modified on 1/22/2010.*
GUID: {5D63A8F2-6BB3-4d44-8DA1-84A19369C34A}

A conformance class maps how a configured model component met a specific numerical requirement.

For example, for a double CO2 boundary condition, a model component might read a CO2 dataset in which CO2 has been doubled, or it might modify a parameterisation (presumably with a factor of two somewhere).
So, the conformance links a requirement to a DataSource (which can be either an actual DataObject or a property of a model component).
In some cases a model/simulation may _naturally_ conform to a requirement. In this case there would be no reference to a DataSource but the conformant attribute would be true.

If something is purpopsefully non-conformant then the conformant attribute would be false.

Custom Properties

- isActive = False

Connections

Connector	Source	Target	Notes

NoteLink	Public <anonymous>	Public Conformance	
Generalization Source -> Destination	Public PhysicalModification	Public Conformance	
Aggregation Source -> Destination	Public conformance Conformance	Public Simulation	
Association Unspecified	Public Conformance	Public DataObject	

Attributes

Attribute	Notes	Constraints and tags
conformant Boolean Public	Records whether or not this conformance satisfies the requirement. A simulation should have at least one conformance mapping to every experimental requirement. If a simulation satisfies the requirement - the usual case - then conformant should have a value of "true." If conformant is true but there is no reference to a source for the conformance, then we can assume that the simulation conforms to the requirement _naturally_, that is without having to modify code or inputs. If a simulation does not conform to a requirement then conformant should be set to "false."	*Default:*
description CharacterString Public [0..1]		*Default:*
frequency FrequencyType Public [0..1]		*Default:*
requirement NumericalRequirement Public [1..*] «reference»	Points to the NumericalRequirement that the simulation in question is conforming to.	*Default:*

source DataSource Public [0..*] «reference»	Points to the DataSource used to conform to a particular Requirement. This may be part of an activity::simulation or a software::component. It can be either a DataObject or a SoftwareComponent or a ComponentProperty. It could also be by using particular attributes of, say, a SoftwareComponent, but in that case the recommended practise is to reference the component and add appropriate text in the conformance description attribute.	*Default:*
type ConformanceType Public [0..1]	Describes the method that this simulation conforms to an experimental requirement (in case it is not specified by the change property of the reference to the source of this conformance)	*Default:*

ConformanceType

Type: **Enumeration**
Status: Proposed. Version 1.0. Phase 1.0.
Package: activity *Keywords:*
Detail: *Created on 6/29/2009. Last modified on 3/15/2011.*
GUID: {2094020E-D18A-43b7-95F2-8E813FA1B2B0}

Enumerates the different ways that a simulation can be conformant to an experimental requirement.

Custom Properties

- isActive = False

Attributes

Attribute	Notes	Constraints and tags
not conformant Public «enum»	Describes a simulation that is purpefully non-conformant to an experimental requirement.	*Default:*

standard config Public «enum»	Describes a simulation that is "naturally" conformant to an experimental requirement.	*Default:*
via inputs Public «enum»	Describes a simulation that conforms to an experimental requirement by using particular inputs.	*Default:*
via model mods Public «enum»	Describes a simulation that conforms to an experimental requirement by changing the configuration of the software model implementing that simulation.	*Default:*
combination Public «enum»	Describes a simulation that conforms to an experimental requirement by using more than one method.	*Default:*

DataCollection

Type: **Class** **Project**
Status: Proposed. Version 1.0. Phase 1.0.
Package: activity *Keywords:*
Detail: *Created on 9/18/2008. Last modified on 8/5/2009.*
GUID: {AC712658-636F-4422-8656-AAB91C48F5EE}

A DataCollection activity is one which is not aimed at supporting any specific experiment.

Custom Properties

- isActive = False

Connections

Connector	Source	Target	Notes

Association Bi-Directional	Public inSupportOf Assimilation	Public exploits DataCollection	
Generalization Source -> Destination	Public DataCollection	Public Project	
Aggregation Source -> Destination	Public ObservationStation	Public DataCollection	

Attributes

Attribute	Notes	Constraints and tags
Duration DateRange Public		*Default:*

DataProcessing

Type: **Class** **NumericalActivity**
Status: Proposed. Version 1.0. Phase 1.0.
Package: activity *Keywords:*
Detail: *Created on 9/24/2008. Last modified on 4/2/2010.*
GUID: {9816C4A1-AB15-4535-ACC2-D35AB56C8D9A}

A DataProcessing activity refers to the processing of observation data or post processing of data from a simulation. It does not simulate scientific phenomena like a Simulation activity does. It is associated with a ProcessorComponent as opposed to a ModelComponent.

Custom Properties

- isActive = False

Connections

Connector	Source	Target	Notes
Generalization Source -> Destination	Public DataProcessing	Public NumericalActivity	
Aggregation uses Source -> Destination	Public processor ProcessorComponent	Public activity DataProcessing	

Attributes

Attribute	Notes	Constraints and tags
inputs DataSource Public [0..*] «reference»	the data being processed.	*Default:*
outputs DataSource Public [0..*] «reference»	the data being generated.	*Default:*

DownscalingSimulation

Type: **Class** **Simulation**
Status: Proposed. Version 1.0. Phase 1.0.
Package: activity *Keywords:*
Detail: *Created on 7/10/2012. Last modified on 7/10/2012.*
GUID: {908ADC8B-6437-474a-AB41-4F3F4DECEAE7}

Custom Properties

- isActive = False

Connections

Connector	Source	Target	Notes
Generalization Source -> Destination	Public DownscalingSimulation	Public Simulation	

Attributes

Attribute	Notes	Constraints and tags

downscaledFrom DataSource Public «reference»		*Default:*

DownscalingType

Type: **Enumeration**
Status: Proposed. Version 1.0. Phase 1.0.
Package: activity *Keywords:*
Detail: *Created on 7/10/2012. Last modified on 4/2/2010.*
GUID: {D2F3B41D-CBB9-4b07-9304-119E65CF78F8}

The type of experiment relationship being recorded by an experiment's genealogy.

Custom Properties

- isActive = False

Attributes

Attribute	Notes	Constraints and tags
statistical Public «enum»		*Default:*
dynamic Public «enum»		*Default:*

EnsembleType

Type: **Class**
Status: Proposed. Version 1.0. Phase 1.0.
Package: activity *Keywords:*

Detail: *Created on 9/24/2008. Last modified on 1/25/2010.*
GUID: {BCCA753C-340F-43f7-8E50-8BC0687CEF3F}

Custom Properties

- isActive = False

Tagged Values

- open = true.

Attributes

Attribute	Notes	Constraints and tags
Perturbed Boundary Conditions Public «enum»		*Default:*
Cross Model Public «enum»		*Default:*
Initial Condition Public «enum»		*Default:*
Model Modification Public «enum»		*Default:*

Staggered Start Public «enum»		*Default:*
Perturbed Physics Public «enum»		*Default:*
Experiment Driven Public «enum»		*Default:*
Mixed Public «enum»		*Default:*

Experiment

Type: **Class** **Activity**
Status: Proposed. Version 1.0. Phase 1.0.
Package: activity *Keywords:*
Detail: *Created on 10/9/2007. Last modified on 4/2/2010.*
GUID: {E0D003E9-4DB3-4168-A4DA-ED5C69AF5EF2}

An experiment might be an activity which is both observational and numerical in focus, for example, a measurement campaign and numerical experiments for an alpine experiment.
It is a place for the scientific description of the reason why an experiment was made.

Custom Properties

- isActive = False

Connections

Connector	Source	Target	Notes
Association Bi-Directional	Public requires An Experiment may require certain NumericalActivities NumericalActivity	Public supports A NumericalActivity is performed "in support of" an Experiment. Experiment	
Generalization Source -> Destination	Public Experiment	Public Activity	
Association Bi-Directional	Public MeasurementCampaign	Public Experiment	
Association Bi-Directional	Public generates NumericalExperiment	Public supports Experiment	
Generalization Source -> Destination	Public NumericalExperiment	Public Experiment	

ExperimentRelationship

Type: **Class** **Relationship**
Status: Proposed. Version 1.0. Phase 1.0.
Package: activity *Keywords:*
Detail: *Created on 6/29/2009. Last modified on 4/2/2010.*
GUID: {091B6D1B-F10F-405e-BA82-97360D066110}

<ul style="margin-top: 0mm; margin-bottom: 0mm; list-style-type: disk; "><ul style="margin-top: 0mm; margin-bottom: 0mm; list-style-type: circle; ">Contains a set of relationship types specific to a simulation document that can be used to describe its genealogy.

Custom Properties

- isActive = False

Connections

Connector	Source	Target	Notes
Generalization Source -> Destination	Public ExperimentRelationship	Public Relationship	

Attributes

Attribute	Notes	Constraints and tags

type ExperimentRelationshipType Public		*Default:*
target NumericalExperiment Public «reference»		*Default:*

ExperimentRelationshipType

Type: **Enumeration**
Status: Proposed. Version 1.0. Phase 1.0.
Package: activity *Keywords:*
Detail: *Created on 6/29/2009. Last modified on 4/2/2010.*
GUID: {57E172B6-08F4-4e44-8ADE-2F768A01961E}

The type of experiment relationship being recorded by an experiment's genealogy.

Custom Properties

- isActive = False

Attributes

Attribute	Notes	Constraints and tags
previousRealisation Public «enum»		*Default:*

continuationOf Public «enum»		*Default:*
controlExperiment Public «enum»		*Default:*
higherResolutionVersionOf Public «enum»		*Default:*
lowerResolutionVersionOf Public «enum»		*Default:*
increaseEnsembleOf Public «enum»		*Default:*
modifiedInputMethodOf Public «enum»		*Default:*

shorterVersionOf Public «enum»		*Default:*
extensionOf Public «enum»		*Default:*

FixityType

Type: **Enumeration**
Status: Proposed. Version 1.0. Phase 1.0.
Package: activity *Keywords:*
Detail: *Created on 9/24/2008. Last modified on 4/2/2010.*
GUID: {BFAA854B-4530-4f9c-ACAE-1DF8218642AF}

Type of fixity for an observation station.

Custom Properties

- isActive = False

Attributes

Attribute	Notes	Constraints and tags
stationary Public «enum»		*Default:*
moving Public «enum»		*Default:*

FrequencyType

Type: **Class**
Status: Proposed. Version 1.0. Phase 1.0.
Package: activity *Keywords:*
Detail: *Created on 9/24/2008. Last modified on 4/2/2010.*
GUID: {C475CA96-934E-40a5-B65D-E0CF89088804}

Measures of frequency.

Custom Properties

- isActive = False

Tagged Values

- open = true.

Attributes

Attribute	Notes	Constraints and tags
daily Public «enum»		*Default:*
monthly Public «enum»		*Default:*
yearly Public «enum»		*Default:*

hourly Public «enum»		*Default:*

InitialCondition

Type: **Class** **NumericalRequirement**
Status: Proposed. Version 1.0. Phase 1.0.
Package: activity *Keywords:*
Detail: *Created on 9/22/2008. Last modified on 11/3/2008.*
GUID: {C6311210-6713-45c8-A72C-9B3E9D2F11A2}

An initial condition is a numerical requirement on a model prognostic variable value at time zero.

Custom Properties

- isActive = False

Connections

Connector	Source	Target	Notes
Generalization Source -> Destination	Public InitialCondition	Public NumericalRequirement	

Attributes

Attribute	Notes	Constraints and tags
source DataSource Public [0..1] «reference»		*Default:*

LateralBoundaryCondition

Type: **Class** **NumericalRequirement**
Status: Proposed. Version 1.0. Phase 1.0.
Package: activity *Keywords:*

Detail: *Created on 7/10/2012. Last modified on 11/3/2008.*
GUID: {446F86AA-5D84-4770-B103-A1E428C00751}

A boundary condition is a numerical requirement which looks like a variable imposed on the model evolution (i.e. it might - or might not - evolve with time, but is seen by the model at various times during its evolution) as opposed to an initial condition (at model time zero).

Custom Properties

- isActive = False

Connections

Connector	Source	Target	Notes
Generalization Source -> Destination	Public LateralBoundaryCondition	Public NumericalRequirement	

Attributes

Attribute	Notes	Constraints and tags
source DataSource Public [0..1] «reference»		*Default:*

MIP

Type: **Class** **Project**
Status: Proposed. Version 1.0. Phase 1.0.
Package: activity *Keywords:*
Detail: *Created on 9/22/2008. Last modified on 8/12/2009.*
GUID: {F4EE4486-5865-44ca-A639-DDEC2CE0CA9F}

Model Intercomparison Project. Exmaple: CMIP5 and CCMVal. A MIP aggregates together many Numerical Experiments. A MIP contains a reference to at least two experiments.

Custom Properties

- isActive = False

Connections

Connector	Source	Target	Notes
Generalization Source -> Destination	Public MIP	Public Project	

Attributes

Attribute	Notes	Constraints and tags
numericalExperiment NumericalExperiment Public [2..*] «reference»	A NumericalExperiment to compare	*Default:*

MeasurementCampaign

Type: **Class** **Activity**
Status: Proposed. Version 1.0. Phase 1.0.
Package: activity *Keywords:*
Detail: *Created on 9/18/2008. Last modified on 11/3/2008.*
GUID: {3785D167-A715-44d2-8CCA-EF132C634729}

Custom Properties

- isActive = False

Connections

Connector	Source	Target	Notes
Generalization Source -> Destination	Public MeasurementCampaign	Public Activity	
Association Bi-Directional	Public MeasurementCampaign	Public Experiment	

Attributes

Attribute	Notes	Constraints and tags

Duration ClosedDateRange Public		*Default:*

NumericalActivity

Type: **Abstract** **Activity**
Status: Proposed. Version 1.0. Phase 1.0.
Package: activity *Keywords:*
Detail: *Created on 9/18/2008. Last modified on 8/12/2009.*
GUID: {63DD906A-D06A-4bdb-9753-91575469DA0C}

Numerical Activity is an abstract concept which in this world view is either an ensemble, a simulaiton or a DataProcessing activity.

Custom Properties

- isActive = False

Connections

Connector	Source	Target	Notes
NoteLink	Public <anonymous>	Public NumericalActivity	
Generalization Source -> Destination	Public Ensemble	Public NumericalActivity	
Association Bi-Directional	Public requires An Experiment may require certain NumericalActivities NumericalActivity	Public supports A NumericalActivity is performed "in support of" an Experiment. Experiment	
Generalization Source -> Destination	Public Simulation	Public NumericalActivity	
Generalization Source -> Destination	Public DataProcessing	Public NumericalActivity	
Generalization Source -> Destination	Public NumericalActivity	Public Activity	

Attributes

Attribute	Notes	Constraints and tags
shortName CharacterString Public		*Default:*
longName CharacterString Public		*Default:*
description CharacterString Public [0..1]		*Default:*

NumericalExperiment

Type: **Class** **Experiment**
Status: Proposed. Version 1.0. Phase 1.0.
Package: activity *Keywords:*
Detail: *Created on 9/22/2008. Last modified on 1/16/2009.*
GUID: {96C5625A-0116-448c-973E-AC132E70CBD7}

A numerical experiment may be generated by an experiment, in which case it is inSupportOf the experiment. But a numerical experiment may also exist as an activity in its own right (as it might be if it were needed for a MIP). Examples: AR4 individual experiments, AR5 individual experiments, RAPID THC experiments etc.

Custom Properties

- isActive = False

Connections

Connector	Source	Target	Notes
Aggregation Source -> Destination	Public NumericalRequirement	Public NumericalExperiment	

Association Bi-Directional	Public generates NumericalExperiment	Public supports Experiment	
Generalization Source -> Destination	Public NumericalExperiment	Public Experiment	

Attributes

Attribute	Notes	Constraints and tags
shortName CharacterString Public		*Default:*
longName CharacterString Public		*Default:*
description CharacterString Public [0..1]		*Default:*
experimentID Identifier Public [0..1]	An experiment ID takes the form <number>.<number>[-<letter>].	*Default:*
calendar Calendar Public	Is the numerical experiment representative of real time, a 360 day year or a perpetual period?	*Default:*

NumericalRequirement

Type: **Abstract**
Status: Proposed. Version 1.0. Phase 1.0.
Package: activity *Keywords:*
Detail: *Created on 9/22/2008. Last modified on 7/13/2010.*
GUID: {5170B74B-E598-436d-85F0-98902869D8D3}

A description of the requirements of particular experiments. Numerical Requirements can be initial conditions, boundary conditions, or physical modificiations.

Custom Properties

- isActive = False

Connections

Connector	Source	Target	Notes
Generalization Source -> Destination	Public SpatioTemporalConstraint	Public NumericalRequirement	
Generalization Source -> Destination	Public BoundaryCondition	Public NumericalRequirement	
Generalization Source -> Destination	Public InitialCondition	Public NumericalRequirement	
Generalization Source -> Destination	Public LateralBoundaryCondition	Public NumericalRequirement	
Generalization Source -> Destination	Public OutputRequirement	Public NumericalRequirement	
Aggregation Source -> Destination	Public RequirementOption	Public NumericalRequirement	
Aggregation Source -> Destination	Public NumericalRequirement	Public NumericalExperiment	

Attributes

Attribute	Notes	Constraints and tags

id Identifier Public [0..1]		*Default:*
name CharacterString Public		*Default:*
description CharacterString Public [0..1]		*Default:*

ObservationStation

Type: **Class**
Status: Proposed. Version 1.0. Phase 1.0.
Package: activity *Keywords:*
Detail: *Created on 9/23/2008. Last modified on 11/3/2008.*
GUID: {72B52EA9-9A9B-4365-AA5A-AD92524806F1}

Custom Properties

- isActive = False

Connections

Connector	Source	Target	Notes
Association Source -> Destination	Public ObservationStation	Public Activity	
Aggregation Source -> Destination	Public ObservationStation	Public DataCollection	

Attributes

Attribute	Notes	Constraints and tags
fixity FixityType Public		*Default:*

OutputRequirement

Type: **Class** **NumericalRequirement**
Status: Proposed. Version 1.0. Phase 1.0.
Package: activity *Keywords:*
Detail: *Created on 9/24/2008. Last modified on 2/11/2011.*
GUID: {2AB813E2-67D2-4350-AC83-5955A0965B56}

Custom Properties

- isActive = False

Connections

Connector	Source	Target	Notes
Generalization Source -> Destination	Public OutputRequirement	Public NumericalRequirement	

Attributes

Attribute	Notes	Constraints and tags
outputFrequency FrequencyType Public [0..1]		*Default:*

outputPeriod DateRange Public [0..1]		*Default:*
temporalAveraging TemporalAveType Public [0..1]		*Default:*

PhysicalModification

Type: **Class** **Conformance**
Status: Proposed. Version 1.0. Phase 1.0.
Package: activity *Keywords:*
Detail: *Created on 9/22/2008. Last modified on 11/3/2008.*
GUID: {684E9C34-0A67-4d0e-9A94-6ADDA4EB3389}

Physical modification is the implementation of a boundary condition numerical requirement that is achieved within the model code rather than from some external source file. It might include, for example, a specific rate constant within a chemical reaction, or coefficient value(s) in a parameterisation.
For example, one might require a numerical experiment where specific chemical reactions were turned off - e.g. no heterogeneous chemistry.

Custom Properties

- isActive = False

Connections

Connector	Source	Target	Notes
Generalization Source -> Destination	Public PhysicalModification	Public Conformance	
Association Unspecified	Public PhysicalModification	Public BoundaryCondition	

ProjectType

Type: **Class**

Status: Proposed. Version 1.0. Phase 1.0.
Package: activity *Keywords:*
Detail: *Created on 9/24/2008. Last modified on 1/25/2010.*
GUID: {0B0C290B-9DFB-49b8-AAC7-07EC6A74FDAC}

Custom Properties

- isActive = False

Tagged Values

- open = true.

Attributes

Attribute	Notes	Constraints and tags
CMIP5 Public «enum»		*Default:*
AMIP Public «enum»		*Default:*
TAMIP Public «enum»		*Default:*

RequirementOption

Type: **Class**
Status: Proposed. Version 1.0. Phase 1.0.
Package: activity *Keywords:*

Detail: *Created on 9/22/2008. Last modified on 7/13/2010.*
GUID: {19189628-F3DC-40af-A550-F6AE1A73084F}

A NumericalRequirement that is being used as a set of related requirements; For example if a requirement is to use 1 of 3 boundary conditions, then that "parent" requirement would have three "child" RequirmentOptions (each of one with the XOR optionRelationship).

Custom Properties

- isActive = False

Connections

Connector	Source	Target	Notes
Aggregation Source -> Destination	Public RequirementOption	Public NumericalRequirement	

Attributes

Attribute	Notes	Constraints and tags
requirement NumericalRequirement Public [0..1] «reference»	The requirement being specified by this option	*Default:*
optionRelationship LogicalRelationshipType Public	Describes how this optional (child) requirement is related to its sibling requirements. For example, a NumericalRequirement could consist of a set of optional requirements each with an "OR" relationship meaning use this boundary condition _or_ that one.	*Default:*

ResolutionType

Type: **Class**
Status: Proposed. Version 1.0. Phase 1.0.
Package: activity *Keywords:*
Detail: *Created on 9/24/2008. Last modified on 1/25/2010.*
GUID: {EC5E1FB8-A07F-4091-83BA-30CFAC87B825}

Custom Properties

- isActive = False

Tagged Values

- open = true.

Simulation

Type: **Abstract** **NumericalActivity**
Status: Proposed. Version 1.0. Phase 1.0.
Package: activity *Keywords:*
Detail: *Created on 2/15/2008. Last modified on 4/2/2010.*
GUID: {ABD369EB-2260-4fee-B482-132886CDBA76}

A simulation is the implementation of a numerical experiment. A simulation can be made up of "child" simulations aggregated together to form a "simulation composite". The "parent" simulation can be made up of whole or partial child simulations, the simulation attributes need to be able to capture this.

Custom Properties

- isActive = False

Connections

Connector	Source	Target	Notes
NoteLink	Public <anonymous>	Public Simulation	
Aggregation Source -> Destination	Public conformance Conformance	Public Simulation	
Generalization Source -> Destination	Public Simulation	Public NumericalActivity	
Generalization Source -> Destination	Public Assimilation	Public Simulation	
Aggregation Source -> Destination	Public child Simulation	Public SimulationComposite	
Generalization Source -> Destination	Public DownscalingSimulation	Public Simulation	
Generalization	Public	Public	

Source -> Destination	SimulationRun	Simulation	
Generalization Source -> Destination	Public SimulationComposite	Public Simulation	
Aggregation Source -> Destination	Public Simulation	Public deployment Deployment	

Attributes

Attribute	Notes	Constraints and tags
simulationID CharacterString Public [0..1]		*Default:*
simulationType SimulationType Public [0..1]		*Default:*
calendar Calendar Public		*Default:*
input Coupling Public [0..*]	implemented as a mapping from a source to target; can be a forcing file, a boundary condition, etc.	*Default:*
output DataObject Public [0..*] «reference»		*Default:*

restart DataObject Public [0..*] «reference»		*Default:*
spinupDateRange ClosedDateRange Public [0..1]	The date range that a simulation is engaged in "spinup."	*Default:*
spinupSimulation Simulation Public [0..1] «reference»	The (external) simulation used during "spinup." Note that this element can be used in conjuntion with spinupDateRange. If a simulation has the latter but not the former, then one can assume that the simulation is performing its own spinup.	*Default:*
controlSimulation Simulation Public [0..1] «reference»	Points to a simulation being used as the basis (control) run. Note that only "derived" simulations can describe something as being control; a simulation should not know if it is being used itself as the control of some other run.	*Default:*
authorsList CharacterString Public [0..1] «extensible»		*Default:*
simulationURL URI Public [0..1]	Points to the URL where information about this simulation is maintained (primarily for CCSM)	*Default:*

SimulationComposite

Type: **Class** **Simulation**

Status: Proposed. Version 1.0. Phase 1.0.
Package: activity *Keywords:*
Detail: *Created on 10/21/2008. Last modified on 12/12/2008.*
GUID: {71452308-4E12-43db-A8CC-F63BC4A99597}

A SimulationComposite is an aggregation of Simulaitons.
With the aggreation connector between Simulation and SimulationComposite(SC) the SC can be made up of both SimulationRuns and SCs.

The SimulationComposite is the new name for the concept of SimulationCollection: A simulation can be made up of "child" simulations aggregated together to form a "simulation composite". The "parent" simulation can be made up of whole or partial child simulations and the SimulationComposite attributes need to be able to capture this.

Custom Properties

- isActive = False

Connections

Connector	Source	Target	Notes
NoteLink	Public <anonymous>	Public SimulationComposite	
Aggregation Source -> Destination	Public child Simulation	Public SimulationComposite	
Generalization Source -> Destination	Public SimulationComposite	Public Simulation	

Attributes

Attribute	Notes	Constraints and tags
rank int Public	Position of a simulation in the SimulationComposite timeline. eg: Is this the first (rank = 1) or second (rank = 2) simulation	*Default:*
dateRange DateRange Public		*Default:*

SimulationRelationship

Type: **Class** **Relationship**
Status: Proposed. Version 1.0. Phase 1.0.
Package: activity *Keywords:*
Detail: *Created on 6/29/2009. Last modified on 4/2/2010.*
GUID: {5B0F133F-2B9C-4993-A83A-4D9565036F97}

Contains a set of relationship types specific to a simulation document that can be used to describe its genealogy. <ul style="margin-top: 0mm; margin-bottom: 0mm; list-style-type: disk; "><ul style="margin-top: 0mm; margin-bottom: 0mm; list-style-type: circle; ">

Custom Properties

- isActive = False

Connections

Connector	Source	Target	Notes
Generalization Source -> Destination	Public SimulationRelationship	Public Relationship	

Attributes

Attribute	Notes	Constraints and tags
type SimulationRelationshipType Public		*Default:*
target Simulation Public «reference»		*Default:*

SimulationRelationshipType

Type: **Enumeration**
Status: Proposed. Version 1.0. Phase 1.0.

Package: activity *Keywords:*
Detail: *Created on 6/29/2009. Last modified on 4/2/2010.*
GUID: {CDBBB5E1-5359-47a2-8F1C-E2ADAD884687}

The types of relationships that can be described in a simulation's genealogy.

Custom Properties

- isActive = False

Attributes

Attribute	Notes	Constraints and tags
extensionOf Public «enum»		*Default:*
responseTo Public «enum»		*Default:*
continuationOf Public «enum»		*Default:*
previousSimulation Public «enum»		*Default:*

higherResolutionVersionOf Public «enum»		*Default:*
lowerResolutionVersionOf Public «enum»		*Default:*
fixedVersionOf Public «enum»		*Default:*
followingSimulation Public «enum»		*Default:*

SimulationRun

Type: **Class** **Simulation**
Status: Proposed. Version 1.0. Phase 1.0.
Package: activity *Keywords:*
Detail: *Created on 10/23/2008. Last modified on 8/12/2009.*
GUID: {2B925BF9-5D6E-4b06-89A6-06544210D848}

A SimulationRun is, as the name implies, one single model run.
A SimulationRun is a Simulation.
There is a one to one association between SimulationRun and (a top-level) SoftwarePackage::ModelComponent.

Custom Properties

- isActive = False

Connections

Connector	Source	Target	Notes
NoteLink	Public <anonymous>	Public SimulationRun	
Aggregation uses Source -> Destination	Public model ModelComponent	Public activity SimulationRun	
Generalization Source -> Destination	Public SimulationRun	Public Simulation	

Attributes

Attribute	Notes	Constraints and tags
dateRange DateRange Public	A DateRange can be used to specify a startPoint, and optionally an endPoint, or an explicit duration.	*Default:*

SimulationType

Type: **Class**
Status: Proposed. Version 1.0. Phase 1.0.
Package: activity *Keywords:*
Detail: *Created on 4/29/2011. Last modified on 4/29/2011.*
GUID: {8731608A-A1AA-4857-92B1-A9656684E2C6}

The configuration type for a simulation. Primarily this is for users of ESMF to describe their simulation case.

Custom Properties

- isActive = False

Tagged Values

- open = true.

Attributes

Attribute	Notes	Constraints and tags

Statistical Downscaling Public «enum»		*Default:*
Dynamical Downscaling Public «enum»		*Default:*

SpatioTemporalConstraint

Type: **Class NumericalRequirement**
Status: Proposed. Version 1.0. Phase 1.0.
Package: activity *Keywords:*
Detail: *Created on 9/24/2008. Last modified on 11/3/2008.*
GUID: {82799C15-51DA-4af1-9B25-F1C0C7391F54}

Custom Properties

- isActive = False

Connections

Connector	Source	Target	Notes
Generalization Source -> Destination	Public SpatioTemporalConstraint	Public NumericalRequirement	

Attributes

Attribute	Notes	Constraints and tags

requiredDuration DateRange Public [0..1]		*Default:*
spatialResolution ResolutionType Public [0..1]		*Default:*

TemporalAveType

Type: **Class**
Status: Proposed. Version 1.0. Phase 1.0.
Package: activity *Keywords:*
Detail: *Created on 9/24/2008. Last modified on 1/25/2010.*
GUID: {5B1F1E66-03CC-43a4-A6AF-4FB1316BA006}

Custom Properties

- isActive = False

Tagged Values

- open = true.

Ensemble

Type: **Class** **NumericalActivity**
Status: Proposed. Version 1.0. Phase 1.0.
Package: activity *Keywords:*
Detail: *Created on 2/15/2008. Last modified on 6/28/2010.*
GUID: {AFBAC29E-9522-4ad6-8700-DBBECF3A3819}

An ensemble is made up of two or more simulations which are to be compared against each other to create ensemble statistics. Ensemble members can differ in terms of initial conditions, physical parameterisation and the model used.

An ensemble bundles together sets of ensembleMembers, all of which reference the same Simulation(Run) and

include one or more changes.

Custom Properties

- isActive = False

Connections

Connector	Source	Target	Notes
Generalization Source -> Destination	Public Ensemble	Public NumericalActivity	
Aggregation Source -> Destination	Public EnsembleMember	Public Ensemble	

Attributes

Attribute	Notes	Constraints and tags
output DataSource Public [0..*] «reference»		*Default:*
ensembleType EnsembleType Public [1..*]		*Default:*

EnsembleMember

Type: **Class**
Status: Proposed. Version 1.0. Phase 1.0.
Package: activity *Keywords:*
Detail: *Created on 2/15/2008. Last modified on 7/1/2010.*
GUID: {A59013AC-8739-44ec-97C4-2DE4E09D5420}

Custom Properties

- isActive = False

Connections

Connector	Source	Target	Notes
Aggregation Source -> Destination	Public EnsembleMember	Public Ensemble	

Attributes

Attribute	Notes	Constraints and tags
activity NumericalActivity Public «reference»		*Default:*
ensembleMemberID StandardName Public [0..*]		*Default:*

Project

Type: **Class** **Activity**
Status: Proposed. Version 1.0. Phase 1.0.
Package: activity *Keywords:*
Detail: *Created on 7/15/2008. Last modified on 4/2/2010.*
GUID: {32CA4192-E4CB-4335-BDFE-6CB6FD69665D}

A climate project.

Custom Properties

- isActive = False

Connections

Connector	Source	Target	Notes
Generalization	Public	Public	

Source -> Destination	Project	Activity	
Generalization Source -> Destination	Public DataCollection	Public Project	
Aggregation Source -> Destination	Public parent Project	Public child Project	
Generalization Source -> Destination	Public MIP	Public Project	

Attributes

Attribute	Notes	Constraints and tags
experiment Experiment Public [0..*]		*Default:*

data

Type: **Package**
Status: Proposed. Version . Phase 1.0.
Package: cim
Detail: *Created on 11/27/2008. Last modified on 12/9/2008*
GUID: {D3C3018E-CC7C-44b5-9D6C-E22B12537756}

Data - *(Logical diagram)*
Created By: k204039 *on* 10/16/2008
Last Modified: 3/8/2011
Version: 1.0. *Locked:* False
GUID: {3EC9221D-9A0C-46c2-BB85-436811C076C6}

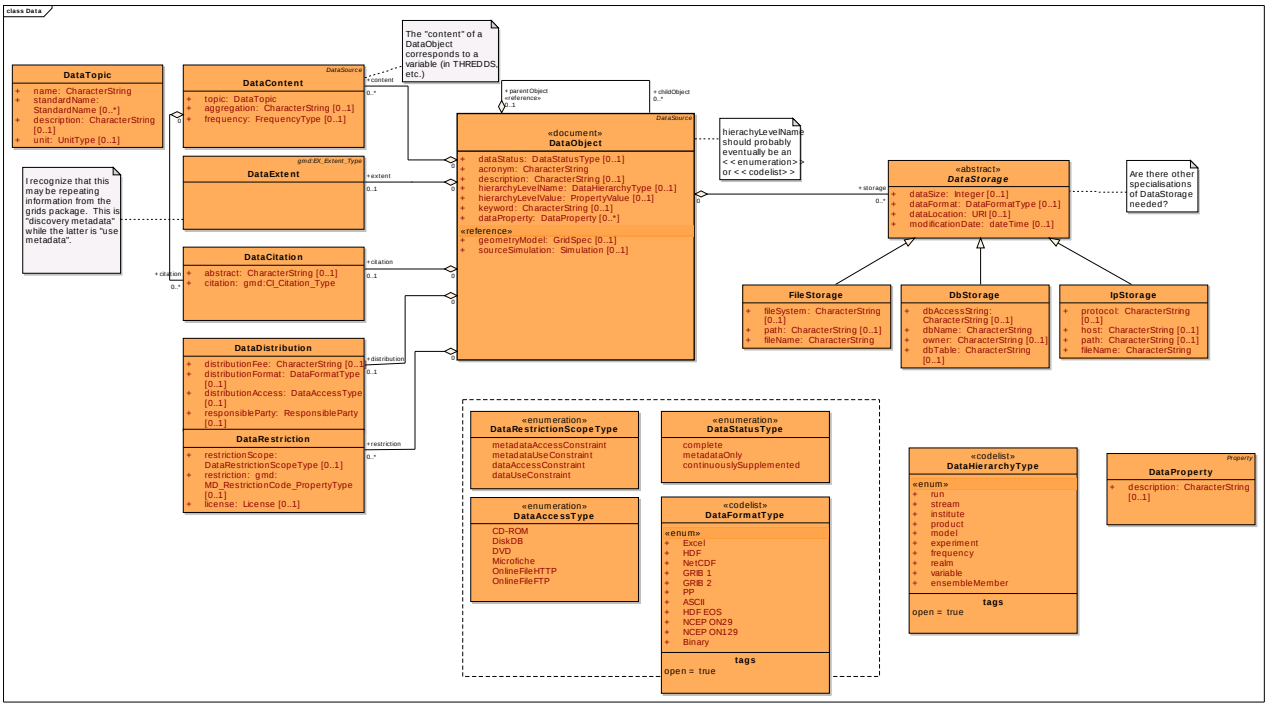

Figure: 6

DataAccessType

Type: **Enumeration**
Status: Proposed. Version 1.0. Phase 1.0.
Package: data *Keywords:*
Detail: *Created on 12/11/2008. Last modified on 3/6/2011.*
GUID: {E5E3D0DC-6A98-45cf-B735-4DA2183FF099}

The format that data is stored in.

Custom Properties

- isActive = False

Attributes

Attribute	Notes	Constraints and tags
CD-ROM Public «enum»		*Default:*

DiskDB Public «enum»		*Default:*
DVD Public «enum»		*Default:*
Microfiche Public «enum»		*Default:*
OnlineFileHTTP Public «enum»		*Default:*
OnlineFileFTP Public «enum»		*Default:*

DataCitation

Type: **Class**
Status: Proposed. Version 1.0. Phase 1.0.
Package: data *Keywords:*
Detail: *Created on 10/8/2008. Last modified on 3/6/2011.*
GUID: {AD573D72-4F78-4ca9-AC47-D7E4FCAE4987}

A description of references to this data from the scientific literature; like ISO: MD_ContentInformation

Custom Properties

- isActive = False

Connections

Connector	Source	Target	Notes
Aggregation Source -> Destination	Public citation DataCitation	Public DataContent	
Aggregation Source -> Destination	Public citation DataCitation	Public DataObject	

Attributes

Attribute	Notes	Constraints and tags
abstract CharacterString Public [0..1]		*Default:*
citation gmd:CI_Citation_Type Public		*Default:*

DataContent

Type: **Class** **DataSource**
Status: Proposed. Version 1.0. Phase 1.0.
Package: data *Keywords:*
Detail: *Created on 10/8/2008. Last modified on 3/6/2011.*
GUID: {CBC6B7E7-8B14-4581-8285-7395FE84F406}

The contents of the data object; like ISO: MD_ContentInformation.

Custom Properties

- isActive = False

Connections

Connector	Source	Target	Notes
NoteLink	Public <anonymous>	Public DataContent	
Generalization Source -> Destination	Public DataContent	Public DataSource	
Aggregation Source -> Destination	Public citation DataCitation	Public DataContent	
Aggregation Source -> Destination	Public content DataContent	Public DataObject	

Attributes

Attribute	Notes	Constraints and tags
topic DataTopic Public		*Default:*
aggregation CharacterString Public [0..1]	Describes how the content has been aggregated together: sum, min, mean, max, ...	*Default:*
frequency FrequencyType Public [0..1]	Describes the frequency of the data content: daily, hourly, ...	*Default:*

DataDistribution

Type: **Class**
Status: Proposed. Version 1.0. Phase 1.0.
Package: data *Keywords:*
Detail: *Created on 10/8/2008. Last modified on 3/6/2011.*
GUID: {A26D57FC-2979-465b-B8D2-9C3F1E7ECFB8}

Describes how a DataObject is distributed.

Custom Properties

- isActive = False

Connections

Connector	Source	Target	Notes
Aggregation Source -> Destination	Public distribution DataDistribution	Public DataObject	

Attributes

Attribute	Notes	Constraints and tags
distributionFee CharacterString Public [0..1]		*Default:*
distributionFormat DataFormatType Public [0..1]		*Default:*
distributionAccess DataAccessType Public [0..1]		*Default:*
responsibleParty ResponsibleParty Public [0..1]		*Default:*

DataExtent

Type: **Class gmd:EX_Extent_Type**
Status: Proposed. Version 1.0. Phase 1.0.
Package: data *Keywords:*
Detail: *Created on 10/21/2008. Last modified on 3/6/2011.*
GUID: {F3F07939-D20D-424b-8706-3072A3238697}

Records the geographic (horizontal and vertical) and temporal extent of the DataObject.

Custom Properties

- isActive = False

Connections

Connector	Source	Target	Notes
NoteLink	Public <anonymous>	Public DataExtent	
Aggregation Source -> Destination	Public extent DataExtent	Public DataObject	

DataFormatType

Type: **Class**
Status: Proposed. Version 1.0. Phase 1.0.
Package: data *Keywords:*
Detail: *Created on 10/22/2008. Last modified on 3/6/2011.*
GUID: {0B4DB83E-5EFE-47f9-A16E-E8961F437B87}

Describes the internal format of the dataset.

Custom Properties

- isActive = False

Tagged Values

- open = true.

Attributes

Attribute	Notes	Constraints and tags
Excel Public «enum»		*Default:*
HDF Public «enum»		*Default:*
NetCDF Public «enum»		*Default:*
GRIB 1 Public «enum»		*Default:*
GRIB 2 Public «enum»		*Default:*
PP Public «enum»		*Default:*

ASCII Public «enum»		*Default:*
HDF EOS Public «enum»		*Default:*
NCEP ON29 Public «enum»		*Default:*
NCEP ON129 Public «enum»		*Default:*
Binary Public «enum»		*Default:*

DataHierarchyType

Type: **Class**
Status: Proposed. Version 1.0. Phase 1.0.
Package: data *Keywords:*
Detail: *Created on 10/22/2008. Last modified on 3/6/2011.*
GUID: {8C11D0CC-33CC-4425-8FBF-3FF48F3AF1C4}

The type of data object that is grouped together into a particular hierarchy. Currently, this is made up of terms describing how the Met Office splits up archived data and how THREDDS categorises variables.

Custom Properties

- isActive = False

Tagged Values

- open = true.

Attributes

Attribute	Notes	Constraints and tags
run Public «enum»		*Default:*
stream Public «enum»		*Default:*
institute Public «enum»		*Default:*
product Public «enum»		*Default:*

model Public «enum»		*Default:*
experiment Public «enum»		*Default:*
frequency Public «enum»		*Default:*
realm Public «enum»		*Default:*
variable Public «enum»		*Default:*
ensembleMember Public «enum»		*Default:*

DataObject

Type: **Class** **DataSource**

Status: Proposed. Version 1.0. Phase 1.0.
Package: data *Keywords:*
Detail: *Created on 10/6/2008. Last modified on 3/6/2011.*
GUID: {A5F7FEF4-DAD8-47dd-8D0A-C49B3FD1A43E}

A DataObject describes a unit of data. DataObjects can be grouped hierarchically. The attributes hierarchyLevelName and hierarchyLevelValue describe how objects are grouped.

Custom Properties

- isActive = False

Connections

Connector	Source	Target	Notes
NoteLink	Public <anonymous>	Public DataObject	
Association Unspecified	Public Conformance	Public DataObject	
Generalization Source -> Destination	Public DataObject	Public DataSource	
Aggregation Source -> Destination	Public restriction DataRestriction	Public DataObject	
Aggregation Source -> Destination	Public extent DataExtent	Public DataObject	
Aggregation Source -> Destination	Public storage DataStorage	Public DataObject	
Aggregation Source -> Destination	Public distribution DataDistribution	Public DataObject	
Aggregation Source -> Destination	Public citation DataCitation	Public DataObject	
Aggregation Source -> Destination	Public content DataContent	Public DataObject	
Aggregation Source -> Destination	Public childObject DataObject	Public parentObject DataObject	

Attributes

Attribute	Notes	Constraints and tags

dataStatus DataStatusType Public [0..1]	The current status of the data - is it complete, or is this metadata description all that is available, or is the data continuously supplemented.	*Default:*
acronym CharacterString Public		*Default:*
description CharacterString Public [0..1]		*Default:*
hierarchyLevelName DataHierarchyType Public [0..1]	What level in the data hierarchy (constructed by the self-referential parent/child aggregations) is this DataObject.	*Default:*
hierarchyLevelValue PropertyValue Public [0..1]	What is the name of the specific HierarchyLevel this DataObject is being organised at (ie: if the HierarchyLevel is "run" then the name might be the runid).	*Default:*
keyword CharacterString Public [0..1]	Descriptive keyword used when searching for DataObjects (this is not the same as shortName / longName / description).	*Default:*

geometryModel GridSpec Public [0..1] «reference»		*Default:*
dataProperty DataProperty Public [0..*]	May not be used	*Default:*
sourceSimulation Simulation Public [0..1] «reference»	Points to the simulation that generated this dataset.	*Default:*

DataProperty

Type: **Class** **Property**
Status: Proposed. Version 1.0. Phase 1.0.
Package: data *Keywords:*
Detail: *Created on 10/20/2008. Last modified on 3/6/2011.*
GUID: {F03941AA-DA66-4e88-863D-A90B3C418EA2}

A property of a DataObject. Currently this is intended to be used to record CF specific information (like packing, scaling, etc.) for OASIS4.

Custom Properties

- isActive = False

Connections

Connector	Source	Target	Notes
Generalization Source -> Destination	Public DataProperty	Public Property	

Attributes

Attribute	Notes	Constraints and tags
description CharacterString Public [0..1]		*Default:*

DataRestriction

Type: **Class**
Status: Proposed. Version 1.0. Phase 1.0.
Package: data *Keywords:*
Detail: *Created on 10/9/2008. Last modified on 3/6/2011.*
GUID: {3698B5BB-D04C-4878-B2DA-75AB029B099C}

An access or use restriction on some element of the DataObject's actual data.

Custom Properties

- isActive = False

Scenarios

- A - Alternate
  Notes

Connections

Connector	Source	Target	Notes
Aggregation Source -> Destination	Public restriction DataRestriction	Public DataObject	

Attributes

Attribute	Notes	Constraints and tags

restrictionScope DataRestrictionScopeType Public [0..1]	The thing (data or metadata, access or use) that this restriction is applied to.	*Default:*
restriction gmd:MD_RestrictionCode_PropertyType Public [0..1]		*Default:*
license License Public [0..1]		*Default:*

DataRestrictionScopeType

Type: **Enumeration**
Status: Proposed. Version 1.0. Phase 1.0.
Package: data *Keywords:*
Detail: *Created on 10/22/2008. Last modified on 3/6/2011.*
GUID: {F3A5ECB1-9F60-459f-82FC-BFEEA2B4110A}

The method by which a data object is restricted.

Custom Properties

- isActive = False

Attributes

Attribute	Notes	Constraints and tags

metadataAccessConstraint MD_Constraints Public «enum»		*Default:*
metadataUseConstraint MD_Constraints Public «enum»		*Default:*
dataAccessConstraint MD_Constraints Public «enum»		*Default:*
dataUseConstraint MD_Constraints Public «enum»		*Default:*

DataStatusType

Type: **Enumeration**
Status: Proposed. Version 1.0. Phase 1.0.
Package: data *Keywords:*
Detail: *Created on 10/22/2008. Last modified on 3/6/2011.*
GUID: {822406C9-0D7A-46c0-902F-371267022B33}

The current status of a data object - complete, always updated, or available as a metadata description only (ie: the actual data is unavailable).

Custom Properties

- isActive = False

Attributes

Attribute	Notes	Constraints and tags
complete Public «enum»	This DataObject is complete.	*Default:*
metadataOnly Public «enum»	This DataObject is incomplete - it is described in metadata but the actual data has not yet been linked to it.	*Default:*
continuouslySupplemented Public «enum»	This DataObject's actual data is continuously updated.	*Default:*

DataStorage

Type: **Abstract**
Status: Proposed. Version 1.0. Phase 1.0.
Package: data *Keywords:*
Detail: *Created on 10/20/2008. Last modified on 3/6/2011.*
GUID: {55AA9E9C-2069-4fed-A27C-819957F245BD}

Describes the method that the DataObject is stored. An abstract class with specific child classes for each supported method.

Custom Properties

- isActive = False

Connections

Connector	Source	Target	Notes
NoteLink	Public DataStorage	Public <anonymous>	
Generalization Source -> Destination	Public DbStorage	Public DataStorage	

Generalization Source -> Destination	Public IpStorage	Public DataStorage	
Aggregation Source -> Destination	Public storage DataStorage	Public DataObject	
Generalization Source -> Destination	Public FileStorage	Public DataStorage	

Attributes

Attribute	Notes	Constraints and tags
dataSize Integer Public [0..1]		*Default:*
dataFormat DataFormatType Public [0..1]		*Default:*
dataLocation URI Public [0..1]	Points to the actual location of the data (used to be dataURI, a feature of DataObject).	*Default:*
modificationDate dateTime Public [0..1]	The date that the file (or other storage medium) has been updated	*Default:*

DataTopic

Type: **Class**
Status: Proposed. Version 1.0. Phase 1.0.
Package: data *Keywords:*

Detail: *Created on 10/8/2008. Last modified on 3/6/2011.*
GUID: {3268157A-A4C2-422a-8777-32270D7AC49C}

Describes the content of a data object; the variable's name, units, etc.

Custom Properties

- isActive = False

Attributes

Attribute	Notes	Constraints and tags
name CharacterString Public		*Default:*
standardName StandardName Public [0..*]		*Default:*
description CharacterString Public [0..1]		*Default:*
unit UnitType Public [0..1]		*Default:*

DbStorage

Type: **Class** **DataStorage**
Status: Proposed. Version 1.0. Phase 1.0.

Package: data *Keywords:*
Detail: *Created on 10/20/2008. Last modified on 3/6/2011.*
GUID: {5BD21A55-87FD-4d31-9B7E-83D35C36720A}

Contains attributes to describe a DataObject being stored in a database.

Custom Properties

- isActive = False

Connections

Connector	Source	Target	Notes
Generalization Source -> Destination	Public DbStorage	Public DataStorage	

Attributes

Attribute	Notes	Constraints and tags
dbAccessString CharacterString Public [0..1]		*Default:*
dbName CharacterString Public		*Default:*
owner CharacterString Public [0..1]		*Default:*

dbTable CharacterString Public [0..1]		*Default:*

FileStorage

Type: **Class** **DataStorage**
Status: Proposed. Version 1.0. Phase 1.0.
Package: data *Keywords:*
Detail: *Created on 10/20/2008. Last modified on 3/6/2011.*
GUID: {0606F3C6-E4BC-4dc4-BA16-88B61754DF44}

Contains attributes to describe a DataObject stored as a single file.

Custom Properties

- isActive = False

Connections

Connector	Source	Target	Notes
Generalization Source -> Destination	Public FileStorage	Public DataStorage	

Attributes

Attribute	Notes	Constraints and tags
fileSystem CharacterString Public [0..1]		*Default:*
path CharacterString Public [0..1]		*Default:*

fileName CharacterString Public		*Default:*

IpStorage

Type: **Class** **DataStorage**
Status: Proposed. Version 1.0. Phase 1.0.
Package: data *Keywords:*
Detail: *Created on 10/20/2008. Last modified on 3/6/2011.*
GUID: {F671B23F-E165-4aeb-9E17-7A1A99E65F99}

Custom Properties

- isActive = False

Connections

Connector	Source	Target	Notes
Generalization Source -> Destination	Public IpStorage	Public DataStorage	

Attributes

Attribute	Notes	Constraints and tags
protocol CharacterString Public [0..1]		*Default:*
host CharacterString Public [0..1]		*Default:*

path CharacterString Public [0..1]		*Default:*
fileName CharacterString Public		*Default:*

grids

Type: **Package**
Status: Proposed. Version 1.0. Phase 1.0.
Package: cim
Detail: *Created on 8/17/2009. Last modified on 8/17/2009*
GUID: {905766D8-2245-41fd-9FB8-B3E0E3EF9E25}

Grid Cell Classes - *(Logical diagram)*
Created By: philip.bentley *on* 2/3/2009
Last Modified: 2/3/2009
Version: 1.0. *Locked:* False
GUID: {AFFCAA98-0A69-4a60-8C3D-ED3D7A9684E3}

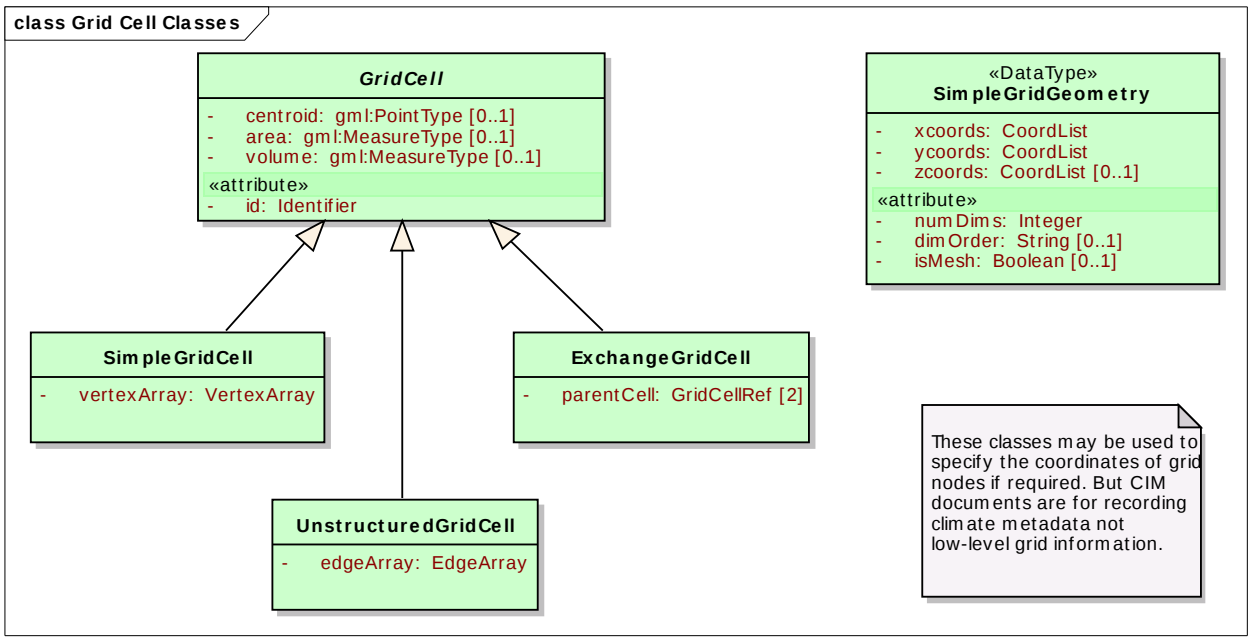

Figure: 7

GridSpec Classes - *(Logical diagram)*
Created By: philip.bentley *on* 2/3/2009
Last Modified: 3/18/2009
Version: 1.0. *Locked:* False
GUID: {FB364C63-8EB7-45ff-AD57-DF6CBCB676E7}

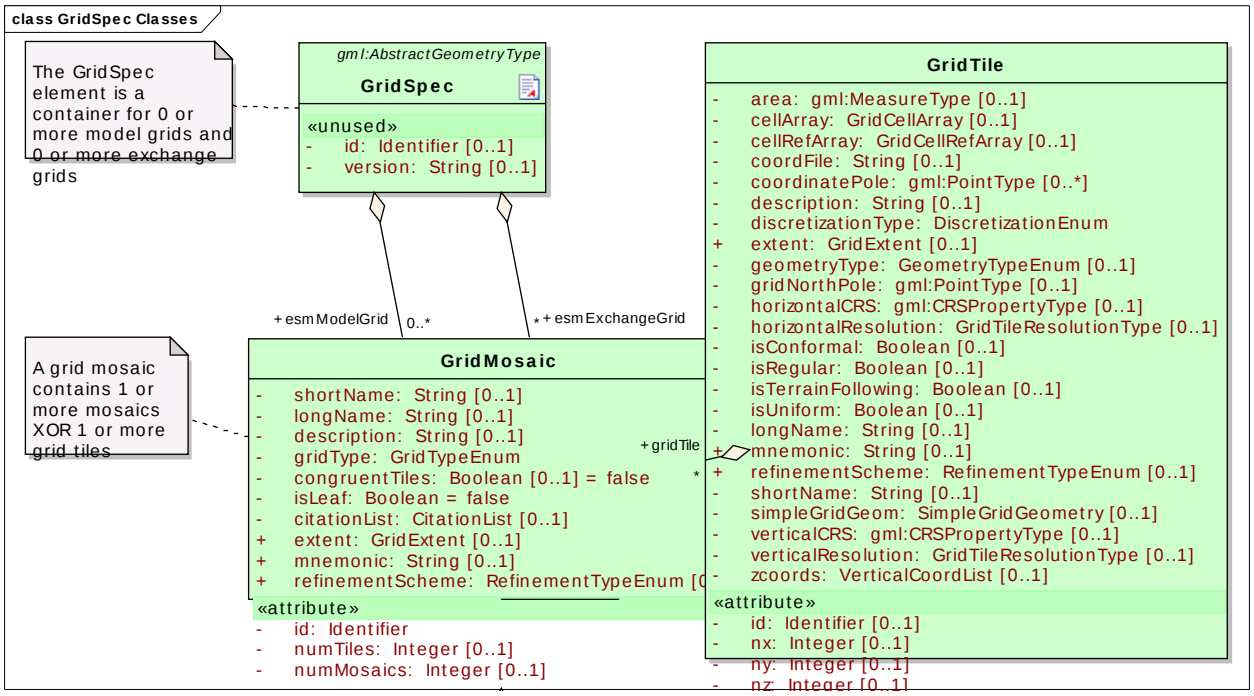

Figure: 8

Grids Package Diagram - *(Logical diagram)*
Created By: philip.bentley *on* 1/11/2006
Last Modified: 3/16/2011
Version: 1.0. *Locked:* False
GUID: {3232C69D-F0D8-461a-9AE3-672138106AD9}

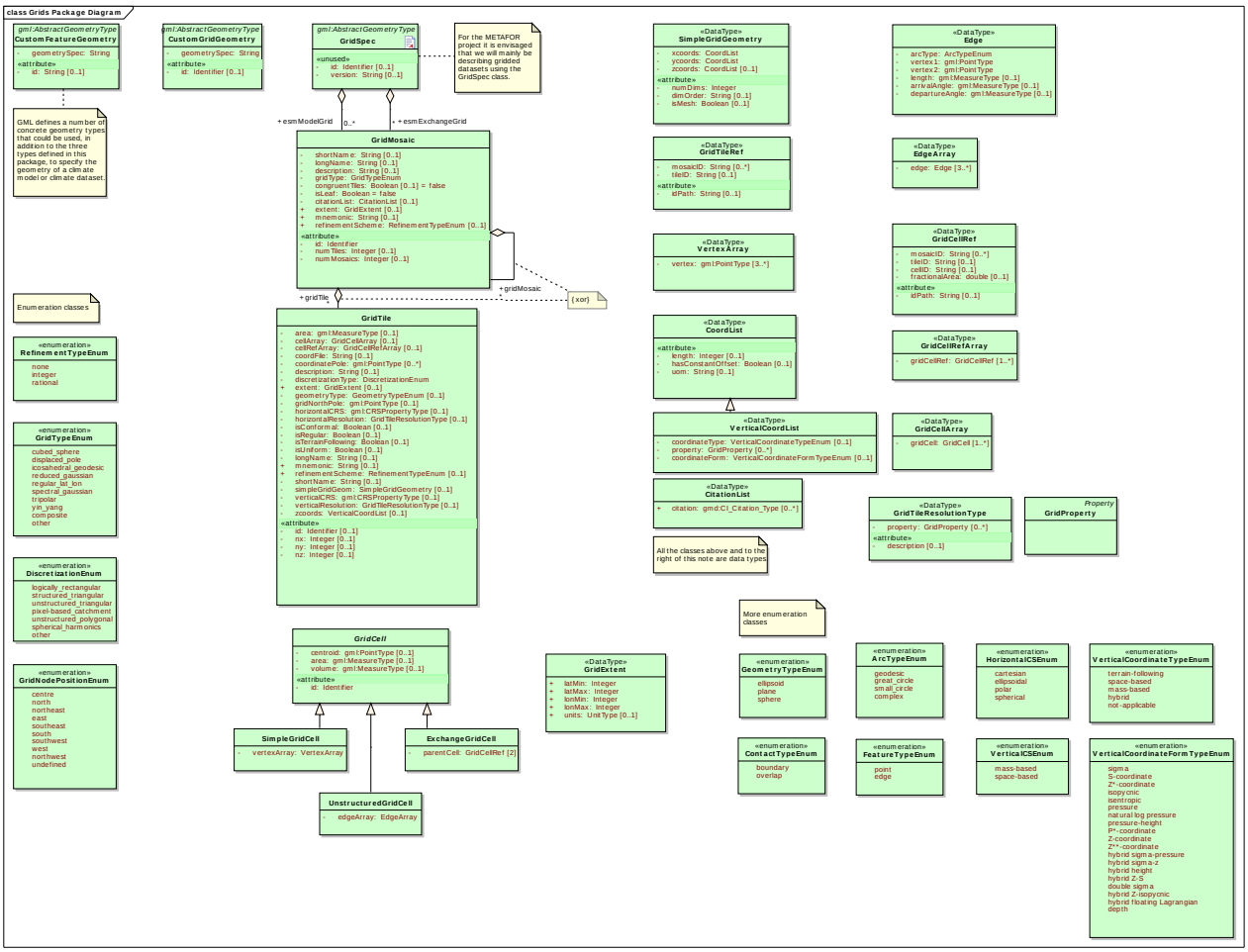

Figure: 9

ArcTypeEnum

Type: **Enumeration**
Status: Proposed. Version 1.0. Phase 1.0.
Package: grids *Keywords:*
Detail: *Created on 10/9/2008. Last modified on 2/3/2009.*
GUID: {34B1E228-6362-4b7d-BF85-8A3F64808F2A}

The ArcType enumeration may be used to indicate the type of the curves (arcs) that connect the grid nodes in a grid tile. The 'complex' enumeration should be used when the arc type is not one of the other well-known types.

Custom Properties

- isActive = False

Attributes

Attribute	Notes	Constraints and tags
geodesic Public		*Default:*
great_circle Public		*Default:*
small_circle Public		*Default:*
complex Public		*Default:*

CitationList

Type: **Class**
Status: Proposed. Version 1.0. Phase 1.0.
Package: grids *Keywords:*
Detail: *Created on 1/29/2009. Last modified on 11/30/2010.*
GUID: {AB5D3079-DD1E-4da3-BE08-9221461CACEF}

Simple data type for specifying a list of references.

Custom Properties

- isActive = False

Attributes

Attribute	Notes	Constraints and tags
citation gmd:CI_Citation_Type Public [0..*]	A detailed description of a citation	*Default:*

ContactTypeEnum

Type: **Enumeration**
Status: Proposed. Version 1.0. Phase 1.0.
Package: grids *Keywords:*
Detail: *Created on 10/9/2008. Last modified on 2/3/2009.*
GUID: {CFDAF27B-07FC-40ca-81F5-E8FA2CF835B1}

The ContactType enumeration is used to indicate the nature of the contact between two grid tiles. Use boundary if they touch, overlap if they overlap.

Note: this enumeration is not required by the current version of the CIM.

Custom Properties

- isActive = False

Attributes

Attribute	Notes	Constraints and tags
boundary Public		*Default:*

overlap Public		*Default:*

CoordList

Type: **Class**
Status: Proposed. Version 1.0. Phase 1.0.
Package: grids *Keywords:*
Detail: *Created on 1/22/2009. Last modified on 2/2/2009.*
GUID: {CFC25640-B10B-43c4-ACEF-621F9E7C60C5}

The CoordList type may be used to specify a list of coordinates, typically for the purpose of defining coordinates along the X, Y or Z axes. The length of the coordinate list is given by the attribute of that name. This may be used by software to allocate memory in advance of storing the coordinate values. The hasConstantOffset attribute may be used to indicate that the coordinate list consists of values with constant offset (spacing). In this case only the first coordinate value and the offset (spacing) value need to be specified; however, the length attribute must still define the final 'as-built' size of the coordinate list.

Custom Properties

- isActive = False

Tagged Values

- mixed = true.

Connections

Connector	Source	Target	Notes
Generalization Source -> Destination	Public VerticalCoordList	Public CoordList	

Attributes

Attribute	Notes	Constraints and tags

length Integer Private [0..1] «attribute»	Specifies the length of the coordinate array. This should always be the final, as-built length of the array if the hasConstantOffset property is set to true and the compact notation (start coordinate plus offset) is used.	*Default:*
hasConstantOffset Boolean Private [0..1] «attribute»	Set to true if coordinates in the built array have constant offset.	*Default:*
uom String Private [0..1] «attribute»	Units of measure used by the coordinates.	*Default:*

CustomFeatureGeometry

Type: **Class** **gml:AbstractGeometryType**
Status: Proposed. Version 1.0. Phase 1.0.
Package: grids *Keywords:*
Detail: *Created on 10/7/2008. Last modified on 3/9/2009.*
GUID: {37B76C39-92FE-44d1-B17E-55A7B0754C6B}

This class may be used to provide a custom, i.e. local and non-standard, description of the feature geometry associated with a geophysical dataset. Use-cases for such a class have, however, yet to be identified and elaborated.

Custom Properties

- isActive = False

Connections

Connector	Source	Target	Notes
NoteLink	Public <anonymous>	Public CustomFeatureGeometry	

Attributes

Attribute	Notes	Constraints and tags
id String Private [0..1] «attribute»	The optional id attribute may be used to specify a CIM-specific identifier. Note, however, that this would be in addition to the mandatory gml:id attribute which is required for all GML-style geometry objects. The two attributes may of course be the same, though that would represent redundant usage.	*Default:*
geometrySpec String Private	This attribute is used to provide a free-text description of a locally-defined custom feature geometry. If serialised in XML format this attribute might contain either plain text, a nested hierarchy of XML elements, or possibly both.	*Default:*

CustomGridGeometry

Type: **Class** **gml:AbstractGeometryType**
Status: Proposed. Version 1.0. Phase 1.0.
Package: grids *Keywords:*
Detail: *Created on 10/7/2008. Last modified on 3/9/2009.*
GUID: {0798EA12-64F0-4f68-9DB9-1C2B80C7A74A}

This class may be used to provide a custom, i.e. local and non-standard, description of the grid geometry associated with a geophysical dataset. Use-cases for such a class have, however, yet to be identified and elaborated.

Custom Properties

- isActive = False

Attributes

Attribute	Notes	Constraints and tags
id Identifier Private [0..1] «attribute»	The optional id attribute may be used to specify a CIM-specific identifier. Note, however, that this would be in addition to the mandatory gml:id attribute which is required for all GML-style geometry objects. The two attributes may of course be the same, though that would represent redundant usage.	*Default:*

geometrySpec String Private	This attribute is used to provide a free-text description of a locally-defined custom grid geometry. If serialised in XML format this attribute might contain either plain text, a nested hierarchy of XML elements, or possibly both.	*Default:*

DiscretizationEnum

Type: **Enumeration**
Status: Proposed. Version 1.0. Phase 1.0.
Package: grids *Keywords:*
Detail: *Created on 10/7/2008. Last modified on 2/3/2009.*
GUID: {C7C41452-0C00-4875-B79F-6AA4F770921C}

The Discretization enumeration may be used to indicate the manner in which a grid tile is discretized. It is envisaged that the majority of model grids described by CIM metadata documents will be logically rectangular in construction.

Custom Properties

- isActive = False

Attributes

Attribute	Notes	Constraints and tags
logically_rectangular Public		*Default:*
structured_triangular String Public		*Default:*

unstructured_triangular String Public		*Default:*
pixel-based_catchment String Public		*Default:*
unstructured_polygonal String Public		*Default:*
spherical_harmonics Public		*Default:*
other Public		*Default:*

Edge

Type: **Class**
Status: Proposed. Version 1.0. Phase 1.0.
Package: grids *Keywords:*
Detail: *Created on 10/9/2008. Last modified on 4/2/2010.*
GUID: {7EF8EAD4-70CC-461e-8A5A-DB30EFE3C9AE}

The Edge data type is used to define the topological edge between adjacent (touching) grid cells.

Custom Properties

- isActive = False

Attributes

Attribute	Notes	Constraints and tags
arcType ArcTypeEnum Private		*Default:*
vertex1 gml:PointType Private	Specifies the position of the first (start) point of the edge.	*Default:*
vertex2 gml:PointType Private	Specifies the position of the second (end) point of the edge.	*Default:*
length gml:MeasureType Private [0..1]	Specifies the length of the edge in the units defined using the 'uom' attribute that is attached to the GML MeasureType data type.	*Default:*
arrivalAngle gml:MeasureType Private [0..1]		*Default:*

departureAngle gml:MeasureType Private [0..1]		*Default:*

EdgeArray

Type: **Class**
Status: Proposed. Version 1.0. Phase 1.0.
Package: grids *Keywords:*
Detail: *Created on 1/22/2009. Last modified on 4/2/2010.*
GUID: {5DD69A4F-B178-4b8a-B6D2-EBB142845CCE}

Simple data type for encapsulating an array of grid cell edge definitions.

Custom Properties

- isActive = False

Attributes

Attribute	Notes	Constraints and tags
edge Edge Private [3..*]		*Default:*

ExchangeGridCell

Type: **Class** **GridCell**
Status: Proposed. Version 1.0. Phase 1.0.
Package: grids *Keywords:*
Detail: *Created on 10/7/2008. Last modified on 1/27/2009.*
GUID: {390B71FB-8106-4630-AC8F-BBEB265BFBBE}

Intended usage is for defining cells in exchange grids. Such cells reference 'parent' grid cells in the two grids partaking in an exchange. The association isn't really a parent-child one, but the name seems to have stuck.

Custom Properties

- isActive = False

Connections

Connector	Source	Target	Notes
Generalization Source -> Destination	Public ExchangeGridCell	Public GridCell	

Attributes

Attribute	Notes	Constraints and tags
parentCell GridCellRef Private [2]		*Default:*

FeatureTypeEnum

Type: **Enumeration**
Status: Proposed. Version 1.0. Phase 1.0.
Package: grids *Keywords:*
Detail: *Created on 10/9/2008. Last modified on 2/3/2009.*
GUID: {D671C0D0-44D6-4621-A8B9-F972688C9B16}

Note: this enumeration is not required by the current version of the CIM.

Custom Properties

- isActive = False

Attributes

Attribute	Notes	Constraints and tags
point Public		*Default:*

edge Public		*Default:*

GeometryTypeEnum

Type: **Enumeration**
Status: Proposed. Version 1.0. Phase 1.0.
Package: grids *Keywords:*
Detail: *Created on 10/9/2008. Last modified on 2/3/2009.*
GUID: {71B77E42-3D90-49e0-B43D-CBBEBB371FEF}

The GeometryType enumeration may be used to indicate the geometry used to approximate the figure of the Earth.

Custom Properties

- isActive = False

Attributes

Attribute	Notes	Constraints and tags
ellipsoid Public		*Default:*
plane Public		*Default:*
sphere Public		*Default:*

GridCell

Type: **Class**
Status: Proposed. Version 1.0. Phase 1.0.
Package: grids *Keywords:*
Detail: *Created on 10/7/2008. Last modified on 2/2/2009.*
GUID: {F793EB4A-2737-4a26-8495-7DEE650E92EB}

This abstract base class is used to model various types of grid cells. Every GridCell object has its boundary defined by at least 3 vertices, though 4 will probably be more typical. Vertices are either defined directly (e.g. in the case of a SimpleGridCell object), or indirectly by referencing a remote grid cell (in the case of an ExchangeGridCell object).

Custom Properties

- isActive = False

Connections

Connector	Source	Target	Notes
Generalization Source -> Destination	Public ExchangeGridCell	Public GridCell	
Generalization Source -> Destination	Public SimpleGridCell	Public GridCell	
Generalization Source -> Destination	Public UnstructuredGridCell	Public GridCell	

Attributes

Attribute	Notes	Constraints and tags
id Identifier Private «attribute»	Specifies an identifer that uniquely identifies a cell within its parent grid tile.	*Default:*
centroid gml:PointType Private [0..1]	Optionally specifies the coordinate location of the centroid of a grid cell.	*Default:*

area gml:MeasureType Private [0..1]	Optionally specifies the area of a 2D grid cell (or the footprint of a 3D grid cell). The units used must be specified via the 'uom' attribute associated with GML's MeasureType class.	*Default:*
volume gml:MeasureType Private [0..1]	Optionally specifies the volume of a 3D grid cell.The units used must be specified via the 'uom' attribute associated with GML's MeasureType class.	*Default:*

GridCellArray

Type: **Class**
Status: Proposed. Version 1.0. Phase 1.0.
Package: grids *Keywords:*
Detail: *Created on 1/22/2009. Last modified on 2/2/2009.*
GUID: {0B659634-3572-4dbf-BDA7-69D6148427E1}

Simple data type for encapsulating an array of grid cell definitions.

Custom Properties

- isActive = False

Attributes

Attribute	Notes	Constraints and tags
gridCell GridCell Private [1..*]		*Default:*

GridCellRef

Type: **Class**
Status: Proposed. Version 1.0. Phase 1.0.
Package: grids *Keywords:*

Detail: *Created on 10/7/2008. Last modified on 2/3/2009.*
GUID: {7EB9E07D-0C23-4e0c-B2EF-103C28FF05FC}

This data type is used to encode a reference to a grid cell defined as part of some other grid tile, which itself may be part of the same or an entirely separate grid mosaic.

A GridCellRef object consists of a reference to a cell in a separately-defined grid tile, together with an optional fractional area that indicates the portion of the target cell 'occupied' by the referring cell. If this area is not specified, a default value of 1.0 is assumed. A cell reference can be specified either as a sequence of mosaic, tile and cell ID elements, or as a text string attribute (idPath) containing colon-separated ID values terminated with a number representing the fractional area (e.g. "m1:m2:m3:t1:c1:0.5").

Custom Properties

- isActive = False

Attributes

Attribute	Notes	Constraints and tags
mosaicID String Private [0..*]	Specifies the ID of a remotely-defined grid mosaic object.	*Default:*
tileID String Private [0..1]	Specifies the ID of a remotely-defined grid tile object	*Default:*
cellID String Private [0..1]	Specifies the ID of a remotely-defined grid cell object	*Default:*
fractionalArea double Private [0..1]	This property is used to indicate that a fractional area of the referenced grid cell is to be used in computations using that grid cell. The actual geometry of the fractional part is not defined. If this property is not specified a default value of 1 is assumed.	*Default:*

idPath String Private [0..1] «attribute»	The idPath property may be used as a more compact alternative to specifying a grid cell reference. The value of an idPath string is a colon-separated list comprising 1 or more mosaic IDs, a tile ID, a cell ID, and, optionally, a number representing the fractional part.	*Default:*

GridCellRefArray

Type: **Class**
Status: Proposed. Version 1.0. Phase 1.0.
Package: grids *Keywords:*
Detail: *Created on 1/22/2009. Last modified on 2/2/2009.*
GUID: {93EAFD79-4424-42dc-A90B-EAD265A38194}

Simple data type for encapsulating an array of grid cell reference definitions.

Custom Properties

- isActive = False

Attributes

Attribute	Notes	Constraints and tags
gridCellRef GridCellRef Private [1..*]		*Default:*

GridExtent

Type: **Class**
Status: Proposed. Version 1.0. Phase 1.0.
Package: grids *Keywords:*
Detail: *Created on 1/22/2009. Last modified on 11/17/2010.*
GUID: {3569B6AC-6F0E-4ebd-B733-5B2DA4F641CC}

DataType for recording the geographic extent of a gridMosaic or gridTile.

Custom Properties

- isActive = False

Attributes

Attribute	Notes	Constraints and tags
latMin Integer Public		*Default:*
latMax Integer Public		*Default:*
lonMin Integer Public		*Default:*
lonMax Integer Public		*Default:*
units UnitType Public [0..1]		*Default:*

GridMosaic

Type: **Class**
Status: Proposed. Version 1.0. Phase 1.0.

Package: grids *Keywords:*
Detail: *Created on 10/7/2008. Last modified on 2/3/2009.*
GUID: {18E90B49-E375-4a4f-A8EC-1801422E6E3B}

The GridMosaic class is used to define the geometry properties of an earth system model grid or an exchange grid. Such a grid definition may then be referenced by any number of earth system models. A GridMosaic object consists either of 1 or more child GridMosaics, or one or more child GridTiles, but not both. In the latter case the isLeaf property should be set to true, indicating that the mosaic is a leaf mosaic.

Custom Properties

- isActive = False

Connections

Connector	Source	Target	Notes
NoteLink	Public <anonymous>	Public GridMosaic	
Aggregation Source -> Destination	Public gridTile GridTile	Public GridMosaic	
Aggregation Source -> Destination	Public esmExchangeGrid GridMosaic	Public GridSpec	
Aggregation Source -> Destination	Public gridMosaic GridMosaic	Public GridMosaic	
Aggregation Source -> Destination	Public esmModelGrid GridMosaic	Public GridSpec	

Attributes

Attribute	Notes	Constraints and tags
id Identifier Private «attribute»	Specifies a globally unique identifier for a grid mosaic instance. By globally we mean across all GridSpec instances/records within a given modelling activity (such as CMIP5).	*Default:*
shortName String Private [0..1]	Specifies the short name associated with a grid mosaic. The short name will typically be a convenient abbreviation used to refer to a grid mosaic, e.g. 'UM ATM N96'.	*Default:*

longName String Private [0..1]	Specifies the long name associated with a grid mosaic. The long name will typically be a human-readable string, with acronyms expanded, used for labelling purposes.	*Default:*
description String Private [0..1]	A free-text description of a grid mosaic.	*Default:*
gridType GridTypeEnum Private	Specifies the type of all the grid tiles contained in a grid mosaic. It is assumed that all of the tiles comprising a given grid mosaic are of the same type. The value domain is as per the specified enumeration list.	*Default:*
congruentTiles Boolean Private [0..1]	Indicates whether or not all the tiles contained within a grid mosaic are congruent, that is, of the same size and shape.	*Default:* false
isLeaf Boolean Private	Indicates whether or not a grid mosaic is a leaf mosaic, that is, it only contains child grid tiles not further mosaics.	*Default:* false
citationList CitationList Private [0..1]	Optional container element for specifying a list of references that describe the grid.	*Default:*

numTiles Integer Private [0..1] «attribute»	Specifies the number of tiles associated with a leaf grid mosaic. Set to zero if the grid mosaic is not a leaf mosaic, i.e. it contains child grid mosaics rather than tiles. (Added to align with equivalent ESG/Curator property.)	*Default:*
numMosaics Integer Private [0..1] «attribute»	Specifies the number of mosaics associated with a non-leaf grid mosaic. Set to zero if the grid mosaic is a leaf mosaic, i.e. it contains child grid tiles not mosaics.	*Default:*
extent GridExtent Public [0..1]		*Default:*
mnemonic String Public [0..1]		*Default:*
refinementScheme RefinementTypeEnum Public [0..1]		*Default:*

GridNodePositionEnum

Type: **Enumeration**
Status: Proposed. Version 1.0. Phase 1.0.
Package: grids *Keywords:*
Detail: *Created on 10/10/2008. Last modified on 2/3/2009.*
GUID: {BA3CA14E-B2DD-4724-9E0A-150119B803DB}

The GridNodePosition enumeration may be used to indicate the horizontal position of a grid node relative to its surrounding or containing grid cell. This enumeration may be extended at some point to include relative vertical position.

Custom Properties

- isActive = False

Attributes

Attribute	Notes	Constraints and tags
centre Public		*Default:*
north Public		*Default:*
northeast Public		*Default:*
east Public		*Default:*
southeast Public		*Default:*

south Public		*Default:*
southwest Public		*Default:*
west Public		*Default:*
northwest Public		*Default:*
undefined Public		*Default:*

GridProperty

Type: **Class** **Property**
Status: Proposed. Version 1.0. Phase 1.0.
Package: grids *Keywords:*
Detail: *Created on 1/29/2009. Last modified on 3/15/2011.*
GUID: {AE858FE6-0066-4940-B2E6-0A7C0A5089FB}

Custom Properties

- isActive = False

Connections

Connector	Source	Target	Notes
Generalization Source -> Destination	Public GridProperty	Public Property	

GridSpec

Type: **Class** **gml:AbstractGeometryType**
Status: Proposed. Version 1.0. Phase 1.0.
Package: grids *Keywords:*
Detail: *Created on 10/7/2008. Last modified on 2/3/2009.*
GUID: {CA93D22D-19CF-4238-A8F0-05CAB066F806}

This is a container class for GridSpec objects. A GridSpec object can contain one or more esmModelGrid objects, and one or more esmExchangeGrid objects. These objects may be serialised to one or possibly several files according to taste. Since GridSpec is sub-typed from GML's AbstractGeometryType it can, and should, be identified using a gml:id attribute.

Custom Properties

- isActive = False

Connections

Connector	Source	Target	Notes
NoteLink	Public <anonymous>	Public GridSpec	
NoteLink	Public <anonymous>	Public GridSpec	
Aggregation Source -> Destination	Public esmExchangeGrid GridMosaic	Public GridSpec	
Aggregation Source -> Destination	Public esmModelGrid GridMosaic	Public GridSpec	

Attributes

Attribute	Notes	Constraints and tags

id Identifier Private [0..1] «unused»	The optional id attribute may be used to specify a CIM-specific identifier. Note, however, that this would be in addition to the mandatory gml:id attribute which is required for all GML-style geometry objects. The two attributes may of course be the same, though that would represent redundant usage.	*Default:*
version String Private [0..1] «unused»	Indicates the version of the GridSpec standard to which a grid specification instance conforms.	*Default:*

GridTile

Type: **Class**
Status: Proposed. Version 1.0. Phase 1.0.
Package: grids *Keywords:*
Detail: *Created on 10/7/2008. Last modified on 2/3/2009.*
GUID: {EF21E721-0E27-4bbc-9A25-B8D1F876F3BC}

The GridTile class is used to model an individual grid tile contained within a grid mosaic. A GridTile consists of an array of grid cells which may be defined in one of four ways: 1) for simple grids, by use of the SimpleGridGeometry data type; 2) by defining an array of GridCell objects; 3) by specifying an array of references to externally defined GridCell objects; or 4) by specifying a URI to a remote data file containing the grid cell definitions.

For all but the simplest grid tiles, it is envisaged that method 4 above will be the most frequently used option. However, it should be remembered that the CIM is primarily concerned with encoding climate model metadata. Specifying the coordinates of individual grid tiles and cells will most likely not be required as part of such metadata descriptions.

A GridTile object is associated with a geodetic or projected CRS via the horizontalCRS property, and with a vertical CRS via the verticalCRS property.

Custom Properties

- isActive = False

Connections

Connector	Source	Target	Notes
Aggregation Source -> Destination	Public gridTile GridTile	Public GridMosaic	

Attributes

Attribute	Notes	Constraints and tags
area gml:MeasureType Private [0..1]	Specifies the area of the grid tile in the units defined by the 'uom' attribute that is attached to the GML MeasureType data type.	*Default:*
cellArray GridCellArray Private [0..1]	This property may be used to specify an array of grid cell definitions which together define the coordinate geometry of a grid tile. Depending on context, any of the existing sub-types of GridCell may be used. Mixing types is, however, not currently permitted.	*Default:*
cellRefArray GridCellRefArray Private [0..1]	This property may be used to define the coordinate geometry of a grid tile by specifying an array of references to remotely defined grid cells. Depending on context, any of the existing sub-types of GridCell may be referenced.	*Default:*
coordFile String Private [0..1]	This property may be used to specify the URI of a file containing grid coordinates that define the geometry of a a grid tile. It is envisaged that this will be the preferred mechanism for specifying the geometry of complex grids.	*Default:*
coordinatePole gml:PointType Private [0..*]	The coordinatePole property may be used to specify the lat-long position of any coordinate poles (in the mathematical sense) that form part of the definition of a grid tile. Not to be confused with the gridNorthPole property. If required, two or more coordinate pole definitions may be distinguished by setting the gml:id attribute to appropriate values, such as "spole", "npole", etc.	*Default:*
description String Private [0..1]	A free-text description of a grid tile.	*Default:*

discretizationType DiscretizationEnum Private	Indicates the type of discretization applied to the grid tile, e.g. "logically_rectangular".	*Default:*
extent GridExtent Public [0..1]		*Default:*
geometryType GeometryTypeEnum Private [0..1]	Indicates the geometric figure used to approximate the figure of the Earth, e.g. "sphere".	*Default:*
gridNorthPole gml:PointType Private [0..1]	If required, defines the lat-long position of the 'north pole' used by the grid tile in the case of rotated/displaced pole grids. Not to be confused with the coordinatePole property.	*Default:*
horizontalCRS gml:CRSPropertyType Private [0..1]	Specifies the horizontal coordinate reference system used in the definition of the grid tile coordinates. This property should normally be an xlink reference to an external horizontal CRS definition (e.g. in a separate CRS dictionary). If required, however, the property may be defined in situ within a CIM document.	*Default:*
horizontalResolution GridTileResolutionType Private [0..1]	Provides an indication of the approximate spatial sampling size of the grid tile, i.e. the size of the underlying grid cells. (Note: the maximum spatial resolution of the grid is twice the sampling size (e.g. 2 km for a 1 km x 1 km grid pitch).	*Default:*

id Identifier Private [0..1] «attribute»	Specifies an identifer for a grid tile that is unique within its parent grid mosaic. It is not required for this identifier to be unique either across all mosaics in a GridSpec or across all GridSpecs, though if that were the case it would not be detrimental.	*Default:*
isConformal Boolean Private [0..1]	This property is used to indicate if the grid tile is conformal, i.e. angle-preserving. If so, angles measured on the grid are equal to the equivalent angles on the Earth.	*Default:*
isRegular Boolean Private [0..1]	If true, indicates that the horizontal coordinates of the grid can be defined using 1D arrays (vectors). This means that grid node locations are defined by the cartesian product of the X/Lon and Y/Lat coordinate vectors. It also means that grid cells are logically rectangular (they may also be physically rectangular in the case of projected coordinates).	*Default:*
isTerrainFollowing Boolean Private [0..1]	Set to true if the vertical coordinate system is terrain-following even if, as is often the case, this only applies to the lower levels of the grid.	*Default:*
isUniform Boolean Private [0..1]	If true, indicates that horizontal coordinates have fixed offsets in the X and Y directions. If the offset is the same in both directions then the grids are logically square, otherwise they are logically rectangular. The offsets can be specified by two scalar values (or three values in the case of 3D grids).	*Default:*
longName String Private [0..1]	Specifies the long name associated with a grid tile. The long name will typically be a human-readable string, with acronyms expanded, used for labelling purposes.	*Default:*

mnemonic String Public [0..1]		*Default:*
nx Integer Private [0..1] «attribute»	Specifies the length of the X, or longitude, dimension of the grid tile.	*Default:*
ny Integer Private [0..1] «attribute»	Specifies the length of the Y, or latitude, dimension of the grid tile.	*Default:*
nz Integer Private [0..1] «attribute»	Specifies the length of the Z, or height/level, dimension of the grid tile. The zcoords coordinate list property, if specified, should have this length.	*Default:*
refinementScheme RefinementTypeEnum Public [0..1]		*Default:*
shortName String Private [0..1]	Specifies the short name associated with a grid tile. The short name will typically be a convenient abbreviation used to refer to a grid tile, e.g. 'NEMO T-Grid'.	*Default:*

simpleGridGeom SimpleGridGeometry Private [0..1]	This property may be used to define the coordinates of the nodes or cells making up a simple (i.e. uniform or regular) grid tile. More details are provided in the description of the SimpleGridGeometry data type.	*Default:*
verticalCRS gml:CRSPropertyType Private [0..1]	Specifies the vertical coordinate reference system used in the definition of the grid tile coordinates. This property should normally be an xlink reference to an external vertical CRS definition (e.g. in a separate CRS dictionary). If required, however, the property may be defined in situ within a CIM document.	*Default:*
verticalResolution GridTileResolutionType Private [0..1]	Provides an indication of the approximate resolution of the grid tile in the vertical dimension. (Added to align with corresponding ESG/Curator and DIF property).	*Default:*
zcoords VerticalCoordList Private [0..1]	This optional property may be used to specify the vertical coordinates (e.g. heights or model levels) at which a grid tile is utilised or realised. In the case of simple grid tiles the equivalent zcoords property on the SimpleGridGeometry data type would be used instead. The current property is intended to be used when the horizontal grid coordinates are defined by one of the other methods.	*Default:*

GridTileRef

Type: **Class**
Status: Proposed. Version 1.0. Phase 1.0.
Package: grids *Keywords:*
Detail: *Created on 10/7/2008. Last modified on 2/3/2009.*
GUID: {BFD9169E-2ED2-42de-A0B3-8779E9FAA442}

This data type is used to encode a reference to a grid tile defined as part of some other grid mosaic, which may itself be part of the same hierarchy of grid mosaics or else part of an entirely separate mosaic (possibly even in a separate physical realisation, e.g. XML file or database table).

A grid tile reference is a list of ID references from the top-level mosaic down to the grid tile itself. A tile reference can be specified either as a sequence of mosaic ID elements and a tile ID element, or as a text string attribute (idPath) containing colon-separated ID values (e.g. "m1:m2:m3:t1").

Custom Properties

- isActive = False

Attributes

Attribute	Notes	Constraints and tags
mosaicID String Private [0..*]	Specifies the ID of a remotely-defined grid mosaic object.	*Default:*
tileID String Private [0..1]	Specifies the ID of a remotely-defined grid tile object.	*Default:*
idPath String Private [0..1] «attribute»	The idPath property may be used as a more compact alternative to specifying a grid tile reference. The value of an idPath string is a colon-separated list comprising 1 or more mosaic IDs, and a tile ID.	*Default:*

GridTileResolutionType

Type: **Class**
Status: Proposed. Version 1.0. Phase 1.0.
Package: grids *Keywords:*
Detail: *Created on 1/29/2009. Last modified on 3/15/2011.*
GUID: {AF305481-A5F6-4383-9191-778FD0F243E1}

Provides a description and set of named properties for the horizontal or vertical resolution.

Custom Properties

- isActive = False

Attributes

Attribute	Notes	Constraints and tags
description Private [0..1] «attribute»	A description of the resolution.	*Default:*
property GridProperty Private [0..*]		*Default:*

GridTypeEnum

Type: **Enumeration**
Status: Proposed. Version 1.0. Phase 1.0.
Package: grids *Keywords:*
Detail: *Created on 10/9/2008. Last modified on 2/3/2009.*
GUID: {A08B9B20-5819-4fd0-8733-93B01A9008C6}

The GridType enumeration may be used to indicate the structural type of a grid mosaic or, equivalently, a model grid.

Custom Properties

- isActive = False

Attributes

Attribute	Notes	Constraints and tags
cubed_sphere Public		*Default:*

displaced_pole Public		*Default:*
icosahedral_geodesic Public		*Default:*
reduced_gaussian Public		*Default:*
regular_lat_lon Public		*Default:*
spectral_gaussian Public		*Default:*
tripolar Public		*Default:*

yin_yang Public		*Default:*
composite Public		*Default:*
other Public		*Default:*

HorizontalCSEnum

Type: **Enumeration**
Status: Proposed. Version 1.0. Phase 1.0.
Package: grids *Keywords:*
Detail: *Created on 10/9/2008. Last modified on 2/3/2009.*
GUID: {A29C5C26-F82C-4165-BD3E-822A1AC1ADC4}

The HorizontalCS enumeration is used to indicate the construction of the coordinate system used for horizontal grid coordinates.

Note: this enumeration is not required by the current version of the CIM. The horizontalCRS property of a grid tile may be used to provide equivalent information.

Custom Properties

- isActive = False

Attributes

Attribute	Notes	Constraints and tags

cartesian Public		*Default:*
ellipsoidal Public		*Default:*
polar Public		*Default:*
spherical Public		*Default:*

Identification

Type: **Class**
Status: Proposed. Version 1.0. Phase 1.0.
Package: grids *Keywords:*
Detail: *Created on 10/10/2008. Last modified on 10/10/2008.*
GUID: {5AB018D6-C2E6-4058-8355-6086930AAECE}

Custom Properties

- isActive = False

Attributes

Attribute	Notes	Constraints and tags

name String Private		*Default:*
id Integer Private		*Default:*
description String Private		*Default:*

RefinementTypeEnum

Type: **Enumeration**
Status: Proposed. Version 1.0. Phase 1.0.
Package: grids *Keywords:*
Detail: *Created on 10/9/2008. Last modified on 2/3/2009.*
GUID: {E896DEBB-9583-467c-A906-CBAA32DE5F73}

The RefinementType enumeration is used to indicate the spatial relationship between two overlapping or adjacent grid tiles. The meaning of the various refinement values is described in section 2.8 of the GridSpec paper.

Custom Properties

- isActive = False

Attributes

Attribute	Notes	Constraints and tags

none Public	Tile boundaries have no refinement when the grid lines meeting at the tile boundary are continuous.	*Default:*
integer Public	The refinement is integer when grid lines from the coarser grid are continuous on the finer grid, but not vice versa.	*Default:*
rational Public	The refinement is rational when the adjacent or overlapping grid tiles have grid line counts that are coprime (i.e. no common factor other than 1).	*Default:*

SimpleGridCell

Type: **Class** **GridCell**
Status: Proposed. Version 1.0. Phase 1.0.
Package: grids *Keywords:*
Detail: *Created on 1/27/2009. Last modified on 1/27/2009.*
GUID: {BB4F527F-7C70-4b00-9D90-3E1267A75F70}

The SimpleGridCell class is intended to be used to specify a grid cell of arbitrary polygonal shape. The vertices of the grid cell are specified using the vertexArray property, which contains three or more vertex definitions. Since a vertex is declared to be of type GML PointPropertyType, each vertex may be specified either as a coordinate tuple or as an xlink reference to a vertex defined elsewhere. Vertices should be specified as an ordered sequence, i.e. proceeding clockwise or counterclockwise around the perimeter of the grid cell. Clockwise vertex ordering is a common convention.

Custom Properties

- isActive = False

Connections

Connector	Source	Target	Notes
Generalization Source -> Destination	Public SimpleGridCell	Public GridCell	

Attributes

Attribute	Notes	Constraints and tags
vertexArray VertexArray Private	The vertexArray attribute is used to specify an array of three or more vertices that define the perimeter of the grid cell. Each vertex member of the array may be specified either as a coordinate tuple or as a reference to a vertex defined remotely.	*Default:*

SimpleGridGeometry

Type: **Class**
Status: Proposed. Version 1.0. Phase 1.0.
Package: grids *Keywords:*
Detail: *Created on 10/9/2008. Last modified on 1/29/2009.*
GUID: {1A7B70F2-54E2-4bb6-93E7-751B7921C6A0}

This class may be used to encode the parameters needed to define a simple grid, i.e. a grid based on repeating square or rectangular grid cells.

Custom Properties

- isActive = False

Attributes

Attribute	Notes	Constraints and tags
numDims Integer Private «attribute»	Specifies the number of dimensions (i.e. the rank) of the grid, e.g. 2 for 2D grids, 3 for 3D grids.	*Default:*
dimOrder String Private [0..1] «attribute»	Text string specifying the order in which the coordinate dimensions are traversed. This determines the ordering of grid cells defined by the grid parameters, e.g. row order or column order. The default is "yx" ("zyx" for 3D grids), i.e. row order for logically rectangular grids. This syntax follows CF conventions.	*Default:*

isMesh Boolean Private [0..1] «attribute»	Set to True if the grid geometry defines a grid mesh that fully partitions a 2D or 3D space. Set to false (the default) if the grid geometry simply defines the locations of grid nodes, making no statement about the shape or extent of surrounding grid cells.	*Default:*
xcoords CoordList Private	Specifies the X (or i) coordinate of each 'vertical' grid line making up the grid mesh. For uniform grids (square or rectangular cells), only two X coordinates are required: the X coordinate of the initial grid node, plus the offset or spacing between successive grid nodes.	*Default:*
ycoords CoordList Private	Specifies the Y (or j) coordinate of each 'horizontal' grid line making up the grid mesh. For uniform grids (square or rectangular cells), only two Y coordinates are required: the Y coordinate of the initial grid node, plus the offset or spacing between successive grid nodes.	*Default:*
zcoords CoordList Private [0..1]	For 3D grids, specifies the Z coordinates of the grid.	*Default:*

UnstructuredGridCell

Type: **Class** **GridCell**
Status: Proposed. Version 1.0. Phase 1.0.
Package: grids *Keywords:*
Detail: *Created on 10/7/2008. Last modified on 1/27/2009.*
GUID: {31A99190-0F49-4f8a-88BE-FDAD89B40C73}

This class is used to define grid cells that form the basis of unstructured triangular or polygonal grids, as per the gridspec paper. The grid cell boundary is defined by specifying three or more edges via the edgeArray property. Each edge member of this array is defined by specifying references to the start and end points of the edge.

Custom Properties

- isActive = False

Connections

Connector	Source	Target	Notes
Generalization Source -> Destination	Public UnstructuredGridCell	Public GridCell	

Attributes

Attribute	Notes	Constraints and tags
edgeArray EdgeArray Private	The edgeArray attribute is used to specify three or more edges that define the boundary of the grid cell. Each edge member is specified by reference to two remotely-defined grid points. The latter may, for instance, have been defined as part of a SimpleGridCell definition.	*Default:*

VertexArray

Type: **Class**
Status: Proposed. Version 1.0. Phase 1.0.
Package: grids *Keywords:*
Detail: *Created on 1/22/2009. Last modified on 1/22/2009.*
GUID: {78348E22-FF80-41b3-B903-1126B863C70A}

Custom Properties

- isActive = False

Attributes

Attribute	Notes	Constraints and tags
vertex gml:PointType Private [3..*]		*Default:*

VerticalCSEnum

Type: **Enumeration**

Status: Proposed. Version 1.0. Phase 1.0.
Package: grids *Keywords:*
Detail: *Created on 10/9/2008. Last modified on 2/3/2009.*
GUID: {9114F432-E132-4607-8AF5-3A9045470C11}

TheVerticalCS enumeration is used to indicate the construction of the coordinate system used for vertical grid coordinates.

Note: this enumeration is not required by the current version of the CIM. The verticalCRS property of a grid tile may be used to provide equivalent information.

Custom Properties

- isActive = False

Attributes

Attribute	Notes	Constraints and tags
mass-based Public		*Default:*
space-based Public		*Default:*

VerticalCoordList

Type: **Class** **CoordList**
Status: Proposed. Version 1.0. Phase 1.0.
Package: grids *Keywords:*
Detail: *Created on 1/29/2009. Last modified on 3/16/2011.*
GUID: {C9E2FAED-829E-451b-AB58-BABCD70AB5FF}

There are some specific attributes that are associated with vertical coordinates.

Custom Properties

- isActive = False

Tagged Values

- mixed = true.

Connections

Connector	Source	Target	Notes
Generalization Source -> Destination	Public VerticalCoordList	Public CoordList	

Attributes

Attribute	Notes	Constraints and tags
coordinateType VerticalCoordinateTypeEnum Private [0..1]		*Default:*
property GridProperty Private [0..*]		*Default:*
coordinateForm VerticalCoordinateFormTypeEnum Private [0..1]		*Default:*

VerticalCoordinateFormTypeEnum

Type: **Enumeration**
Status: Proposed. Version 1.0. Phase 1.0.
Package: grids *Keywords:*
Detail: *Created on 10/9/2008. Last modified on 3/16/2011.*

GUID: {F26D0E47-37A9-4224-9AE0-82F83379B89D}

A list of different types of vertical coordinates you could have. Only certain subsets of these can be selected depending on the VerticalCoordinateType selected.

Custom Properties

- isActive = False

Attributes

Attribute	Notes	Constraints and tags
sigma Public «enum»		*Default:*
S-coordinate Public «enum»		*Default:*
Z*-coordinate Public		*Default:*
isopycnic Public «enum»		*Default:*

isentropic Public «enum»		*Default:*
pressure Public «enum»		*Default:*
natural log pressure Public «enum»		*Default:*
pressure-height Public		*Default:*
P*-coordinate Public «enum»		*Default:*
Z-coordinate Public «enum»		*Default:*

Z-coordinate** Public «enum»		*Default:*
hybrid sigma-pressure Public «enum»		*Default:*
hybrid sigma-z Public «enum»		*Default:*
hybrid height Public «enum»		*Default:*
hybrid Z-S Public «enum»		*Default:*
double sigma Public «enum»		*Default:*

hybrid Z-isopycnic Public «enum»		*Default:*
hybrid floating Lagrangian Public «enum»		*Default:*
depth Public «enum»		*Default:*

VerticalCoordinateTypeEnum

Type: **Enumeration**
Status: Proposed. Version 1.0. Phase 1.0.
Package: grids *Keywords:*
Detail: *Created on 10/9/2008. Last modified on 3/16/2011.*
GUID: {F60C7E0C-D1F9-4ce6-B2C1-99E17E03C15C}

A list of different types of vertical coordinates systems.

Custom Properties

- isActive = False

Attributes

Attribute	Notes	Constraints and tags

terrain-following Public		*Default:*
space-based Public		*Default:*
mass-based Public		*Default:*
hybrid Public		*Default:*
not-applicable Public		*Default:*

quality

Type: **Package**
Status: Proposed. Version 1.0. Phase 1.0.
Package: cim
Detail: *Created on 11/27/2008. Last modified on 12/4/2008*
GUID: {18AE3D5C-A78B-4193-87D3-5A820CCB03F8}

Quality - *(Package diagram)*

Created By: mark.elkington *on* 9/19/2008
Last Modified: 2/15/2011
Version: 1.0. *Locked:* False
GUID: {C9BDE3D2-34EC-49d2-8F90-36ADF524CDC5}

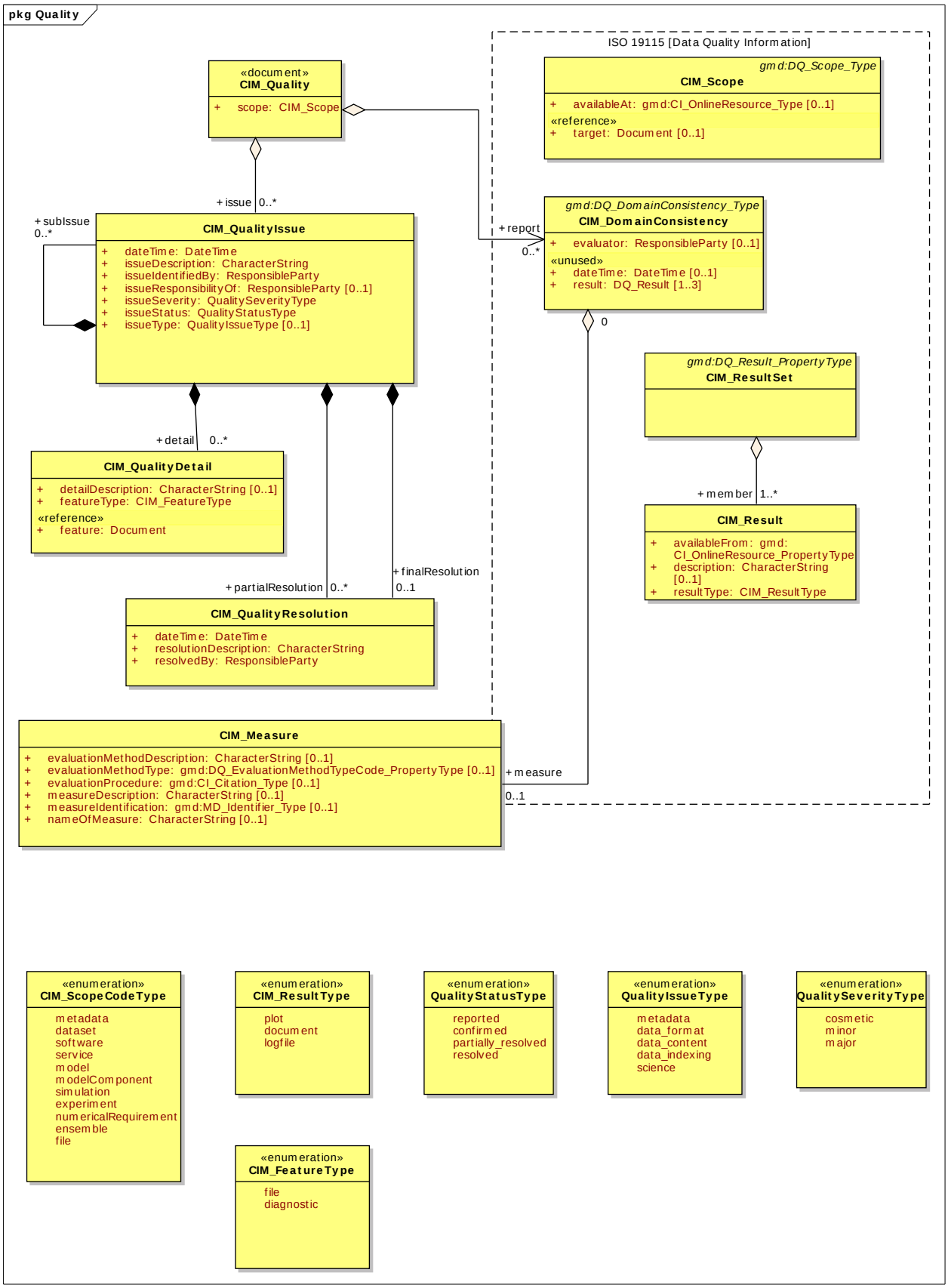
pkg Quality
ISO 19115 [Data Quality Information]
«document»
CIM_Quality
+ scope: CIM_Scope
gmd:DQ_Scope_Type
CIM_Scope
+ availableAt: gmd:CI_OnlineResource_Type [0..1]
«reference»
+ target: Document [0..1]
+ issue 0..*
+ subIssue 0..*
CIM_QualityIssue
+ dateTime: DateTime
+ issueDescription: CharacterString
+ issueIdentifiedBy: ResponsibleParty
+ issueResponsibilityOf: ResponsibleParty [0..1]
+ issueSeverity: QualitySeverityType
+ issueStatus: QualityStatusType
+ issueType: QualityIssueType [0..1]
+ report
0..*
gmd:DQ_DomainConsistency_Type
CIM_DomainConsistency
+ evaluator: ResponsibleParty [0..1]
«unused»
+ dateTime: DateTime [0..1]
+ result: DQ_Result [1..3]
0
gmd:DQ_Result_PropertyType
CIM_ResultSet
+ member 1..*
CIM_Result
+ availableFrom: gmd:CI_OnlineResource_PropertyType
+ description: CharacterString [0..1]
+ resultType: CIM_ResultType
+ detail 0..*
CIM_QualityDetail
+ detailDescription: CharacterString [0..1]
+ featureType: CIM_FeatureType
«reference»
+ feature: Document
+ partialResolution 0..*
+ finalResolution 0..1
CIM_QualityResolution
+ dateTime: DateTime
+ resolutionDescription: CharacterString
+ resolvedBy: ResponsibleParty
CIM_Measure
+ evaluationMethodDescription: CharacterString [0..1]
+ evaluationMethodType: gmd:DQ_EvaluationMethodTypeCode_PropertyType [0..1]
+ evaluationProcedure: gmd:CI_Citation_Type [0..1]
+ measureDescription: CharacterString [0..1]
+ measureIdentification: gmd:MD_Identifier_Type [0..1]
+ nameOfMeasure: CharacterString [0..1]
+ measure
0..1
«enumeration»
CIM_ScopeCodeType
metadata
dataset
software
service
model
modelComponent
simulation
experiment
numericalRequirement
ensemble
file
«enumeration»
CIM_ResultType
plot
document
logfile
«enumeration»
QualityStatusType
reported
confirmed
partially_resolved
resolved
«enumeration»
QualityIssueType
metadata
data_format
data_content
data_indexing
science
«enumeration»
QualitySeverityType
cosmetic
minor
major
«enumeration»
CIM_FeatureType
file
diagnostic

Figure: 10

CIM_DomainConsistency

Type: **Class gmd:DQ_DomainConsistency_Type**
Status: Proposed. Version 1.0. Phase 1.0.
Package: quality *Keywords:*
Detail: *Created on 9/19/2008. Last modified on 9/27/2010.*
GUID: {A3D18998-F666-45fd-B09F-5ED29766912F}

Custom Properties

- isActive = False

Connections

Connector	Source	Target	Notes
Aggregation Source -> Destination	Public measure CIM_Measure	Public CIM_DomainConsistency	
Aggregation Destination -> Source	Public report CIM_DomainConsistency	Public CIM_Quality	

Attributes

Attribute	Notes	Constraints and tags
dateTime DateTime Public [0..1] «unused»		*Default:*
evaluator ResponsibleParty Public [0..1]		*Default:*

result DQ_Result Public [1..3] «unused»		*Default:*

CIM_FeatureType

Type: **Enumeration**
Status: Proposed. Version 1.0. Phase 1.0.
Package: quality *Keywords:*
Detail: *Created on 9/23/2008. Last modified on 2/15/2011.*
GUID: {52423482-6596-4d54-BEB3-45741FD2FECB}

Custom Properties

- isActive = False

Attributes

Attribute	Notes	Constraints and tags
file Public «enum»		*Default:*
diagnostic Public «enum»		*Default:*

CIM_Measure

Type: **Class**
Status: Proposed. Version 1.0. Phase 1.0.
Package: quality *Keywords:*

Detail: *Created on 9/19/2008. Last modified on 9/27/2010.*
GUID: {67D94C1D-2C4C-407d-851B-72CEA065B62C}

Custom Properties

- isActive = False

Connections

Connector	Source	Target	Notes
Aggregation Source -> Destination	Public measure CIM_Measure	Public CIM_DomainConsistency	

Attributes

Attribute	Notes	Constraints and tags
evaluationMethodDescription CharacterString Public [0..1]		*Default:*
evaluationMethodType gmd:DQ_EvaluationMethodTypeCode_PropertyType Public [0..1]		*Default:*
evaluationProcedure gmd:CI_Citation_Type Public [0..1]		*Default:*

measureDescription CharacterString Public [0..1]		*Default:*
measureIdentification gmd:MD_Identifier_Type Public [0..1]		*Default:*
nameOfMeasure CharacterString Public [0..1]		*Default:*

CIM_Quality

Type: **Class**
Status: Proposed. Version 1.0. Phase 1.0.
Package: quality *Keywords:*
Detail: *Created on 9/19/2008. Last modified on 9/27/2010.*
GUID: {FF17A8DA-64F9-4a3f-B57F-5593F92A9A77}

The starting point for a quality record. It can contain any number of issues and reports. An issue is an open-ended description of some issue about a CIM instance. A record is a prescribed description of some specific quantitative measure that has been applied to a CIM instance.

Custom Properties

- isActive = False

Connections

Connector	Source	Target	Notes
Aggregation Source -> Destination	Public issue CIM_QualityIssue	Public CIM_Quality	
Aggregation Destination -> Source	Public report CIM_DomainConsistency	Public CIM_Quality	

Attributes

Attribute	Notes	Constraints and tags
scope CIM_Scope Public	the specific data to which the quality information applies	*Default:*

CIM_QualityDetail

Type: **Class**
Status: Proposed. Version 1.0. Phase 1.0.
Package: quality *Keywords:*
Detail: *Created on 9/19/2008. Last modified on 4/2/2010.*
GUID: {D518865F-97F7-4b53-AD48-7A2CB5FFCA95}

Locates the "target" of a CIM QualityIssue.

Custom Properties

- isActive = False

Connections

Connector	Source	Target	Notes
Aggregation Source -> Destination	Public detail CIM_QualityDetail	Public CIM_QualityIssue	

Attributes

Attribute	Notes	Constraints and tags
detailDescription CharacterString Public [0..1]	a description of the quality issue with reference to this specific feature	*Default:*

featureType CIM_FeatureType Public	the type of feature that the quality issue refers too (for METAFOR this could be simulation, file, boundary condition etc.)	*Default:*
feature Document Public «reference»	the reference to the specific feature (e.g. a URI to a file)	*Default:*

CIM_QualityIssue

Type: **Class**
Status: Proposed. Version 1.0. Phase 1.0.
Package: quality *Keywords:*
Detail: *Created on 9/19/2008. Last modified on 8/13/2009.*
GUID: {E2CD66DE-B23F-4021-BD65-4EB8139E413E}

Records an issue with an instance of the CIM. The particular part of the instance being referred to is captured by the detail attribute(s). A resolution can be added to a quality issue. A single issue can have multiple subissues.

Custom Properties

- isActive = False

Connections

Connector	Source	Target	Notes
Aggregation Source -> Destination	Public issue CIM_QualityIssue	Public CIM_Quality	
Aggregation Source -> Destination	Public subIssue CIM_QualityIssue	Public CIM_QualityIssue	
Aggregation Source -> Destination	Public finalResolution CIM_QualityResolution	Public CIM_QualityIssue	
Aggregation Source -> Destination	Public partialResolution CIM_QualityResolution	Public CIM_QualityIssue	

Aggregation Source -> Destination	Public detail CIM_QualityDetail	Public CIM_QualityIssue	

Attributes

Attribute	Notes	Constraints and tags
dateTime DateTime Public	date (and time) issue was added to CIM	*Default:*
issueDescription CharacterString Public	summary description of quality issue	*Default:*
issueIdentifiedBy ResponsibleParty Public	person/organisation responsible for identifying this quality issue	*Default:*
issueResponsibilityOf ResponsibleParty Public [0..1]	person/organisation allocated the responsibuility for addressing this issue	*Default:*
issueSeverity QualitySeverityType Public	severity of issue (e.g. potential, minor, major etc. - enumeration list will need to be defined for METAFOR	*Default:*

issueStatus QualityStatusType Public	current status of this issue (e.g. open, investigation, closed, etc. - enumeration values to be defined for METAFOR)	*Default:*
issueType QualityIssueType Public [0..1]	type of quality issue (e.g. metadata, data etc. - enumeration list needs to be defined for METAFOR	*Default:*

CIM_QualityResolution

Type: **Class**
Status: Proposed. Version 1.0. Phase 1.0.
Package: quality *Keywords:*
Detail: *Created on 9/19/2008. Last modified on 8/13/2009.*
GUID: {F0233E60-11F1-4745-B709-591B9AABB50E}

A description of what action was taken because of a quality issue.

Custom Properties

- isActive = False

Connections

Connector	Source	Target	Notes
Aggregation Source -> Destination	Public finalResolution CIM_QualityResolution	Public CIM_QualityIssue	
Aggregation Source -> Destination	Public partialResolution CIM_QualityResolution	Public CIM_QualityIssue	

Attributes

Attribute	Notes	Constraints and tags

dateTime DateTime Public	date of resolution information	*Default:*
resolutionDescription CharacterString Public	description of resolution of quality issues - including external references if required	*Default:*
resolvedBy ResponsibleParty Public	person/organisation responsible for resolution, or the person/organisation who should be contacted with any queries about the resolution of this quality issue	*Default:*

CIM_Result

Type: **Class**
Status: Proposed. Version 1.0. Phase 1.0.
Package: quality *Keywords:*
Detail: *Created on 9/19/2008. Last modified on 9/27/2010.*
GUID: {60433207-93A8-4912-A708-75AE17F1B75C}

Custom Properties

- isActive = False

Connections

Connector	Source	Target	Notes
Aggregation Source -> Destination	Public member CIM_Result	Public CIM_ResultSet	

Attributes

Attribute	Notes	Constraints and tags

availableFrom gmd:CI_OnlineResource_ PropertyType Public		*Default:*
description CharacterString Public [0..1]		*Default:*
resultType CIM_ResultType Public		*Default:*

CIM_ResultSet

Type: **Class gmd:DQ_Result_PropertyType**
Status: Proposed. Version 1.0. Phase 1.0.
Package: quality *Keywords:*
Detail: *Created on 9/19/2008. Last modified on 9/27/2010.*
GUID: {96A46971-E571-4503-8343-F28A091EC814}

Custom Properties

- isActive = False

Connections

Connector	Source	Target	Notes
Aggregation Source -> Destination	Public member CIM_Result	Public CIM_ResultSet	

CIM_ResultType

Type: **Enumeration**
Status: Proposed. Version 1.0. Phase 1.0.
Package: quality *Keywords:*
Detail: *Created on 10/7/2008. Last modified on 10/8/2008.*
GUID: {CA88FEA2-C2AB-4040-A491-A297F14C0149}

Custom Properties

- isActive = False

Attributes

Attribute	Notes	Constraints and tags
plot Public «enum»		*Default:*
document Public «enum»		*Default:*
logfile Public «enum»		*Default:*

CIM_Scope

Type: **Class** **gmd:DQ_Scope_Type**
Status: Proposed. Version 1.0. Phase 1.0.
Package: quality *Keywords:*
Detail: *Created on 9/19/2008. Last modified on 9/27/2010.*
GUID: {6A19CB2A-F3ED-4cc9-852F-9C6A92D728F4}

Custom Properties

- isActive = False

Attributes

Attribute	Notes	Constraints and tags
availableAt gmd:CI_OnlineResource_ Type Public [0..1]		*Default:*
target Document Public [0..1] «reference»		*Default:*

CIM_ScopeCodeType

Type: **Enumeration**
Status: Proposed. Version 1.0. Phase 1.0.
Package: quality *Keywords:*
Detail: *Created on 10/8/2008. Last modified on 10/22/2010.*
GUID: {2A01B7D3-48D4-41a1-93CB-34736C281E02}

Relatively few of the scope codes defined in ISO19115 are relevant to CIM. I have therefore added a number of additional scope types - these are indicated with a trailing asterisk.

Custom Properties

- isActive = False

Attributes

Attribute	Notes	Constraints and tags

metadata Public «enum»	This would cover quality issues with the CIM itself	*Default:*
dataset Public «enum»		*Default:*
software Public «enum»		*Default:*
service Public «enum»		*Default:*
model Public «enum»		*Default:*
modelComponent Public «enum»		*Default:*

simulation Public «enum»		*Default:*
experiment Public «enum»		*Default:*
numericalRequirement Public «enum»		*Default:*
ensemble Public «enum»		*Default:*
file Public «enum»		*Default:*

QualityIssueType

Type: **Enumeration**
Status: Proposed. Version 1.0. Phase 1.0.
Package: quality *Keywords:*
Detail: *Created on 10/7/2008. Last modified on 10/8/2008.*
GUID: {C29C40CC-BEFD-4046-82B4-22F23D35BF29}

Custom Properties

- isActive = False

Attributes

Attribute	Notes	Constraints and tags
metadata Public «enum»		*Default:*
data_format Public «enum»		*Default:*
data_content Public «enum»		*Default:*
data_indexing Public «enum»		*Default:*
science Public «enum»		*Default:*

QualitySeverityType

Type: **Enumeration**

Status: Proposed. Version 1.0. Phase 1.0.
Package: quality *Keywords:*
Detail: *Created on 10/8/2008. Last modified on 10/8/2008.*
GUID: {C8F7591E-F3DE-4b0a-ACE6-9073A873C6AB}

Custom Properties

- isActive = False

Attributes

Attribute	Notes	Constraints and tags
cosmetic Public «enum»		*Default:*
minor Public «enum»		*Default:*
major Public «enum»		*Default:*

QualityStatusType

Type: **Enumeration**
Status: Proposed. Version 1.0. Phase 1.0.
Package: quality *Keywords:*
Detail: *Created on 10/8/2008. Last modified on 10/8/2008.*
GUID: {08E77721-3A33-43ee-B5F5-730676AD1D05}

Custom Properties

- isActive = False

Attributes

Attribute	Notes	Constraints and tags
reported Public «enum»		*Default:*
confirmed Public «enum»		*Default:*
partially_resolved Public «enum»		*Default:*
resolved Public «enum»		*Default:*

shared

Type: **Package**
Status: Proposed. Version 1.0. Phase 1.0.
Package: cim
Detail: *Created on 11/27/2008. Last modified on 12/4/2008*
GUID: {325FDFFC-1671-4a33-9579-029B6555B109}

Shared - *(Logical diagram)*

Created By: Allyn.Treshansky *on* 10/21/2008
Last Modified: 8/15/2011
Version: 1.0. *Locked:* False
GUID: {0C74D3C0-F8E5-4d9f-8189-3873AA843191}

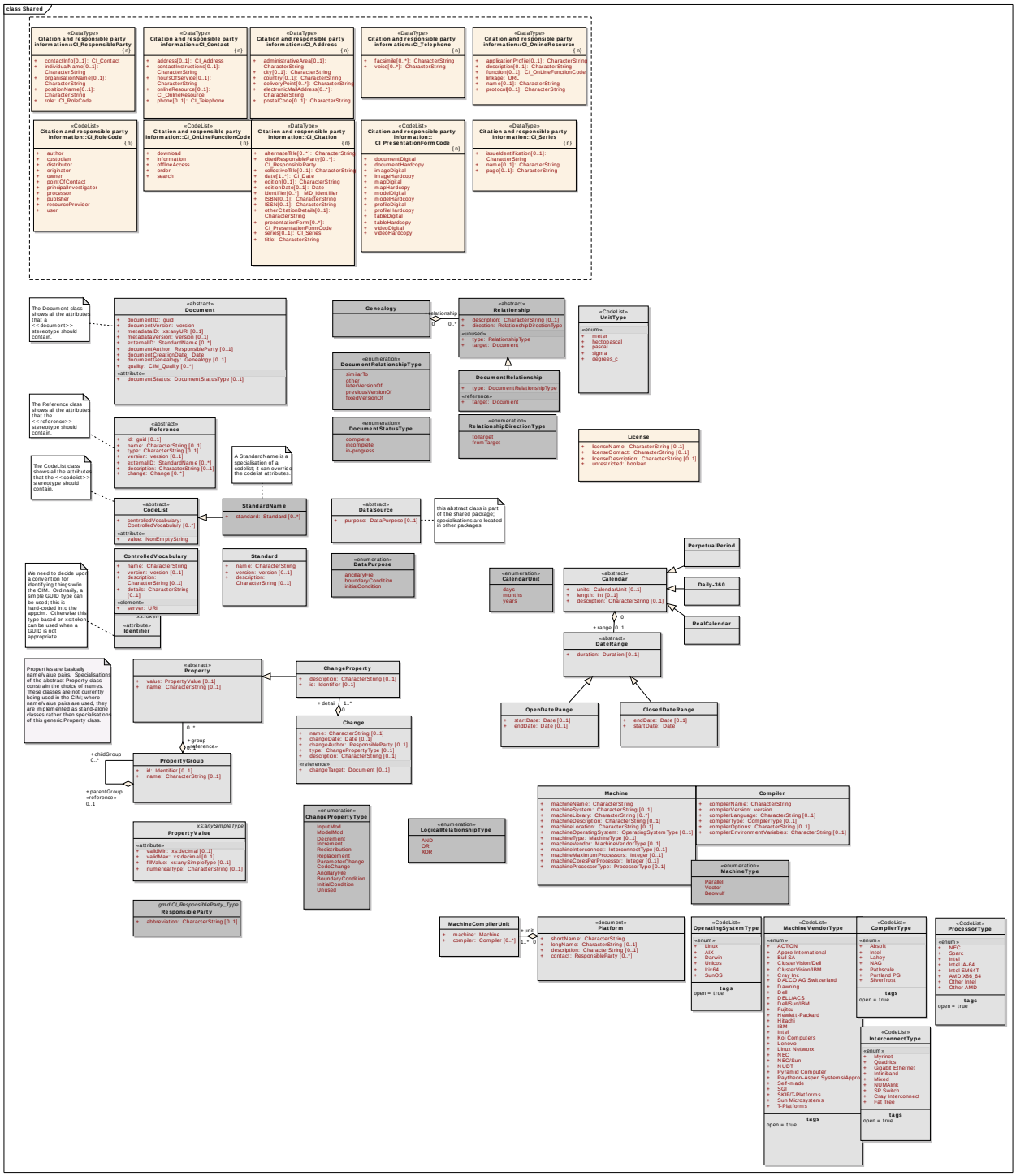

Figure: 11

Calendar

Type: **Abstract**
Status: Proposed. Version 1.0. Phase 1.0.
Package: shared *Keywords:*
Detail: *Created on 9/22/2008. Last modified on 4/2/2010.*
GUID: {51965989-6140-4494-B858-AC62C61BD85D}

Describes a method of calculating a span of dates.

Custom Properties

- isActive = False

Connections

Connector	Source	Target	Notes
Aggregation Source -> Destination	Public range DateRange	Public Calendar	
Generalization Source -> Destination	Public Daily-360	Public Calendar	
Generalization Source -> Destination	Public RealCalendar	Public Calendar	
Generalization Source -> Destination	Public PerpetualPeriod	Public Calendar	

Attributes

Attribute	Notes	Constraints and tags
units CalendarUnit Public [0..1]		*Default:*
length int Public [0..1]		*Default:*

description CharacterString Public [0..1]	Describes the finer details of the calendar, in case they are not-obvious. For example, if an experiment has changing conditions within it (ie: 1% CO2 increase until 2100, then hold fixed for the remaining period of the experment)	*Default:*

CalendarUnit

Type: **Enumeration**
Status: Proposed. Version 1.0. Phase 1.0.
Package: shared *Keywords:*
Detail: *Created on 6/29/2009. Last modified on 3/18/2010.*
GUID: {B287BC02-E206-470c-A334-92647E44A7DD}

Describes the units that a given calendar uses.

Custom Properties

- isActive = False

Attributes

Attribute	Notes	Constraints and tags
days Public «enum»		*Default:*
months Public «enum»		*Default:*
years Public «enum»		*Default:*

Change

Type: **Class**
Status: Proposed. Version 1.0. Phase 1.0.
Package: shared *Keywords:*
Detail: *Created on 12/4/2008. Last modified on 2/28/2010.*
GUID: {BA8D0604-859B-4189-96DB-5B6C5C4D8C92}

A description of [a set of] changes applied at a particular time, by a particular party, to a particular unit of metadata (identified using XPath). Currently unused in the CIM.

Custom Properties

- isActive = False

Connections

Connector	Source	Target	Notes
Aggregation Source -> Destination	Public detail ChangeProperty	Public Change	

Attributes

Attribute	Notes	Constraints and tags
name CharacterString Public [0..1]	A mnemonic for describing a particular change.	*Default:*
changeTarget Document Public [0..1] «reference»	The CIM element being changed. If this is blank, then it is implied by the target of its parent (a Change instance currently can only appear as part of a reference which has a target anyway).	*Default:*

changeDate Date Public [0..1]	The date the change was implemented.	*Default:*
changeAuthor ResponsibleParty Public [0..1]	The person that made the change.	*Default:*
type ChangePropertyType Public [0..1]		*Default:*
description CharacterString Public [0..1]		*Default:*

ChangeProperty

Type: **Class** **Property**
Status: Proposed. Version 1.0. Phase 1.0.
Package: shared *Keywords:*
Detail: *Created on 12/22/2008. Last modified on 2/28/2010.*
GUID: {BC80E80E-EC3C-4d14-AFDD-AD8ABAEF5F1B}

A description of a single change applied to a single target. Every ChangeProperty has a description, and may also have a name from a controlled vocabulary and a value.

Currently unused in the CIM.

Custom Properties

- isActive = False

Connections

Connector	Source	Target	Notes
Aggregation Source -> Destination	Public detail ChangeProperty	Public Change	
Generalization Source -> Destination	Public ChangeProperty	Public Property	

Attributes

Attribute	Notes	Constraints and tags
description CharacterString Public [0..1]	A text description of the change. May be used in addition to, or instead of, the more formal description provided by the "value" attribute.	*Default:*
id Identifier Public [0..1]		*Default:*

ChangePropertyType

Type: **Enumeration**
Status: Proposed. Version 1.0. Phase 1.0.
Package: shared *Keywords:*
Detail: *Created on 3/4/2010. Last modified on 3/4/2010.*
GUID: {72E45810-6CC8-483f-AC5F-A85AD7E49405}

A list of modification types. Modifications are optional sub-elements of references that describe how the referenced element has changed. They are particularly relevant for ensemble members and conformances (where the modification types "modelMod" or "inputMod" would be used).

Custom Properties

- isActive = False

Attributes

Attribute	Notes	Constraints and tags

InputMod Public «enum»		*Default:*
ModelMod Public «enum»		*Default:*
Decrement Public «enum»		*Default:*
Increment Public «enum»		*Default:*
Redistribution Public «enum»		*Default:*
Replacement Public «enum»		*Default:*

ParameterChange Public «enum»	a specific type of ModelMod	*Default:*
CodeChange Public «enum»	a specific type of ModelMod	*Default:*
AncillaryFile Public «enum»	a specific type of InputMod	*Default:*
BoundaryCondition Public «enum»	a specific type of InputMod	*Default:*
InitialCondition Public «enum»	a specific type of InputMod	*Default:*
Unused Public «enum»		*Default:*

ClosedDateRange

Type: **Class** **DateRange**

Status: Proposed. Version 1.0. Phase 1.0.
Package: shared *Keywords:*
Detail: *Created on 9/22/2008. Last modified on 4/2/2010.*
GUID: {026D313C-40A6-4781-82A7-18EA9430288D}

A date range with specified start and end points.

Custom Properties

- isActive = False

Connections

Connector	Source	Target	Notes
Generalization Source -> Destination	Public ClosedDateRange	Public DateRange	

Attributes

Attribute	Notes	Constraints and tags
endDate Date Public [0..1]	EndDate is optional becuase the length of a ClosedDateRange can be calculated from the StartDate plus the Duration element.	*Default:*
startDate Date Public		*Default:*

CodeList

Type: **Abstract**
Status: Proposed. Version 1.0. Phase 1.0.
Package: shared *Keywords:*
Detail: *Created on 12/10/2008. Last modified on 3/22/2011.*
GUID: {60BFCCDE-6F80-4545-96A4-62F1E8AB7191}

A placeholder for codelists (required for XSL generation).

Custom Properties

- isActive = False

Connections

Connector	Source	Target	Notes
Generalization Source -> Destination	Public StandardName	Public CodeList	
NoteLink	Public <anonymous>	Public CodeList	

Attributes

Attribute	Notes	Constraints and tags
controlledVocabulary ControlledVocabulary Public [0..*]		*Default:*
value NonEmptyString Public «attribute»	The term being used for this CV (or standard)	*Default:*

Compiler

Type: **Class**
Status: Proposed. Version 1.0. Phase 1.0.
Package: shared *Keywords:*
Detail: *Created on 9/22/2008. Last modified on 4/2/2010.*
GUID: {356E35A2-A47E-4d06-9E84-E11EF7ECF7EE}

A description of a compiler used on a particular platform.

Custom Properties

- isActive = False

Attributes

Attribute	Notes	Constraints and tags
compilerName CharacterString Public		*Default:*
compilerVersion version Public		*Default:*
compilerLanguage CharacterString Public [0..1]		*Default:*
compilerType CompilerType Public [0..1]		*Default:*
compilerOptions CharacterString Public [0..1]	The set of options used during compilation (recorded here as a single string rather than separate elements)	*Default:*
compilerEnvironmentVariables CharacterString Public [0..1]	The state of envrionment variables used during compilation (recorded here as a single string rather than separate elements)	*Default:*

CompilerType

Type: **Class**
Status: Proposed. Version 1.0. Phase 1.0.
Package: shared *Keywords:*
Detail: *Created on 10/9/2008. Last modified on 4/2/2010.*
GUID: {1433FE43-7BAC-45c7-8377-91EB7347FAEE}

A list of known compilers.

Custom Properties

- isActive = False

Tagged Values

- open = true.

Attributes

Attribute	Notes	Constraints and tags
Absoft Public «enum»		*Default:*
Intel Public «enum»		*Default:*
Lahey Public «enum»		*Default:*

NAG Public «enum»		*Default:*
Pathscale Public «enum»		*Default:*
Portland PGI Public «enum»		*Default:*
Silverfrost Public «enum»		*Default:*

ControlledVocabulary

Type: **Class**
Status: Proposed. Version 1.0. Phase 1.0.
Package: shared *Keywords:*
Detail: *Created on 12/10/2008. Last modified on 3/22/2011.*
GUID: {5C349C28-E082-4f64-AFB2-06F1528A3A1F}

Custom Properties

- isActive = False

Attributes

Attribute	Notes	Constraints and tags

name CharacterString Public	The name of the CV	*Default:*
version version Public [0..1]	The version of the CV	*Default:*
server URI Public «element»	The location (URI) of the CV	*Default:*
description CharacterString Public [0..1]		*Default:*
details CharacterString Public [0..1]	Details on how to access the CV	*Default:*

Daily-360

Type: **Class** **Calendar**
Status: Proposed. Version 1.0. Phase 1.0.
Package: shared *Keywords:*
Detail: *Created on 9/22/2008. Last modified on 2/6/2009.*
GUID: {A312FC5F-796C-4f41-92FD-DDA79C17C5DA}

Custom Properties

- isActive = False

Connections

Connector	Source	Target	Notes
Generalization Source -> Destination	Public Daily-360	Public Calendar	

DataPurpose

Type: **Enumeration**
Status: Proposed. Version 1.0. Phase 1.0.
Package: shared *Keywords:*
Detail: *Created on 6/29/2009. Last modified on 4/2/2010.*
GUID: {8F19E1EE-6298-41a1-89FA-3B06D1745668}

Describes what purpose a particular simulation input has: ancillary file, boundary condition, or initial condition.

Custom Properties

- isActive = False

Attributes

Attribute	Notes	Constraints and tags
ancillaryFile Public «enum»		*Default:*
boundaryCondition Public «enum»		*Default:*

initialCondition Public «enum»		*Default:*

DataSource

Type: **Abstract**
Status: Proposed. Version 1.0. Phase 1.0.
Package: shared *Keywords:*
Detail: *Created on 10/10/2008. Last modified on 7/9/2010.*
GUID: {58FBA630-1EF2-4e9a-ACA8-854D78978061}

A DataSource can be realised by either a DataObject (file), a DataContent (variable), a Component (model), or a ComponentProperty (variable); all of those can supply data.

Custom Properties

- isActive = False

Connections

Connector	Source	Target	Notes
Generalization Source -> Destination	Public SoftwareComponent	Public DataSource	
Generalization Source -> Destination	Public ComponentProperty	Public DataSource	
NoteLink	Public <anonymous>	Public DataSource	
Generalization Source -> Destination	Public DataContent	Public DataSource	
Generalization Source -> Destination	Public DataObject	Public DataSource	

Attributes

Attribute	Notes	Constraints and tags

purpose DataPurpose Public [0..1]		*Default:*

DateRange

Type: **Abstract**
Status: Proposed. Version 1.0. Phase 1.0.
Package: shared *Keywords:*
Detail: *Created on 9/22/2008. Last modified on 8/5/2009.*
GUID: {BA8E5BC8-B130-4400-921D-D48651666EFD}

Custom Properties

- isActive = False

Connections

Connector	Source	Target	Notes
Generalization Source -> Destination	Public OpenDateRange	Public DateRange	
Generalization Source -> Destination	Public ClosedDateRange	Public DateRange	
Aggregation Source -> Destination	Public range DateRange	Public Calendar	

Attributes

Attribute	Notes	Constraints and tags
duration Duration Public [0..1]		*Default:*

Document

Type: **Abstract**
Status: Proposed. Version 1.0. Phase 1.0.
Package: shared *Keywords:*
Detail: *Created on 12/12/2008. Last modified on 8/5/2009.*
GUID: {74368B1B-3C39-486a-A318-3C6AB0AFE1DD}

Any class or feature with the <<document>> stereotype uses the attributes of this class. Furthermore, any class or feature with the <<document>> stereotype can form the root of an XML document.

Custom Properties

- isActive = False

Connections

Connector	Source	Target	Notes
NoteLink	Public Document	Public <anonymous>	

Attributes

Attribute	Notes	Constraints and tags
documentID guid Public	a unique indentifier for this document	*Default:*
documentVersion version Public		*Default:*
metadataID xs:anyURI Public [0..1]		*Default:*

metadataVersion version Public [0..1]		*Default:*
externalID StandardName Public [0..*]	The id of this document as referenced by an external body (ie: DOI, or even IPSL)	*Default:*
documentAuthor ResponsibleParty Public [0..1]	A contact for the author of this *document* (as opposed to the author of the artifact being described by this document; ie: the simulation or component or whatever). This includes information about the authoring institution.	*Default:*
documentCreationDate Date Public	The date the *document* was created.	*Default:*
documentGenealogy Genealogy Public [0..1]	Specifies the relationship of this document with another document. Various relationship types (depending on the type of document; ie: simulation, component, etc.) are supported.	*Default:*
documentStatus DocumentStatusType Public [0..1] «attribute»		*Default:*

quality CIM_Quality Public [0..*]	a (set of) quality record(s) for this document.	*Default:*

DocumentRelationship

Type: **Class** **Relationship**
Status: Proposed. Version 1.0. Phase 1.0.
Package: shared *Keywords:*
Detail: *Created on 6/29/2009. Last modified on 4/2/2010.*
GUID: {517485D4-5B1E-4d27-99B5-EC2E9C483650}

Contains the set of relationships supported by a Document.

Custom Properties

- isActive = False

Connections

Connector	Source	Target	Notes
Generalization Source -> Destination	Public DocumentRelationship	Public Relationship	

Attributes

Attribute	Notes	Constraints and tags
type DocumentRelationshipType Public		*Default:*

target Document Public «reference»		*Default:*

DocumentRelationshipType

Type: **Enumeration**
Status: Proposed. Version 1.0. Phase 1.0.
Package: shared *Keywords:*
Detail: *Created on 6/29/2009. Last modified on 4/2/2010.*
GUID: {6EF5EDDE-02DE-4a8a-B4EF-69A501923893}

The types of relationships that can be specified within a document's genealogy.

Custom Properties

- isActive = False

Attributes

Attribute	Notes	Constraints and tags
similarTo Public «enum»		*Default:*
other Public «enum»		*Default:*
laterVersionOf Public «enum»		*Default:*

previousVersionOf Public «enum»		*Default:*
fixedVersionOf Public «enum»		*Default:*

DocumentStatusType

Type: **Enumeration**
Status: Proposed. Version 1.0. Phase 1.0.
Package: shared *Keywords:*
Detail: *Created on 6/29/2009. Last modified on 4/2/2010.*
GUID: {A90EF0C8-428A-4201-A884-15E33B8C2FD8}

The current state of the CIM document: complete, incomplete, or in-progress.

Custom Properties

- isActive = False

Attributes

Attribute	Notes	Constraints and tags
complete Public «enum»		*Default:*
incomplete Public «enum»		*Default:*

in-progress Public «enum»		*Default:*

Genealogy

Type: **Class**
Status: Proposed. Version 1.0. Phase 1.0.
Package: shared *Keywords:*
Detail: *Created on 6/29/2009. Last modified on 8/5/2009.*
GUID: {A3D68BD7-89FF-4861-952B-B4DDA55C645E}

A record of a document's history. A genealogy element contains a textual description and a set of relationships. Each relationship has a type and a reference to some target. There are different relationships for different document types.

Custom Properties

- isActive = False

Connections

Connector	Source	Target	Notes
Aggregation Source -> Destination	Public relationship Relationship	Public Genealogy	

Identifier

Type: **Class** **xs:token**
Status: Proposed. Version 1.0. Phase 1.0.
Package: shared *Keywords:*
Detail: *Created on 10/2/2008. Last modified on 4/2/2010.*
GUID: {7829C9A7-BAD3-4fa6-8C65-1BCCAF62E479}

Needed so that a Numerical Requirement can be be uniquely identified and related to a specific data granule.

Custom Properties

- isActive = False

Connections

Connector	Source	Target	Notes
NoteLink	Public Identifier	Public <anonymous>	

InterconnectType

Type: **Class**
Status: Proposed. Version 1.0. Phase 1.0.
Package: shared *Keywords:*
Detail: *Created on 10/9/2008. Last modified on 4/2/2010.*
GUID: {C04ABE46-1259-441b-B4CA-8F535896B26C}

A list of known compilers.

Custom Properties

- isActive = False

Tagged Values

- open = true.

Attributes

Attribute	Notes	Constraints and tags
Myrinet Public «enum»		*Default:*
Quadrics Public «enum»		*Default:*

Gigabit Ethernet Public «enum»		*Default:*
Infiniband Public «enum»		*Default:*
Mixed Public «enum»		*Default:*
NUMAlink Public «enum»		*Default:*
SP Switch Public «enum»		*Default:*
Cray Interconnect Public «enum»		*Default:*

Fat Tree Public «enum»		*Default:*

License

Type: **Class**
Status: Proposed. Version 1.0. Phase 1.0.
Package: shared *Keywords:*
Detail: *Created on 8/14/2009. Last modified on 8/14/2009.*
GUID: {3FF98F2D-DDCC-4660-A9B6-883A366D7129}

A description of a license restricting access to a unit of data or software.

Custom Properties

- isActive = False

Attributes

Attribute	Notes	Constraints and tags
licenseName CharacterString Public [0..1]	The name that the license goes by (ie: "GPL").	*Default:*
licenseContact CharacterString Public [0..1]	The point of contact for access to this artifact; may be either a person or an institution.	*Default:*

licenseDescription CharacterString Public [0..1]	A textual description of the license. This might be the full text of the license, though it is more likely to be just a brief summary.	*Default:*
unrestricted boolean Public	If unrestricted is true then the artifact can be downloaded with no restrictions (ie: there are no administrative steps for the user to deal with; code or data can be downloaded and used directly).	*Default:*

LogicalRelationshipType

Type: **Enumeration**
Status: Proposed. Version 1.0. Phase 1.0.
Package: shared *Keywords:*
Detail: *Created on 6/29/2009. Last modified on 8/5/2009.*
GUID: {D6D4193D-1D82-4283-807B-5DC6892D061E}

Custom Properties

- isActive = False

Attributes

Attribute	Notes	Constraints and tags
AND Public «enum»		*Default:*

OR Public «enum»		*Default:*
XOR Public «enum»		*Default:*

Machine

Type: **Class**
Status: Proposed. Version 1.0. Phase 1.0.
Package: shared *Keywords:*
Detail: *Created on 9/22/2008. Last modified on 4/2/2010.*
GUID: {8D7AB250-025B-4dd9-82F6-7254486204F6}

A description of a machine used by a particular platform.

Custom Properties

- isActive = False

Attributes

Attribute	Notes	Constraints and tags
machineName CharacterString Public		*Default:*

machineSystem CharacterString Public [0..1]		*Default:*
machineLibrary CharacterString Public [0..*]	A library residing on this machine.	*Default:*
machineDescription CharacterString Public [0..1]		*Default:*
machineLocation CharacterString Public [0..1]		*Default:*
machineOperatingSystem OperatingSystemType Public [0..1]		*Default:*
machineType MachineType Public [0..1]		*Default:*

machineVendor MachineVendorType Public [0..1]		*Default:*
machineInterconnect InterconnectType Public [0..1]		*Default:*
machineMaximumProcessors Integer Public [0..1]		*Default:*
machineCoresPerProcessor Integer Public [0..1]		*Default:*
machineProcessorType ProcessorType Public [0..1]		*Default:*

MachineCompilerUnit

Type: **Class**
Status: Proposed. Version 1.0. Phase 1.0.
Package: shared *Keywords:*
Detail: *Created on 9/22/2008. Last modified on 9/30/2010.*
GUID: {5754A253-3BAC-4d55-9EF9-D0A0D3CD1E92}

Associates a machine with a [set of] compilers. This is a separate class in case a platform needs to specify more than one machine/compiler pair.

Custom Properties

- isActive = False

Connections

Connector	Source	Target	Notes
Aggregation Source -> Destination	Public unit MachineCompilerUnit	Public Platform	

Attributes

Attribute	Notes	Constraints and tags
machine Machine Public		*Default:*
compiler Compiler Public [0..*]		*Default:*

MachineType

Type: **Enumeration**
Status: Proposed. Version 1.0. Phase 1.0.
Package: shared *Keywords:*
Detail: *Created on 6/29/2009. Last modified on 8/5/2009.*
GUID: {71F53310-BDA0-40ac-8CD0-A1E81FD6298C}

Custom Properties

- isActive = False

Attributes

Attribute	Notes	Constraints and tags
Parallel Public «enum»		*Default:*
Vector Public «enum»		*Default:*
Beowulf Public «enum»		*Default:*

MachineVendorType

Type: **Class**
Status: Proposed. Version 1.0. Phase 1.0.
Package: shared *Keywords:*
Detail: *Created on 10/9/2008. Last modified on 4/2/2010.*
GUID: {BE2EE292-67BC-44a8-8598-649ADAAE4E0B}

A list of organisations that create machines.

Custom Properties

- isActive = False

Tagged Values

- open = true.

Attributes

Attribute	Notes	Constraints and tags

ACTION Public «enum»		*Default:*
Appro International Public «enum»		*Default:*
Bull SA Public «enum»		*Default:*
ClusterVision/Dell Public «enum»		*Default:*
ClusterVision/IBM Public «enum»		*Default:*
Cray Inc Public «enum»		*Default:*

DALCO AG Switzerland Public «enum»		*Default:*
Dawning Public «enum»		*Default:*
Dell Public «enum»		*Default:*
DELL/ACS Public «enum»		*Default:*
Dell/Sun/IBM Public «enum»		*Default:*
Fujitsu Public «enum»		*Default:*

Hewlett-Packard Public «enum»		*Default:*
Hitachi Public «enum»		*Default:*
IBM Public «enum»		*Default:*
Intel Public «enum»		*Default:*
Koi Computers Public «enum»		*Default:*
Lenovo Public «enum»		*Default:*

Linux Networx Public «enum»		*Default:*
NEC Public «enum»		*Default:*
NEC/Sun Public «enum»		*Default:*
NUDT Public «enum»		*Default:*
Pyramid Computer Public «enum»		*Default:*
Raytheon-Aspen Systems/Appro Public «enum»		*Default:*

Self-made Public «enum»		*Default:*
SGI Public «enum»		*Default:*
SKIF/T-Platforms Public «enum»		*Default:*
Sun Microsystems Public «enum»		*Default:*
T-Platforms Public «enum»		*Default:*

OpenDateRange

Type: **Class** **DateRange**
Status: Proposed. Version 1.0. Phase 1.0.
Package: shared *Keywords:*
Detail: *Created on 9/22/2008. Last modified on 4/2/2010.*
GUID: {6322D7D5-68AC-4891-993A-6C0C840F6573}

A date range without a specified start and/or end point.

Custom Properties

- isActive = False

Connections

Connector	Source	Target	Notes
Generalization Source -> Destination	Public OpenDateRange	Public DateRange	

Attributes

Attribute	Notes	Constraints and tags
startDate Date Public [0..1]		*Default:*
endDate Date Public [0..1]		*Default:*

OperatingSystemType

Type: **Class**
Status: Proposed. Version 1.0. Phase 1.0.
Package: shared *Keywords:*
Detail: *Created on 10/9/2008. Last modified on 4/2/2010.*
GUID: {9D2B643E-4FCA-45d8-8805-49F9830F903F}

A list of common operating systems.

Custom Properties

- isActive = False

Tagged Values

- open = true.

Attributes

Attribute	Notes	Constraints and tags
Linux Public «enum»		*Default:*
AIX Public «enum»		*Default:*
Darwin Public «enum»		*Default:*
Unicos Public «enum»		*Default:*
Irix64 Public «enum»		*Default:*
SunOS Public «enum»		*Default:*

PerpetualPeriod

Type: **Class** **Calendar**
Status: Proposed. Version 1.0. Phase 1.0.
Package: shared *Keywords:*
Detail: *Created on 9/22/2008. Last modified on 11/3/2008.*
GUID: {DF8B7441-784A-432b-91DB-2B7000A0C3C4}

Custom Properties

- isActive = False

Connections

Connector	Source	Target	Notes
Generalization Source -> Destination	Public PerpetualPeriod	Public Calendar	

Platform

Type: **Class**
Status: Proposed. Version 1.0. Phase 1.0.
Package: shared *Keywords:*
Detail: *Created on 9/22/2008. Last modified on 7/8/2010.*
GUID: {2C64F7B8-314C-4d6a-A4E5-674AFC9BA6E1}

A platform is a description of resources used to deploy a component/simulation. A platform pairs a machine with a (set of) compilers. There is also a point of contact for the platform.

Custom Properties

- isActive = False

Connections

Connector	Source	Target	Notes
Aggregation Source -> Destination	Public unit MachineCompilerUnit	Public Platform	

Attributes

Attribute	Notes	Constraints and tags
shortName CharacterString Public		*Default:*
longName CharacterString Public [0..1]		*Default:*
description CharacterString Public [0..1]		*Default:*
contact ResponsibleParty Public [0..*]		*Default:*

ProcessorType

Type: **Class**
Status: Proposed. Version 1.0. Phase 1.0.
Package: shared *Keywords:*
Detail: *Created on 10/9/2008. Last modified on 4/2/2010.*
GUID: {FF1FD6D4-89E1-4f5a-AE63-8229625C3891}

A list of known compilers.

Custom Properties

- isActive = False

Tagged Values

- open = true.

Attributes

Attribute	Notes	Constraints and tags
NEC Public «enum»		*Default:*
Sparc Public «enum»		*Default:*
Intel Public «enum»		*Default:*
Intel IA-64 Public «enum»		*Default:*
Intel EM64T Public «enum»		*Default:*

AMD X86_64 Public «enum»		*Default:*
Other Intel Public «enum»		*Default:*
Other AMD Public «enum»		*Default:*

Property

Type: **Abstract**
Status: Proposed. Version 1.0. Phase 1.0.
Package: shared *Keywords:*
Detail: *Created on 10/31/2008. Last modified on 4/2/2010.*
GUID: {063684D8-BF5A-42a7-9EBD-A7968AACE56E}

An abstract property is simply a name/value pair. Properties may be grouped into PropertyGroups. Properties are used to describe features of a class whose details can't be known beforehand and, hence, can't be hard-coded into the schema.

Custom Properties

- isActive = False

Connections

Connector	Source	Target	Notes
Aggregation Source -> Destination	Public Property	Public group PropertyGroup	
Generalization Source -> Destination	Public CouplingProperty	Public Property	

Generalization Source -> Destination	Public SpatialRegriddingProperty	Public Property	
Generalization Source -> Destination	Public ConnectionProperty	Public Property	
Generalization Source -> Destination	Public ComponentLanguageProperty	Public Property	
Generalization Source -> Destination	Public ChangeProperty	Public Property	
Generalization Source -> Destination	Public GridProperty	Public Property	
Generalization Source -> Destination	Public DataProperty	Public Property	

Attributes

Attribute	Notes	Constraints and tags
value PropertyValue Public [0..1]		*Default:*
name CharacterString Public [0..1]		*Default:*

PropertyGroup

Type: **Class**
Status: Proposed. Version 1.0. Phase 1.0.
Package: shared *Keywords:*
Detail: *Created on 11/7/2008. Last modified on 2/13/2011.*
GUID: {CD2869D3-FB47-4261-8F9A-165BBC4E6BA5}

A collection of Properties. A PropertyGroup can itself contain other PropertyGroups.

Custom Properties

- isActive = False

Connections

Connector	Source	Target	Notes
Aggregation Source -> Destination	Public childGroup PropertyGroup	Public parentGroup PropertyGroup	
Aggregation Source -> Destination	Public Property	Public group PropertyGroup	

Attributes

Attribute	Notes	Constraints and tags
id Identifier Public [0..1]	A unique id for this group of properties.	*Default:*
name CharacterString Public [0..1]	The name of this group of properties.	*Default:* [fixed =] [anonymousRole = false] [form =] [default =]

PropertyValue

Type: **Class** **xs:anySimpleType**
Status: Proposed. Version 1.0. Phase 1.0.
Package: shared *Keywords:*
Detail: *Created on 2/27/2009. Last modified on 2/27/2009.*
GUID: {78CC5F57-35EC-4bf9-833A-C626894EE514}

Custom Properties

- isActive = False

Attributes

Attribute	Notes	Constraints and tags
validMin xs:decimal Public [0..1] «attribute»		*Default:*
validMax xs:decimal Public [0..1] «attribute»		*Default:*
fillValue xs:anySimpleType Public [0..1] «attribute»	The value to use when the real value is unavailable (ie: cannot be coupled).	*Default:*
numericalType CharacterString Public [0..1] «attribute»	The datatype of the value: string, int, double, etc.	*Default:*

RealCalendar

Type: **Class** **Calendar**
Status: Proposed. Version 1.0. Phase 1.0.
Package: shared *Keywords:*
Detail: *Created on 9/22/2008. Last modified on 2/6/2009.*
GUID: {E96046D0-D7D9-41b1-9185-7F2B78A99446}

Custom Properties

- isActive = False

Connections

Connector	Source	Target	Notes
Generalization Source -> Destination	Public RealCalendar	Public Calendar	

Reference

Type: **Abstract**
Status: Proposed. Version 1.0. Phase 1.0.
Package: shared *Keywords:*
Detail: *Created on 12/12/2008. Last modified on 4/2/2010.*
GUID: {CEB3051E-7100-414e-9801-8A598754FFFA}

Any class or feature with the <<reference>> stereotype uses the attributes of this class.

With all the different ways of pinpointing an XML item, a reference can either use XPATH to directly locate the item or it can just identifiy the document and then use the other attributes (name,type,etc.) to narrow down the particular element within that document.

Custom Properties

- isActive = False

Connections

Connector	Source	Target	Notes
NoteLink	Public <anonymous>	Public Reference	

Attributes

Attribute	Notes	Constraints and tags
id guid Public [0..1]	the ID of the element being referenced.	*Default:*

name CharacterString Public [0..1]	The name of the instance being referenced.	*Default:*
type CharacterString Public [0..1]	The type of item being referenced (should correspond to the name of the referenced XML element).	*Default:*
version version Public [0..1]	The version of the element being referenced.	*Default:*
externalID StandardName Public [0..*]	A non-CIM (non-GUID) id used to reference the element in question.	*Default:*
description CharacterString Public [0..1]	A description of the element being referenced, in the context of the current class.	*Default:*
change Change Public [0..*]	An optional description of how the item being referenced has been modified. This is particularly useful for dealing with Ensembles (a set of simulations where something about each simulation has changed) or Conformances.	*Default:*

Relationship

Type: **Abstract**

Status: Proposed. Version 1.0. Phase 1.0.
Package: shared *Keywords:*
Detail: *Created on 6/29/2009. Last modified on 8/5/2009.*
GUID: {B7077CAD-A00C-4f59-AF1E-7731B72B30E6}

A record of a relationship between one document and another. This class is abstract; specific document types must specialise this class for their relationshipTypes to be included in a document's genealogy.

Custom Properties

- isActive = False

Connections

Connector	Source	Target	Notes
Aggregation Source -> Destination	Public relationship Relationship	Public Genealogy	
Generalization Source -> Destination	Public DocumentRelationship	Public Relationship	
Generalization Source -> Destination	Public SimulationRelationship	Public Relationship	
Generalization Source -> Destination	Public ExperimentRelationship	Public Relationship	

Attributes

Attribute	Notes	Constraints and tags
type RelationshipType Public «unused»	This attribute is <<unused>>; it is a placeholder for specific relationshipTypes used by specialisations of Relationship.	*Default:*
target Document Public «unused»		*Default:*

description CharacterString Public [0..1]		*Default:*
direction RelationshipDirectionType Public		*Default:*

RelationshipDirectionType

Type: **Enumeration**
Status: Proposed. Version 1.0. Phase 1.0.
Package: shared *Keywords:*
Detail: *Created on 6/29/2009. Last modified on 9/30/2010.*
GUID: {B6E94A69-C5C0-468b-B505-4D09F68FDFD3}

The direction of a relationship: source to target, or target to source

Custom Properties

- isActive = False

Attributes

Attribute	Notes	Constraints and tags
toTarget Public «enum»		*Default:*

fromTarget Public «enum»		*Default:*

ResponsibleParty

Type: **Class** **gmd:CI_ResponsibleParty_Type**
Status: Proposed. Version 1.0. Phase 1.0.
Package: shared *Keywords:*
Detail: *Created on 6/29/2009. Last modified on 3/1/2010.*
GUID: {B8669DE3-AB12-4ee9-948D-507F6779E06F}

A CIM-specific ResponsibleParty. Sub-classes the gmd ResponsibleParty type and adds the attribute "abbreviation."

Custom Properties

- isActive = False

Attributes

Attribute	Notes	Constraints and tags
abbreviation CharacterString Public [0..1]		*Default:*

Standard

Type: **Class**
Status: Proposed. Version 1.0. Phase 1.0.
Package: shared *Keywords:*
Detail: *Created on 12/10/2008. Last modified on 3/22/2011.*
GUID: {0A3FD46E-14DD-4824-AA51-E582C57994F0}

Custom Properties

- isActive = False

Attributes

Attribute	Notes	Constraints and tags
name CharacterString Public	The name of the standard	*Default:*
version version Public [0..1]	The version of the standard	*Default:*
description CharacterString Public [0..1]		*Default:*

StandardName

Type: **Class** **CodeList**
Status: Proposed. Version 1.0. Phase 1.0.
Package: shared *Keywords:*
Detail: *Created on 3/4/2010. Last modified on 3/22/2011.*
GUID: {91BFD371-D96E-443c-B680-A401F8427271}

Describes a name given to an entity from a recognised standard. The CIM records the standard and the name. For example, the standard might be "CF" and the name might be "atmospheric_pressure".

Custom Properties

- isActive = False

Tagged Values

- open = true.

Connections

Connector	Source	Target	Notes
Generalization Source -> Destination	Public UnitType	Public StandardName	
Generalization Source -> Destination	Public StandardName	Public CodeList	
NoteLink	Public <anonymous>	Public StandardName	

Attributes

Attribute	Notes	Constraints and tags
standard Standard Public [0..*]	Details of the standard being used.	*Default:*

UnitType

Type: **Class** **StandardName**
Status: Proposed. Version 1.0. Phase 1.0.
Package: shared *Keywords:*
Detail: *Created on 10/9/2008. Last modified on 8/5/2009.*
GUID: {C73547CC-4AE1-4d75-8F32-192C7F7061A4}

A list of scientific units.

Custom Properties

- isActive = False

Tagged Values

- open = true.

Connections

Connector	Source	Target	Notes

Generalization Source -> Destination	Public UnitType	Public StandardName	

Attributes

Attribute	Notes	Constraints and tags
meter Public «enum»		*Default:*
hectopascal Public «enum»		*Default:*
pascal Public «enum»		*Default:*
sigma Public «enum»		*Default:*
degrees_c Public «enum»		*Default:*

software

Type: **Package**

Status: Proposed. Version 1.0. Phase 1.0.
Package: cim
Detail: *Created on 11/27/2008. Last modified on 11/27/2008*
GUID: {268C96CA-8485-4365-A349-56E5AFE3C50A}

Software - *(Logical diagram)*
Created By: Allyn.Treshansky *on* 10/3/2008
Last Modified: 12/17/2014
Version: 1.0. *Locked:* False
GUID: {4A4B531B-AE19-48dd-9A23-DACDE2D60915}

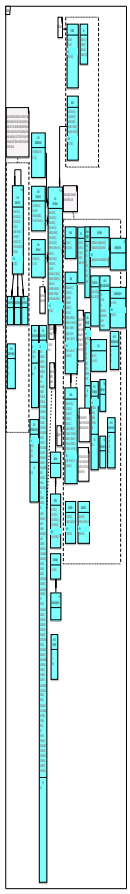

Figure: 12

ComponentLanguage

Type: **Class**
Status: Proposed. Version 1.0. Phase 1.0.
Package: software *Keywords:*
Detail: *Created on 11/20/2008. Last modified on 11/19/2010.*
GUID: {22013055-7227-458a-B694-54EA83083948}

Details of the programming language a component is written in. There is an assumption that all EntryPoints use the same ComponentLanguage.

Custom Properties

- isActive = False

Connections

Connector	Source	Target	Notes
Aggregation Source -> Destination	Public ComponentLanguageProperty	Public ComponentLanguage	

Attributes

Attribute	Notes	Constraints and tags
name CharacterString Public	The name of the language	*Default:*

ComponentLanguageProperty

Type: **Class** **Property**
Status: Proposed. Version 1.0. Phase 1.0.
Package: software *Keywords:*
Detail: *Created on 12/16/2008. Last modified on 11/19/2010.*
GUID: {E52C1D0D-730A-46c2-998D-8ACC67D1DE85}

This provides a place to include language-specific information. Every property is basically a name/value pair, where the names are things like: moduleName, reservedUnits, reservedNames (these are all examples of Fortran-specific properties).

Custom Properties

- isActive = False

Connections

Connector	Source	Target	Notes
Aggregation Source -> Destination	Public ComponentLanguageProperty	Public ComponentLanguage	

Generalization Source -> Destination	Public ComponentLanguageProperty	Public Property	

ComponentProperties

Type: **Class**
Status: Proposed. Version 1.0. Phase 1.0.
Package: software *Keywords:*
Detail: *Created on 3/9/2009. Last modified on 8/13/2009.*
GUID: {8AD65CD8-8EBB-4f98-B25B-5B69842D25DF}

Just acting as a container for multiple component properties.

Custom Properties

- isActive = False

Connections

Connector	Source	Target	Notes
Aggregation Source -> Destination	Public ComponentProperty	Public ComponentProperties	

ComponentProperty

Type: **Class** **DataSource**
Status: Proposed. Version 1.0. Phase 1.0.
Package: software *Keywords:*
Detail: *Created on 3/4/2009. Last modified on 8/17/2011.*
GUID: {A5ABED44-931A-47c0-BE21-D45501DF3B92}

ComponentProperties include things that a component simulates (ie: pressure, humidity) and things that prescribe that simulation (ie: gravity, choice of advection scheme). Note that this is a specialisation of shared::DataSource. data::DataObject is also a specialisation of shared::DataSource. This allows software::Connections and/or activity::Conformance to refer to either ComponentProperties or DataObjects.

Custom Properties

- isActive = False

Connections

Connector	Source	Target	Notes
Generalization Source -> Destination	Public ComponentProperty	Public DataSource	
Aggregation Source -> Destination	Public ComponentProperty	Public NumericalProperties	
Aggregation Source -> Destination	Public ComponentProperty	Public ScientificProperties	
Aggregation Source -> Destination	Public ComponentProperty	Public ComponentProperty	
Aggregation Source -> Destination	Public ComponentProperty	Public ComponentProperties	

Attributes

Attribute	Notes	Constraints and tags
shortName CharacterString Public		*Default:*
longName CharacterString Public [0..1]		*Default:*
description CharacterString Public [0..1]		*Default:*
units UnitType Public [0..1]		*Default:*

standardName StandardName Public [0..*]	The standard name that this property is known as (for example, its CF name)	*Default:*
value PropertyValue Public [0..*]	The value of the property (not applicable to fields)	*Default:*
citation gmd:CI_Citation_Type Public [0..*]		*Default:*
intent ComponentPropertyIntentType Public [0..1]	The direction that this property is intended to be coupled: in, out, or inout.	*Default:*
represented Boolean Public	When set to false, means that this property is not used by the component. Covers the case when, for instance, a modeler chooses not to represent some property in their model. (But still allows meaningful comparisons between components which _do_ model this property.)	*Default:*
grid GridSpec Public [0..1] «reference»	A reference to the grid that this property maps onto; may override the ModelComponent grid.	*Default:*

ComponentPropertyIntentType

Type: **Enumeration**
Status: Proposed. Version 1.0. Phase 1.0.
Package: software *Keywords:*
Detail: *Created on 10/8/2008. Last modified on 4/2/2010.*
GUID: {78223F48-B72F-492d-B06A-635194621D0C}

Describes how a property is used by a component; either as an input argument, an output argument, or an inout argument.

Custom Properties

- isActive = False

Attributes

Attribute	Notes	Constraints and tags
in Public «enum»		*Default:*
out Public «enum»		*Default:*
inout Public «enum»		*Default:*

Composition

Type: **Class**
Status: Proposed. Version 1.0. Phase 1.0.
Package: software *Keywords:*
Detail: *Created on 12/16/2008. Last modified on 4/2/2010.*
GUID: {44C533A0-F8E2-4ce4-B065-E2D45210BE53}

The set of Couplings used by a Component. Couplings can only occur between child components. That is, a composition must belong to an ancestor component of the components whose fields are being connected.

Custom Properties

- isActive = False

Connections

Connector	Source	Target	Notes
Aggregation Source -> Destination	Public Composition	Public SoftwareComponent	

Attributes

Attribute	Notes	Constraints and tags
coupling Coupling Public [1..*]		*Default:*
description CharacterString Public		*Default:*

Connection

Type: **Class**
Status: Proposed. Version 1.0. Phase 1.0.
Package: software *Keywords:*
Detail: *Created on 10/7/2008. Last modified on 7/8/2010.*
GUID: {5B0610EB-15AA-43ed-81EC-EF0191C04178}

A Connection represents a link from a source DataSource to a target DataSource. These can either be ComponentProperties (ie: the values come from an internal component) or DataObjects (ie: the values come from an external file). It can be associated with another software component (a transformer). If present, the rate, lag, timeTransformation, and spatialRegridding override that of the parent coupling.

Note that there is the potential for multiple connectionSource & connectionTarget and multiple couplingSources &

couplingTargets. This may lead users to wonder how to match up a connection source (a ComponentProperty) with its coupling source (a SoftwareComponent). Clever logic is not required though; because the sources and targets are listed by reference, they can be found in a CIM document and the parent can be navigated to from there - there is no need to consult the source or target of the coupling.

Custom Properties

- isActive = False

Connections

Connector	Source	Target	Notes
Aggregation Source -> Destination	Public Connection	Public Coupling	
NoteLink	Public <anonymous>	Public Connection	
NoteLink	Public <anonymous>	Public Connection	
NoteLink	Public <anonymous>	Public Connection	

Attributes

Attribute	Notes	Constraints and tags
description CharacterString Public [0..1]		*Default:*
type ConnectionType Public [0..1]	The type of Connection	*Default:*

purpose DataPurpose Public [0..1]	Describes why this connection is being made. Possible values include: boundaryCondition, initialCondition, Forcing.	*Default:*
timeProfile Timing Public [0..1]	All information having to do with the rate of this connection; the times that it is active. This overrides any rate of a Coupling.	*Default:*
timeLag TimeLag Public [0..1]	The coupling field used in the target at a given time corresponds to a field produced by the source at a previous time.	*Default:*
spatialRegridding SpatialRegridding Public [0..3]	Characteristics of the scheme used to interpolate a field from one grid (source grid) to another (target grid)	*Default:*
timeTransformation TimeTransformation Public [0..1]	Temporal transformation performed on the coupling field before or after regridding onto the target grid.	*Default:*
connectionSource ConnectionEndPoint Public [0..*]	The source property being connected. (note that there can be multiple sources) This is optional; the file/component source may have already been specified by the couplingSource.	*Default:*

connectionTarget ConnectionEndPoint Public [0..1]	The target property being connected. This is optional to support the way that input is handled in the CMIP5 questionnaire.	*Default:*
transformer ProcessorComponent Public [0..*] «reference»	An "in-line" transformer. This references a fully-described transformer (typically that forms part of the top-level composition) used in the context of this coupling. It is used instead of separately specifying a spatialRegridding, timeTransformation, etc. here.	*Default:*
priming DataSource Public [0..1] «reference»	A priming source is one that is active on the first available timestep only (before "proper" coupling can ocurr). It can either be described here explicitly, or else a separate coupling/connection with a timing profile that is active on only the first timestep can be created.	*Default:*
connectionProperty ConnectionProperty Public [0..*]		*Default:*

ConnectionEndPoint

Type: **Class**
Status: Proposed. Version 1.0. Phase 1.0.
Package: software *Keywords:*
Detail: *Created on 11/20/2008. Last modified on 11/19/2010.*
GUID: {B1CC00FC-1052-47c5-9280-37EDB9A69916}

The source/target of a connetion. This is a DataSource (a ComponnetProperty or DataContent). This is a separate class in order to associate an instanceID with the DataSource; this is used to identify which particular instance is being coupled in case the same DataSource is used more than once in a coupled model (this may be required for BFG). Realistically, tihe instanceID is unlikely to be used for a connection, only for a coupling. It is provided here for consistency.

Custom Properties

- isActive = False

Attributes

Attribute	Notes	Constraints and tags
dataSource DataSource Public «reference»		*Default:*
instanceID Identifier Public [0..1]	If the same datasource is used more than once in a coupled model then a method for identifying which particular instance is being referenced is needed (for BFG).	*Default:*
connectionProperty ConnectionProperty Public [0..*]	The place to describe features specific to the source/target of a connection.	*Default:*

ConnectionProperty

Type: **Class** **Property**
Status: Proposed. Version 1.0. Phase 1.0.
Package: software *Keywords:*
Detail: *Created on 12/16/2008. Last modified on 7/8/2010.*
GUID: {50A45F31-04C2-4eae-9365-1EE7F244FD9E}

A ConnectionProperty is a name/value pair used to specify OASIS-specific properties.

Custom Properties

- isActive = False

Connections

Connector	Source	Target	Notes
Generalization Source -> Destination	Public ConnectionProperty	Public Property	

ConnectionType

Type: **Class**
Status: Proposed. Version 1.0. Phase 1.0.
Package: software *Keywords:*
Detail: *Created on 10/8/2008. Last modified on 3/25/2010.*
GUID: {C910C67D-A580-430c-B5CB-718848604690}

The ConnectionType enumeration describes the mechanism of transport for a connection.

Custom Properties

- isActive = False

Tagged Values

- open = true.

Attributes

Attribute	Notes	Constraints and tags
CCSM Flux Coupler Public «enum»		*Default:*
ESMF Public «enum»		*Default:*
FMS Public «enum»		*Default:*

Files Public «enum»		*Default:*
MCT Public «enum»		*Default:*
OASIS3 Public «enum»		*Default:*
OASIS4 Public «enum»		*Default:*
Shared Memory Public «enum»	a "direct" connection; implies a sequential rather than parallel simulation; also known as "argument passing."	*Default:*
Embedded Public «enum»	An embedded connection is a "virtual" connection. It represents a connection between two embedded components which means that they are not implemented as separate comopnents in software and so there is no "real" inter-component coupling going on.	*Default:*

Coupling

Type: **Class**

Status: Proposed. Version 1.0. Phase 1.0.
Package: software *Keywords:*
Detail: *Created on 10/17/2008. Last modified on 1/26/2009.*
GUID: {8F8A0E0F-1405-406c-B767-8204C217EE0F}

A coupling represents a set of Connections between a source and target component. Couplings can be complete or incomplete. If they are complete then they must include all Connections between model properties. If they are incomplete then the connections can be underspecified or not listed at all.

Custom Properties

- isActive = False

Connections

Connector	Source	Target	Notes
Aggregation Source -> Destination	Public Connection	Public Coupling	
NoteLink	Public Coupling	Public <anonymous>	

Attributes

Attribute	Notes	Constraints and tags
description CharacterString Public [0..1]	A free-text description of the coupling.	*Default:*
type ConnectionType Public [0..1]	Describes the method of coupling.	*Default:* [default =] [fixed =] [form =] [anonymousRole = false]
purpose DataPurpose Public		*Default:*

fullySpecified Boolean Public	If "true" then the coupling is fully-specified. If "false" then not every Connection has been described within the coupling.	*Default:*
timeProfile Timing Public [0..1]	Describes how often the coupling takes place.	*Default:*
timeLag TimeLag Public [0..1]	The coupling field used in the target at a given time corresponds to a field produced by the source at a previous time.	*Default:*
spatialRegridding SpatialRegridding Public [0..3]	Characteristics of the scheme used to interpolate a field from one grid (source grid) to another (target grid)	*Default:*
timeTransformation TimeTransformation Public [0..1]	Temporal transformation performed on the coupling field before or after regridding onto the target grid.	*Default:*
couplingSource CouplingEndPoint Public [1..*]	The source component of the coupling. (note that there can be multiple sources)	*Default:*

couplingTarget CouplingEndPoint Public	The target component of the coupling	*Default:*
transformer ProcessorComponent Public [0..*] «reference»	An "in-line" transformer. This references a fully-described transformer (typically that forms part of the top-level composition) used in the context of this coupling. It is used instead of separately specifying a spatialRegridding, timeTransformation, etc. here.	*Default:*
priming DataSource Public [0..1] «reference»	A priming source is one that is active on the first available timestep only (before "proper" coupling can ocurr). It can either be described here explicitly, or else a separate coupling/connection with a timing profile that is active on only the first timestep can be created.	*Default:*
couplingProperty CouplingProperty Public [0..*]		*Default:*

CouplingEndPoint

Type: **Class**
Status: Proposed. Version 1.0. Phase 1.0.
Package: software *Keywords:*
Detail: *Created on 11/20/2008. Last modified on 11/19/2010.*
GUID: {B1CC549E-2556-455e-98D9-9A8DA2551597}

The source/target of a coupling. This is a DataSource (a SoftwareComponent or DataObject). This is a separate class in order to associate an instanceID with the DataSource; this is used to identify which particular instance is being coupled in case the same DataSource is used more than once in a coupled model (this may be required for BFG).

Custom Properties

- isActive = False

Attributes

Attribute	Notes	Constraints and tags
dataSource DataSource Public «reference»		*Default:*
instanceID Identifier Public [0..1]	If the same datasource is used more than once in a coupled model then a method for identifying which particular instance is being referenced is needed (for BFG).	*Default:*
couplingProperty CouplingProperty Public [0..*]	A place to describe features specific to the source/target of a coupling	*Default:*

CouplingFrameworkType

Type: **Enumeration**
Status: Proposed. Version 1.0. Phase 1.0.
Package: software *Keywords:*
Detail: *Created on 10/8/2008. Last modified on 4/2/2010.*
GUID: {A17AA00B-9D25-4fe9-8AF2-0CA2E3536825}

Is the regridding 2D or 3D?

Custom Properties

- isActive = False

Attributes

Attribute	Notes	Constraints and tags

ESMF Public «enum»		*Default:*
OASIS Public «enum»		*Default:*
NUOPC Public «enum»		*Default:*
BFG Public «enum»		*Default:*

CouplingProperty

Type: **Class** **Property**
Status: Proposed. Version 1.0. Phase 1.0.
Package: software *Keywords:*
Detail: *Created on 12/16/2008. Last modified on 7/8/2010.*
GUID: {B79FCFAE-C3FF-4c4c-9167-3056E7394A5F}

A CouplingProperty is a name/value pair used to specify OASIS-specific properties.

Custom Properties

- isActive = False

Connections

Connector	Source	Target	Notes

Generalization Source -> Destination	Public CouplingProperty	Public Property	

Dependencies

Type: **Class**
Status: Proposed. Version 1.0. Phase 1.0.
Package: software *Keywords:*
Detail: *Created on 11/20/2008. Last modified on 11/19/2010.*
GUID: {8C4F4CB1-E064-4893-B273-28636DAF03D8}

Custom Properties

- isActive = False

Connections

Connector	Source	Target	Notes
Aggregation Source -> Destination	Public Dependencies	Public SoftwareComponent	
Aggregation Source -> Destination	Public EntryPoint	Public Dependencies	

Deployment

Type: **Class**
Status: Proposed. Version 1.0. Phase 1.0.
Package: software *Keywords:*
Detail: *Created on 10/10/2008. Last modified on 3/1/2010.*
GUID: {E26C5CC0-EC73-4dfc-B206-99751DDA51BD}

Gives information about the technical properties of a component: what machine it was run on, which compilers were used, how it was parallised, etc.

A deployment basically associates a deploymentDate with a Platform. A deployment only exists if something has been deployed. A platform, in contrast, can exist independently, waiting to be used in deployments.

Custom Properties

- isActive = False

Connections

Connector	Source	Target	Notes
Aggregation Source -> Destination	Public Deployment	Public SoftwareComponent	
Aggregation Source -> Destination	Public Simulation	Public deployment Deployment	

Attributes

Attribute	Notes	Constraints and tags
deploymentDate DateTime Public [0..1]		*Default:*
description CharacterString Public [0..1]		*Default:*
parallelisation Parallelisation Public [0..1]		*Default:*
platform Platform Public [0..1] «reference»	The platform that this deployment has been run on. It is optional to allow for "unconfigured" models, that nonetheless specify their parallelisation constraints (a feature needed by OASIS).	*Default:*
executableName CharacterString Public [0..1]		*Default:*

executableArgument CharacterString Public [0..*]		*Default:*

EntryPoint

Type: **Class**
Status: Proposed. Version 1.0. Phase 1.0.
Package: software *Keywords:*
Detail: *Created on 11/20/2008. Last modified on 3/6/2011.*
GUID: {91EC96EA-A47A-4c78-912D-4CDB97AA583D}

Describes a function or subroutine of a SoftwareComponent. BFG will use these EntryPoints to define a schedule of subroutine calls for a coupled model. Currently, a very basic schedule can be approximated by using the "proceeds" and "follows" attributes, however a more complete system is required for full BFG compatibility.

Every EntryPoint can have a set of arguments associated with it. These reference (previously defined) ComponentProperties.

Custom Properties

- isActive = False

Connections

Connector	Source	Target	Notes
Aggregation Source -> Destination	Public EntryPoint	Public Dependencies	

Attributes

Attribute	Notes	Constraints and tags
name CharacterString Public		*Default:*

type EntryPointType Public [0..1]		*Default:*
proceeds CharacterStringList Public [0..1]	A list of the names of entryPoints that this entryPoint must poeceed	*Default:*
follows CharacterStringList Public [0..1]	A list of the names of entryPoints that this entryPoint must follow	*Default:*
argument ComponentProperty Public [0..*] «reference»	A reference to an argument used by this EntryPoint	*Default:*

EntryPointType

Type: **Enumeration**
Status: Proposed. Version 1.0. Phase 1.0.
Package: software *Keywords:*
Detail: *Created on 10/8/2008. Last modified on 2/11/2011.*
GUID: {7F115964-E081-4bd9-AA31-142D3F757B98}

Describes the intended use of an EntryPoint (subroutine). This is required for ESMF models.

Custom Properties

- isActive = False

Attributes

Attribute	Notes	Constraints and tags
init Public «enum»		*Default:*
run Public «enum»		*Default:*
finalise Public «enum»		*Default:*

ModelComponent

Type: **Class** **SoftwareComponent**
Status: Proposed. Version 1.0. Phase 1.0.
Package: software *Keywords:*
Detail: *Created on 11/17/2008. Last modified on 12/17/2014.*
GUID: {99FF320B-452C-434c-B587-F102C5B05339}

A ModelComponent is a scientific model; it represents code which models some physical phenomena for a particular length of time.

Custom Properties

- isActive = False

Connections

Connector	Source	Target	Notes
Generalization Source -> Destination	Public ModelComponent	Public SoftwareComponent	
NoteLink	Public <anonymous>	Public ModelComponent	

Aggregation uses Source -> Destination	Public model ModelComponent	Public activity SimulationRun	

Attributes

Attribute	Notes	Constraints and tags
type ModelComponentType Public [1..*]	Describes the type of component. There can be multiple types.	*Default:*
timing Timing Public [0..1]	Describes information about how this component simulates time.	*Default:*

ModelComponentType

Type: **Class**
Status: Proposed. Version 1.0. Phase 1.0.
Package: software *Keywords:*
Detail: *Created on 10/9/2008. Last modified on 8/9/2009.*
GUID: {CF53BE87-9620-4286-BF0C-3331F781A566}

An enumeration of types of ModelComponent. This includes things like atmosphere & ocean models, radiation schemes, etc. CIM best-practice is to describe every component for which there is a named ComponentType as a separate component, even if it is not a separate unit of software (ie: even if it is embedded), instead of as a (set of) ModelParameters. This codelist is synonomous with "realm" for the purposes of CMIP5.

Custom Properties

- isActive = False

Tagged Values

- open = true.

Connections

Connector	Source	Target	Notes

NoteLink	Public ModelComponentType	Public <anonymous>	

Attributes

Attribute	Notes	Constraints and tags
Advection Public «enum»		*Default:*
Aerosol3D-Sources Public «enum»		*Default:*
Aerosol2D-Sources Public «enum»		*Default:*
AerolEmissionAndConc Public «enum»		*Default:*
AerosolKeyProperties Public «enum»		*Default:*

AerosolModel Public «enum»		*Default:*
Aerosols Public «enum»		*Default:*
AerosolSpaceConfig Public «enum»		*Default:*
AerosolTransport Public «enum»		*Default:*
AtmChem2D-Sources Public «enum»		*Default:*
AtmChem3D-Sources Public «enum»		*Default:*

AtmChemEmissionAndConc Public «enum»		*Default:*
AtmChemKeyProperties Public «enum»		*Default:*
AtmChemSpaceConfig Public «enum»		*Default:*
AtmChemTransport Public «enum»		*Default:*
AtmGasPhaseChemistry Public «enum»		*Default:*
AtmHeterogeneousChemistry Public «enum»		*Default:*

AtmosAdvection Public «enum»		*Default:*
AtmosCloudScheme Public «enum»		*Default:*
AtmosConvectTurbulCloud Public «enum»		*Default:*
AtmosDynamicalCore Public «enum»		*Default:*
AtmosHorizontalDomain Public «enum»		*Default:*
AtmosKeyProperties Public «enum»		*Default:*

AtmosOrographyAndWaves Public «enum»		*Default:*
Atmosphere Public «enum»		*Default:*
AtmosphericChemistry Public «enum»		*Default:*
AtmosRadiation Public «enum»		*Default:*
AtmosSpaceConfiguration Public «enum»		*Default:*
Climate Public «enum»		*Default:*

CloudSimulator Public «enum»		*Default:*
IceSheetDynamics Public «enum»		*Default:*
LandIce Public «enum»		*Default:*
LandIceGlaciers Public «enum»		*Default:*
LandIceKeyProperties Public «enum»		*Default:*
LandIceSheet Public «enum»		*Default:*

LandIceShelves Public «enum»		*Default:*
LandIceShelvesDynamics Public «enum»		*Default:*
LandSurface Public «enum»		*Default:*
LandSurfaceAlbedo Public «enum»		*Default:*
LandSurfaceCarbonCycle Public «enum»		*Default:*
LandSurfaceEnergyBalance Public «enum»		*Default:*

LandSurfaceKeyProperties Public «enum»		*Default:*
LandSurfaceLakes Public «enum»		*Default:*
LandSurfaceSnow Public «enum»		*Default:*
LandSurfaceSoil Public «enum»		*Default:*
LandSurfaceSpaceConfiguration Public «enum»		*Default:*
LandSurfaceVegetation Public «enum»		*Default:*

LandSurfSoilHeatTreatment Public «enum»		*Default:*
LandSurfSoilHydrology Public «enum»		*Default:*
Ocean Public «enum»		*Default:*
OceanAdvection Public «enum»		*Default:*
OceanBioBoundaryForcing Public «enum»		*Default:*
OceanBioChemistry Public «enum»		*Default:*

OceanBioGasExchange Public «enum»		*Default:*
OceanBioGeoChemistry Public «enum»		*Default:*
OceanBioKeyProperties Public «enum»		*Default:*
OceanBioSpaceConfig Public «enum»		*Default:*
OceanBioTimeStepFramework Public «enum»		*Default:*
OceanBioTracers Public «enum»		*Default:*

OceanBioTracersEcosystem Public «enum»		*Default:*
OceanBoundaryForcing Public «enum»		*Default:*
OceanBoundaryForcingTracers Public «enum»		*Default:*
OceanHorizontalDomain Public «enum»		*Default:*
OceanInteriorMixing Public «enum»		*Default:*
OceanKeyProperties Public «enum»		*Default:*

OceanLateralPhysics Public «enum»		*Default:*
OceanLateralPhysMomentum Public «enum»		*Default:*
OceanLateralPhysTracers Public «enum»		*Default:*
OceanMixedLayer Public «enum»		*Default:*
OceanNudging Public «enum»		*Default:*
OceanSpaceConfiguration Public «enum»		*Default:*

OceanUpAndLowBoundaries Public «enum»		*Default:*
OceanVerticalPhysics Public «enum»		*Default:*
PhotoChemistry Public «enum»		*Default:*
RiverRouting Public «enum»		*Default:*
SeaIce Public «enum»		*Default:*
SeaIceDynamics Public «enum»		*Default:*

SeaIceKeyProperties Public «enum»		*Default:*
SeaIceSpaceConfiguration Public «enum»		*Default:*
SeaIceThermodynamics Public «enum»		*Default:*
StratosphericHeterChem Public «enum»		*Default:*
TopOfAtmosInsolation Public «enum»		*Default:*
ToposphericHeterChem Public «enum»		*Default:*

VegetationCarbonCycle Public «enum»		*Default:*

NumericalProperties

Type: **Class**
Status: Proposed. Version 1.0. Phase 1.0.
Package: software *Keywords:*
Detail: *Created on 3/9/2009. Last modified on 8/13/2009.*
GUID: {E24E23F1-23AA-41af-AA92-429F02082B38}

This is just being used as a container for component properties.

Custom Properties

- isActive = False

Connections

Connector	Source	Target	Notes
Aggregation Source -> Destination	Public ComponentProperty	Public NumericalProperties	

Parallelisation

Type: **Class**
Status: Proposed. Version 1.0. Phase 1.0.
Package: software *Keywords:*
Detail: *Created on 10/10/2008. Last modified on 7/8/2010.*
GUID: {AE820132-8673-49df-8D4B-6437C0433ED7}

Describes how a deployment has been parallelised across a computing platform.

Custom Properties

- isActive = False

Attributes

Attribute	Notes	Constraints and tags
processes Integer Public		*Default:*
rank Rank Public [0..*]		*Default:*
schedule Schedule Public [0..1] «unused»	Information about how entrypoints are connected will be specified here.	*Default:*

ProcessorComponent

Type: **Class** **SoftwareComponent**
Status: Proposed. Version 1.0. Phase 1.0.
Package: software *Keywords:*
Detail: *Created on 11/17/2008. Last modified on 1/26/2009.*
GUID: {8F759CBE-164C-4bfd-9B6E-BA96B48FDC61}

A ProcessorComponent is a component which does not model some physical phenomena. It still processes data, but it is not a "scientific model" in the strict sense. Examples of ProcessorComponents include transformers and post-processors. ProcessorComponents may be assocaited with a DataProcessing activity as opposed to a Simulation activity.

Custom Properties

- isActive = False

Connections

Connector	Source	Target	Notes
Generalization Source -> Destination	Public ProcessorComponent	Public SoftwareComponent	
Aggregation uses	Public processor	Public activity	

Source -> Destination	ProcessorComponent	DataProcessing	

Attributes

Attribute	Notes	Constraints and tags
type ProcessorComponentType Public [1..*]	Describes the type of component. There can be multiple types.	*Default:*
conservative Boolean Public	A conservative component conserves fluxes across corresponding times and areas for different grids.	*Default:*
spatialRegridding SpatialRegridding Public [0..3]	Characteristics of the scheme used to interpolate a field from one grid (source grid) to another (target grid)	*Default:*
timeTransformation TimeTransformation Public [0..1]	Temporal transformation performed on the coupling field before or after regridding onto the target grid.	*Default:*

ProcessorComponentType

Type: **Class**
Status: Proposed. Version 1.0. Phase 1.0.
Package: software *Keywords:*
Detail: *Created on 10/9/2008. Last modified on 3/9/2009.*
GUID: {A7018688-1D25-4531-B63E-513015FFA404}

An enumeration of types of ProcessorComponent. This includes things like transformers and post-processors.

Custom Properties

- isActive = False

Tagged Values

- open = true.

Attributes

Attribute	Notes	Constraints and tags
post_processor Public «enum»		*Default:*
transformer Public «enum»		*Default:*

Rank

Type: **Class**
Status: Proposed. Version 1.0. Phase 1.0.
Package: software *Keywords:*
Detail: *Created on 11/20/2008. Last modified on 11/22/2010.*
GUID: {731AD29C-F9F2-48f7-9472-CF8573856C05}

Custom Properties

- isActive = False

Attributes

Attribute	Notes	Constraints and tags

rankValue Integer Public [0..1]		*Default:*
rankMin Integer Public [0..1]		*Default:*
rankMax Integer Public [0..1]		*Default:*
rankIncrement Integer Public [0..1]		*Default:*

ScientificProperties

Type: **Class**
Status: Proposed. Version 1.0. Phase 1.0.
Package: software *Keywords:*
Detail: *Created on 3/9/2009. Last modified on 8/13/2009.*
GUID: {A7643AE1-162D-4c14-9619-9A3D4A5FDDB3}

This is just being used as a container for component properties.

Custom Properties

- isActive = False

Connections

Connector	Source	Target	Notes

Aggregation Source -> Destination	Public ComponentProperty	Public ScientificProperties	

SoftwareComponent

Type: **Abstract** **DataSource**
Status: Proposed. Version 1.0. Phase 1.0.
Package: software *Keywords:*
Detail: *Created on 11/17/2008. Last modified on 8/8/2009.*
GUID: {650B0D06-D421-4174-8BAF-389C4A930E3B}

A SofwareCompnent is an abstract component from which all other components derive. It represents an element that takes input data and generates output data. A SoftwareCompnent can include nested "child" components. Every component can have "componentProperties" which describe the scientific properties that a component simulates (for example, temperature, pressure, etc.) and the numerical properties that influence how a component performs its simulation (for example, the force of gravity). A SoftwareComponent can also have a Deployment, which describes how software is deployed onto computing resources. And a SoftwareComponent can have a composition, which describes how ComponentProperties are coupled together either to/from other SoftwareComponents or external data files. The properties specified by a component's composition must be owned by that component or a child of that component; child components cannot couple together their parents' properties.

Custom Properties

- isActive = False

Connections

Connector	Source	Target	Notes
Aggregation Source -> Destination	Public Composition	Public SoftwareComponent	
Generalization Source -> Destination	Public SoftwareComponent	Public DataSource	
Generalization Source -> Destination	Public ModelComponent	Public SoftwareComponent	
Aggregation Source -> Destination	Public childComponent SoftwareComponent	Public parentComponent SoftwareComponent	
Aggregation Source -> Destination	Public Dependencies	Public SoftwareComponent	
Aggregation Source -> Destination	Public Deployment	Public SoftwareComponent	
Generalization Source -> Destination	Public ProcessorComponent	Public SoftwareComponent	

Generalization Source -> Destination	Public StatisticalModelComponent	Public SoftwareComponent	

Attributes

Attribute	Notes	Constraints and tags
shortName CharacterString Public	The name of the model (that is used internally).	*Default:*
longName CharacterString Public [0..1]	The name of the model (that is recognized externally).	*Default:*
version CharacterString Public [0..1]		*Default:*
description CharacterString Public [0..1]	A free-text description of the component.	*Default:*
responsibleParty ResponsibleParty Public [0..*]		*Default:*

codeAccess CharacterString Public [0..1]	Instructions on how to access the source code for this component.	*Default:*
citation gmd:CI_Citation_Type Public [0..*]		*Default:*
onlineResource gmd:CI_OnlineResource_Type Public [0..1]	Provides a URL location for this model.	*Default:*
releaseDate Date Public [0..1]	The date of publication of the software component code (as opposed to the date of publication of the metadata document, or the date of deployment of the model)	*Default:*
fundingSource CharacterString Public [0..*]	The entities that funded this software component.	*Default:*
previousVersion version Public [0..1]		*Default:*

license License Public [0..1]	The license held by this piece of software	*Default:*
componentLanguage ComponentLanguage Public [0..1]		*Default:*
couplingFramework CouplingFrameworkType Public [0..1]	The coupling framework that this entire component conforms to.	*Default:*
grid GridSpec Public [0..1] «reference»	A reference to the grid that is used by this component.	*Default:*
embedded Boolean Public [0..1]	An embedded component cannot exist on its own as an atomic piece of software; instead it is embedded within another (parent) component. When embedded equals "true", the SoftwareComponent has a corresponding piece of software (otherwise it is acting as a "virtual" component which may be inexorably nested within a piece of software along with several other virtual components).	*Default:*
numericalProperties NumericalProperties Public [0..1]	The properties that this model simulates and/or couples. NumericalProperties contain those properties that describe _what_ a model simulates. (Although, the distinction between numerical and scientific may be unused - all properties can be stored under the generic "ComponentProperties" attribute).	*Default:*

scientificProperties ScientificProperties Public [0..1]	The properties that this model simulates and/or couples. ScientificProperties contain those properties that describe _how_ a model simulates. (Although, the distinction between numerical and scientific may be unused - all properties can be stored under the generic "ComponentProperties" attribute).	*Default:*
componentProperties ComponentProperties Public [0..1]	The properties that this model simulates and/or couples.	*Default:*

SpatialRegridding

Type: **Class**
Status: Proposed. Version 1.0. Phase 1.0.
Package: software *Keywords:*
Detail: *Created on 12/16/2008. Last modified on 11/18/2010.*
GUID: {1AA3C552-4ACC-46f1-B2AB-3371474BF685}

Characteristics of the scheme used to interpolate a field from one grid (source grid) to another (target grid).

Documents should use either the spatialRegriddingStandardMethod _or_ the spatialRegriddingUserMethod, but not both.

Custom Properties

- isActive = False

Connections

Connector	Source	Target	Notes
Aggregation Source -> Destination	Public SpatialRegriddingProperty	Public SpatialRegridding	

Attributes

Attribute	Notes	Constraints and tags

spatialRegriddingDimension SpatialRegriddingDimensionType Public [0..1]		*Default:*
spatialRegriddingStandardMethod SpatialRegriddingStandardMethodType Public [0..1] «element»		*Default:*
spatialRegriddingUserMethod SpatialRegriddingUserMethod Public [0..1]		*Default:*

SpatialRegriddingDimensionType

Type: **Enumeration**
Status: Proposed. Version 1.0. Phase 1.0.
Package: software *Keywords:*
Detail: *Created on 10/8/2008. Last modified on 4/2/2010.*
GUID: {04FBEE69-6F12-4ad4-AF98-71E06E5961B3}

Is the regridding 2D or 3D?

Custom Properties

- isActive = False

Attributes

Attribute	Notes	Constraints and tags

1D Public «enum»		*Default:*
2D Public «enum»		*Default:*
3D Public «enum»		*Default:*

SpatialRegriddingProperty

Type: **Class** **Property**
Status: Proposed. Version 1.0. Phase 1.0.
Package: software *Keywords:*
Detail: *Created on 12/16/2008. Last modified on 7/8/2010.*
GUID: {7EE91063-48BD-4e06-8ADE-02F275B47ADA}

Used for OASIS-specific regridding information (ie: masked, order, normalisation, etc.)

Custom Properties

- isActive = False

Connections

Connector	Source	Target	Notes
Aggregation Source -> Destination	Public SpatialRegriddingProperty	Public SpatialRegridding	
Generalization Source -> Destination	Public SpatialRegriddingProperty	Public Property	

SpatialRegriddingStandardMethodType

Type: **Enumeration**
Status: Proposed. Version 1.0. Phase 1.0.
Package: software *Keywords:*
Detail: *Created on 10/8/2008. Last modified on 11/18/2010.*
GUID: {C4904BF9-A6E6-4bb8-9FCF-774694E3D72F}

Is the regridding 2D or 3D?

Custom Properties

- isActive = False

Attributes

Attribute	Notes	Constraints and tags
linear Public «enum»		*Default:*
near-neighbour Public «enum»		*Default:*
cubic Public «enum»		*Default:*
conservative-first-order Public «enum»		*Default:*

conservative-second-order Public «enum»		*Default:*
conservative Public «enum»		*Default:*
non-conservative Public «enum»		*Default:*

SpatialRegriddingUserMethod

Type: **Class**
Status: Proposed. Version 1.0. Phase 1.0.
Package: software *Keywords:*
Detail: *Created on 12/16/2008. Last modified on 11/18/2010.*
GUID: {DDD39E37-1CBD-4a26-B7AE-C26676643B68}

Allows users to bypass the SpatialRegriddingStandardMethod and instead provide a set of weights and addresses for regridding via a file.

Custom Properties

- isActive = False

Attributes

Attribute	Notes	Constraints and tags

name CharacterString Public		*Default:*
file DataObject Public [0..1] «reference»		*Default:*

StatisticalModelComponent

Type: **Class** **SoftwareComponent**
Status: Proposed. Version 1.0. Phase 1.0.
Package: software *Keywords:*
Detail: *Created on 7/10/2012. Last modified on 7/10/2012.*
GUID: {AA3043A6-A251-49ed-B43F-C95EC350DAED}

Custom Properties

- isActive = False

Connections

Connector	Source	Target	Notes
Generalization Source -> Destination	Public StatisticalModelComponent	Public SoftwareComponent	

Attributes

Attribute	Notes	Constraints and tags

type StatisticalModelComponentType Public [1..*]	Describes the type of component. There can be multiple types.	*Default:*
timing Timing Public [0..1]		*Default:*

StatisticalModelComponentType

Type: **Class**
Status: Proposed. Version 1.0. Phase 1.0.
Package: software *Keywords:*
Detail: *Created on 7/10/2012. Last modified on 3/8/2013.*
GUID: {962BFCAE-72DC-4789-9BC5-13BEE74C2B0D}

An enumeration of types of StatisticalModelComponent. This includes more than just statistical downscaling techniques; it can be used for forecast or impact models too.

Custom Properties

- isActive = False

Tagged Values

- open = true.

Attributes

Attribute	Notes	Constraints and tags
downscaling Public «enum»	Perfect Prognosis	*Default:*

impact Public «enum»	Model Output Statistics	*Default:*
forecast Public «enum»		*Default:*

TimeLag

Type: **Class**
Status: Proposed. Version 1.0. Phase 1.0.
Package: software *Keywords:*
Detail: *Created on 12/16/2008. Last modified on 4/2/2010.*
GUID: {770E7214-3415-410a-BC69-DBF124CEDFC1}

The coupling field used in the target at a given time corresponds to a field produced by the source at a previous time. This lag specifies the difference in time.

Custom Properties

- isActive = False

Attributes

Attribute	Notes	Constraints and tags
value Integer Public [0..1]		*Default:*

units TimingUnits Public [0..1]		*Default:*

TimeMappingType

Type: **Class**
Status: Proposed. Version 1.0. Phase 1.0.
Package: software *Keywords:*
Detail: *Created on 10/8/2008. Last modified on 4/2/2010.*
GUID: {90A2F650-7B51-42ba-9741-C1B8272115DC}

Enumerates the different ways that time can be mapped when transforming from one field to another.

Custom Properties

- isActive = False

Tagged Values

- open = true.

Attributes

Attribute	Notes	Constraints and tags
TimeAccumulation Public «enum»		*Default:*
TimeAverage Public «enum»		*Default:*

LastAvailable Public «enum»		*Default:*
TimeInterpolation Public «enum»		*Default:*
Exact Public «enum»		*Default:*

TimeTransformation

Type: **Class**
Status: Proposed. Version 1.0. Phase 1.0.
Package: software *Keywords:*
Detail: *Created on 12/16/2008. Last modified on 10/12/2009.*
GUID: {8B7746D0-6C8A-4913-BC90-6F0B56790D95}

Characteristics of the scheme used to interpolate a field from one grid (source grid) to another (target grid)

Custom Properties

- isActive = False

Attributes

Attribute	Notes	Constraints and tags
mappingType TimeMappingType Public		*Default:*

description CharacterString Public [0..1]		*Default:*

Timing

Type: **Class**
Status: Proposed. Version 1.0. Phase 1.0.
Package: software *Keywords:*
Detail: *Created on 11/20/2008. Last modified on 4/2/2010.*
GUID: {ED8DCF75-18FA-4c02-AB8E-09A2147049A8}

Provides information about the rate of couplings and connections and/or the timing characteristics of individual components - for example, the start and stop times that the component was run for or the units of time that a component is able to model (in a single timestep).

Custom Properties

- isActive = False

Attributes

Attribute	Notes	Constraints and tags
start DateTime Public [0..1]		*Default:*

end DateTime Public [0..1]		*Default:*
rate Integer Public [0..1]		*Default:*
units TimingUnits Public		*Default:*
variableRate Boolean Public [0..1]	Describes whether or not the model supports a variable timestep. If set to true, then rate should not be specified.	*Default:*

TimingUnits

Type: **Enumeration**
Status: Proposed. Version 1.0. Phase 1.0.
Package: software *Keywords:*
Detail: *Created on 3/9/2009. Last modified on 3/9/2009.*
GUID: {89E5AD92-2BFE-4889-9AE9-283435BF93C4}

Custom Properties

- isActive = False

Attributes

Attribute	Notes	Constraints and tags

seconds Public «enum»		*Default:*
minutes Public «enum»		*Default:*
hours Public «enum»		*Default:*
days Public «enum»		*Default:*
months Public «enum»		*Default:*
years Public «enum»		*Default:*

decades Public «enum»		*Default:*
centuries Public «enum»		*Default:*