



UML diagrams

Last updated on 30 June 2025







This work is licensed under the <u>Creative Commons License CC</u> BY-NC-SA 4.0 licence.

The latest version of this document can be downloaded from: https://github.com/tudelft3d/Energy ADE 2.0/tree/main/documentation

Author

Giorgio Agugiaro
3D Geoinformation Group
Department of Urbanism
Faculty of Architecture and Built Environment
Delft University of Technology
The Netherlands
g.agugiaro@tudelft.nl
https://3d.bk.tudelft.nl/gagugiaro/

Funding

Development of the Energy ADE 2.0 has started in spring 2024 within the European DigiTwins4PEDs project, as part of the Work Package 3. The project is funded by the European Commission under the Horizon Europe Partnership scheme. The DUT Call 2022 also contributes to the Urban Transition Mission of Mission Innovation as part of the MICall 2022 initiative.

Acknowledgements

The author would like to thank the following people for their suggestions and fruitful discussions that have helped design the current version of the Energy ADE 2.0:

- Rushikesh Padsala and Zhihang Yao (HFT Stuttgart, Germany)
- Thomas Kolbe (TU Munich, Germany)
- Jérôme Kämpf (Idiap, Switzerland)
- Camilo León-Sánchez (TU Delft, The Netherlands)

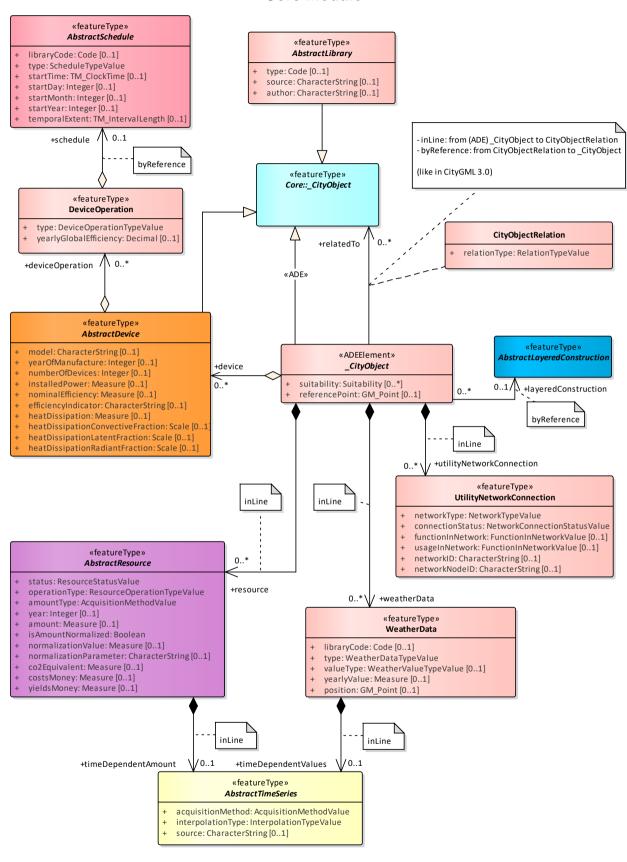
Particular gratitude is due to Daniele Gasparini for designing the Energy ADE 2.0 logo.

Contents

Overview of the packages	
Core module	4
Building physics module	3
Occupancy module	g
Devices module	11
Weather station module	13
Resources module	
Layered construction module	16
Schedules module	
Time series module	18
Supporting classes: DataTypes	19
Supporting classes: Enumerations	20
Supporting classes: Codelists	21
Changelog	

Overview of the packages «applicationSchema» Core «ApplicationSchema» CityObjectGroup «applicationSchema» Building (from CityGML) (from CityGML) (from CityGML) «leaf» «leaf» Urban Function Areas Weather Station «leaf» Building Physics «leaf» «leaf» Time Series Core **Layered Construction** «leaf» «leaf» «leaf» Schedules Devices Occupancy «leaf» Resources «leaf» CodeLists «leaf» DataTypes «leaf» Enumerations

Core module



«codeList» CodeLists:: AcquisitionMethodValue

- measurement
- simulation
- calibratedSimulation

NetworkTypeValue

districtHeating

districtCooling

wasteWater

electicalGrid

- estimation
- unknown

«codeList» CodeLists:: **DeviceOperationTypeValue**

- cooking
- domesticHotWater
- electricalAppliances
- lighting
- otherOrCombination
- process
- shading
- spaceCooling
- spaceHeating
- ventilation

unknown

«codeList» CodeLists:: FunctionInNetworkValue

- producing
- consuming
- storage
- other
- unknown

«codeList» CodeLists:: ScheduleTypeValue

- hour
- day
- week
- month season
- year
- typicalDay
- typicalWeek typicalMonth
- typicalSeason
- typicalYear
- monday
- tuesday
- wednesday
- thursday
- friday saturday
- sunday
- weekDay
- weekendDay
- beerDay
- holiday
- january
- february
- march
- april
- may june
- july
- august
- september
- october
- november
- december
- spring
- summer autumn
- winter
- other

- «codeList» «codeList» CodeLists:: CodeLists::
 - adjacentTo
 - installedOn

RelationTypeValue

sharedWith

«codeList» CodeLists:: ResourceOperationTypeValue

- demands
- has
- hasBalanceOf
- produces
- stores

«codeList» CodeLists::WeatherDataTypeValue

airTemperature

gas

other

unknown

- humidity
- windSpeed
- windDirection
- cloudiness
- globalSolarIrradiance directSolarIrradiance
- diffuseSolarIrradiance
- terrestrialEmission
- downwardTerrestrialRadiation
- davlightIlluminance
- shadowingFactor
- precipitation

«codeList» CodeLists:: WeatherValueTypeValue

- absolute maximum
- average maximum
- average
- average minimum
- absolute minimum
- unknown

«enumeration» «enumeration» Enumerations:: Enumerations:: InterpolationTypeValue NetworkConnectionStatusValue

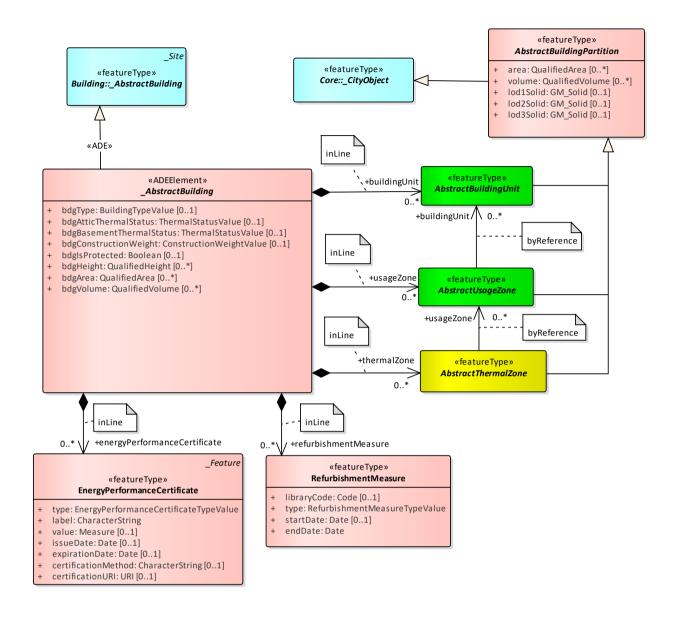
unknown

averageInPrecedingInterval averageInSucceedingInterval constantInPrecedingInterval constantInSucceedingInterval continuous discontinuous instantaneousTotal maximumInPrecedingInterval maximumInSucceedingInterval minimumInPrecedingInterval minimumInSucceedingInterval precedingTotal succeedingTotal

connected disconnectedButConnectable disconnected And Not Connectable

«enumeration» Enumerations:: ResourceStatusValue

actual potential unknown



«codeList» CodeLists:: BuildingTypeValue

- single-family house
- terraced house
- multi-family house
- apartment block
- commercial building
- industrial building
- office building
- religious building
- hospital
- leisure activity building unknown

«enumeration» Enumerations:: ThermalStatusValue

isOnlyHeated is Only Cooled is Heated And Cooled $is {\tt Neither Heated Nor Cooled}$ unknown

«codeList» CodeLists:: ConstructionWeightValue

- veryLight
- light medium
- heavy
- unknown

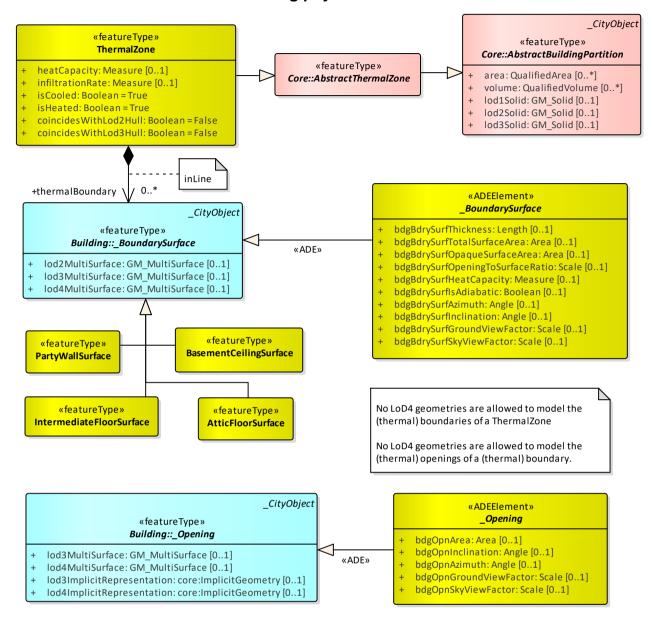
«codeList» CodeLists:: **EnergyPerformanceCertificateTypeValue**

«codeList» CodeLists::

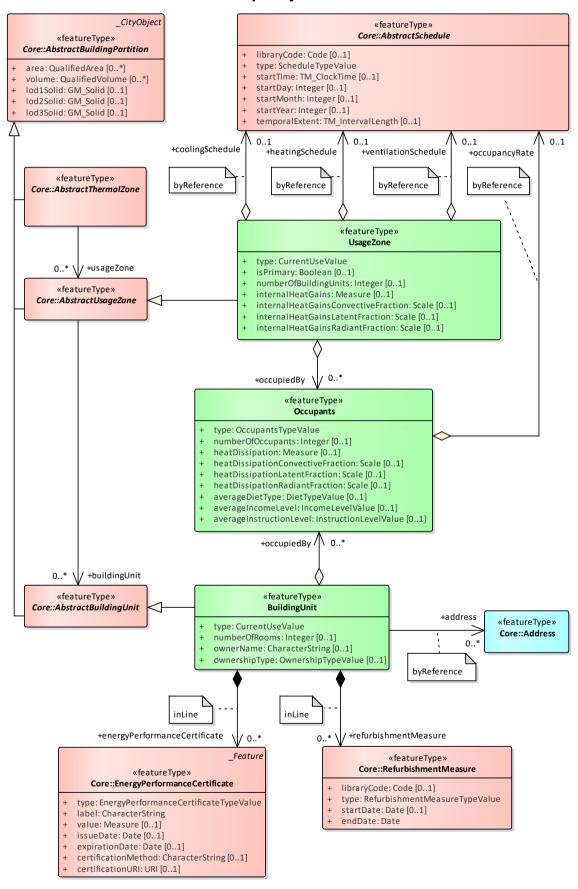
RefurbishmentMeasureTypeValue

- installedSolarPanels
- installedPVPanels
- installedHeatPump changedBoiler
- insulatedWholeThermalHull
- installedFloorHeating
- changedWindows
- changedDoors
- insulatedRoof
- $insulated {\tt ExteriorWalls}$
- insulated Ground Floor
- other
- unknown

Building physics module



Occupancy module



«codeList» CodeLists::CurrentUseValue

«codeList» CodeLists::DietTypeValue

- + omnivorous
- + vegetarian
- + vegan
- + other
- + unknown

«codeList» CodeLists::IncomeLevelValue

- + very low
- + low
- + middle
- + high
- + very high
- + unknown

«codeList» CodeLists:: InstructionLevelValue

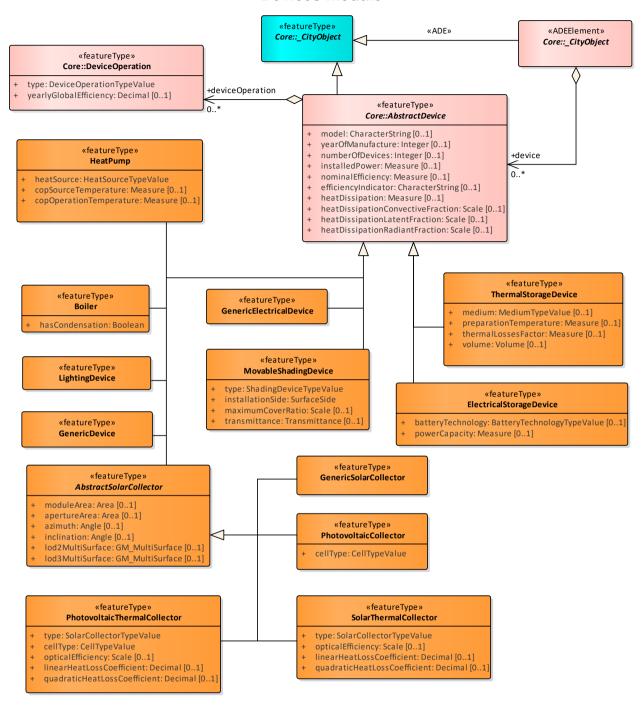
- + no formal education
- + primary school
- + secondary school
- + university
- + postGraduate
- + unknown

«codeList» CodeLists:: OccupantsTypeValue

- + patients
- + residents
- + students
- + visitors
- + workers
- + otherOrCombination
- + unknown

- + corporation
- + government
- nonOccupantPrivateOwner
- nonProfitOrganisation
- + occupantPrivateOwner
- + otherOrCombination
- propertyManagementCompany
- + unknown

Devices module



«codeList» CodeLists:: BatteryTechnologyTypeValue

«codeList» CodeLists::CellTypeValue

- monocrystalline
- polycrystalline
- amorphous
- unknown

«codeList» CodeLists:: DeviceOperationTypeValue

- cooking
- domesticHotWater
- electrical Appliances
- lighting otherOrCombination
- process
- shading
- spaceCooling
- spaceHeating
- ventilation
- unknown

«codeList» CodeLists:: HeatSourceTypeValue

- ambientAir
- aquifer exhaustAir
- horizontalGroundCollector
- verticalGroundCollector
- unknown

«codeList» CodeLists::MediumTypeValue

- steam
- water
- unknown

«codeList» CodeLists:: ShadingDeviceTypeValue

- curtain
- shutter
- blind
- other
- unknown

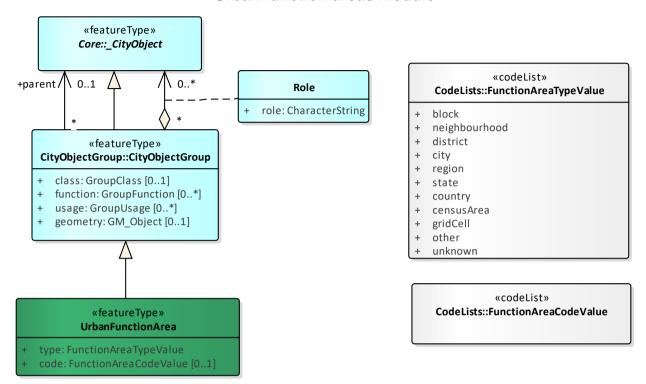
«codeList» CodeLists:: SolarCollectorTypeValue

- flatPlaneCollector
- evacuatedTubeCollector
- unknown

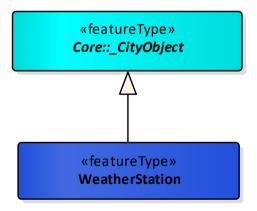
«enumeration» Enumerations:: SurfaceSide

inside outside

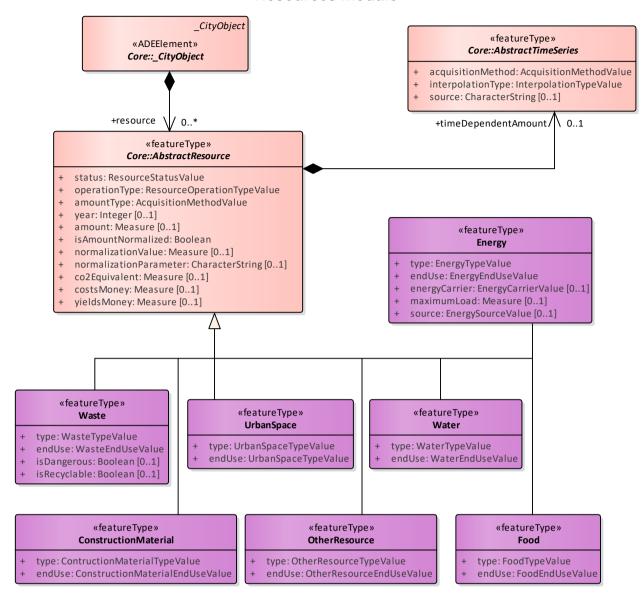
Urban function areas module



Weather station module



Resources module



«codeList» CodeLists:: Construction Material End Use Value

- construction refurbishment
- otherOrCombination
- unknown

«codeList» CodeLists::

ContructionMaterialTypeValue

- wood tiles
- concrete
- sand
- soil
- otherOrCombination
- glass
- bricks
- unknown

«codeList» CodeLists:: EnergyCarrierValue

- electricity
- coal
- naturalGas
- chilledAir
- chilledWater
- fuelOil
- hotAir
- steam
- hotWater
- woodChips
- hydrogen
- propane woodPallets
- other
- unknown

«codeList» CodeLists:: EnergyEndUseValue

- cooking
- domestic Hot Water
- electricalAppliances
- lighting
- otherOrCombination
- spaceCooling
- spaceHeating
- ventilation
- process
- construction
- unknown

«codeList» CodeLists:: EnergyTypeValue

- actual
- net
- primary secondary
- final
- useful

«codeList» CodeLists::EnergySourceValue

- photovoltaicPanels
- powerGrid
- districtHeating
- solar Thermal Panels
- heatPump
- wind

«codeList» CodeLists:: FoodEndUseValue

- alimentation
- commerce

«codeList» CodeLists:: FoodTypeValue

- greeneries
- meat
- cereals
- cheese
- milk
- wine
- beer unknown

«codeList» CodeLists:: OtherResourceEndUseValue

«codeList» CodeLists:: OtherResourceTypeValue

«codeList» CodeLists:: UrbanSpaceEndUseValue

«codeList» CodeLists:: UrbanSpaceTypeValue

«codeList» CodeLists:: WaterEndUseValue

- drinking
- washing
- processing
- otherOrCombination
- unknown

«codeList» CodeLists:: WaterTypeValue

- drinkWater
- wasteWater
- rainWater
- otherOrCombination
- unknown

«codeList» CodeLists:: WasteEndUseValue

- incineration
- landFilling
- recycling

- other
- unknown

«codeList» CodeLists::WasteTypeValue

- organic
- plastic
- glass
- paper
- metal water
- otherOrCombination
- unknown

«codeList» CodeLists:: ResourceOperationTypeValue

- demands
- has
- hasBalanceOf
- produces
- stores

«codeList» CodeLists:: **AcquisitionMethodValue**

- measurement
- simulation
- calibratedSimulation estimation unknown

«enumeration» Enumerations:: ResourceStatusValue

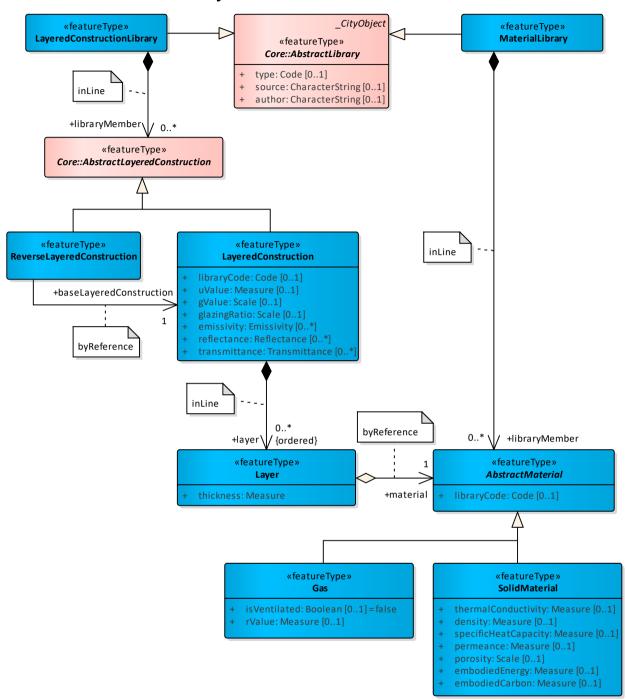
actual potential unknown

«enumeration» Enumerations:: InterpolationTypeValue

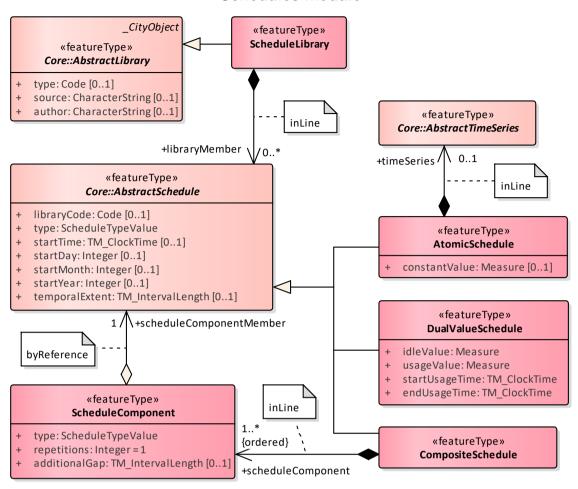
averageInPrecedingInterval averageInSucceedingInterval constant In Preceding Intervalconstant In Succeeding Intervalcontinuous discontinuous instantaneousTotal maximumInPrecedingInterval maximumInSucceedingInterval minimumInPrecedingInterval minimumInSucceedingInterval

preceding TotalsucceedingTotal

Layered construction module



Schedules module



Time series module

«featureType» Core::AbstractTimeSeries

- + acquisitionMethod: AcquisitionMethodValue
- + interpolationType: InterpolationTypeValue
- + source: CharacterString [0..1]

«featureType» RegularTimeSeries

- + temporalExtent: TM Period
- + timeInterval: TM_IntervalLength
- + valuesList: MeasureList

«featureType» TypicalValuesTimeSeries

- + startTime: TM_ClockTime [0..1]
- startDay: Integer [0..1]
- + startMonth: Integer [0..1]
- + temporalExtent: TM IntervalLength
- + timeInterval: TM_IntervalLength
- + valuesList: MeasureList

«featureType» RegularTimeSeriesFile

- + uom: UnitOfMeasure
- + fileURI: URI
- + temporalExtent: TM_Period
- + timeInterval: TM IntervalLength
- + numberOfHeaderLines: Integer [0..1] = 0
- + fieldSeparator: CharacterString
- + recordSeparator: CharacterString [0..1] = \n
- + decimalSymbol: Character [0..1] = .
- + valueColumnNumber: Integer [0..1] = 1

«featureType» TypicalValuesTimeSeriesFile

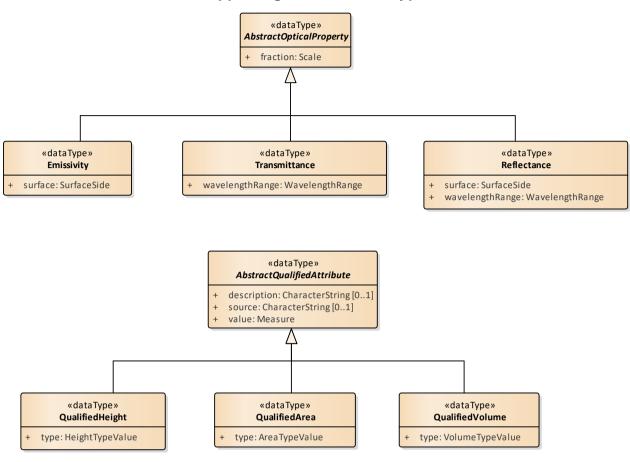
- + startTime: TM_ClockTime [0..1]
- + startDay: Integer [0..1]
- + startMonth: Integer [0..1]
- + uom: UnitOfMeasure
- fileURI: URI
- + temporalExtent: TM_IntervalLength
- + timeInterval: TM IntervalLength
- + numberOfHeaderLines: Integer [0..1] = 0
- + fieldSeparator: CharacterString
- + recordSeparator: CharacterString [0..1] = \n
- + decimalSymbol: Character [0..1] = .
- + valueColumnNumber: Integer [0..1] = 1

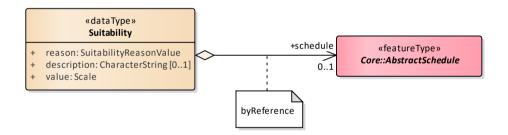
«featureType» SensorConnection

- + temporalExtent: TM_IntervalLength
- + connectionType: SensorConnectionTypeValue
- + observationProperty: CharacterString
- + uom: UnitOfMeasure [0..1]
- + sensorID: CharacterString [0..1]
- + sensorName: CharacterString [0..1]
- + observationID: CharacterString [0..1]
- + datastreamID: CharacterString [0..1]
- + baseURL: URI [0..1]
- + authType: AuthenticationTypeValue [0..1]
- + mqttServer: CharacterString [0..1]
- + mqttTopic: CharacterString [0..1]
 + linkToObservation: CharacterString [0..1]
- + linkToSensorDescription: CharacterString [0..1]

«codeList»
CodeLists::
AuthenticationTypeValue

Supporting classes: DataTypes





Supporting classes: Enumerations

«enumeration» InterpolationTypeValue

averageInPrecedingInterval averageInSucceedingInterval constantInPrecedingInterval constantInSucceedingInterval continuous discontinuous instantaneousTotal maximumInPrecedingInterval maximumInSucceedingInterval minimumInPrecedingInterval minimumInSucceedingInterval precedingTotal succeedingTotal

«enumeration» NetworkConnectionStatusValue

connected disconnectedButConnectable disconnectedAndNotConnectable unknown

«enumeration» ResourceStatusValue

actual potential unknown

«enumeration» SurfaceSide

inside outside

«enumeration» ThermalStatusValue

is Only Heated is Only Cooled is Heated And Cooled is Neither Heated Nor Cooled unknown

«enumeration» WavelengthRange

solar infrared visible total

Supporting classes: Codelists

«codelist» AcquisitionMethodValue

- measurement
- simulation
- calibratedSimulation
- estimation

«codeList» AreaTypeValue

- footprintArea
- netFloorArea
- grossFloorArea energyReferenceArea
- heatedArea
- cooledArea
- totalRoofArea
- totalWallSurfaceArea
- totalPartyWallSurfaceArea
- totalGroundSurfaceArea
- totalExteriorEnvelopeArea

«codeList» AuthenticationTypeValue

«codeList»

BatteryTechnologyTypeValue

«codeList» BuildingTypeValue

- single-family house
- terraced house multi-family house
- apartment block
- commercial building
- industrial building
- office building
- religious building
- hospital
- leisure activity building
- unknown

«codeList» CellTypeValue

- monocrystalline
- polycrystalline
- amorphous
- unknown

«codeList» EnergyPerformanceCertificateTypeValue

«codeList»

Construction Material End Use Value

- construction
- refurbishment
- otherOrCombination
- unknown

«codeList» ConstructionWeightValue

- veryLight
- light
- medium
- heavy

unknown

«codeList»

- wood
- tiles
- concrete
- sand
- soil
- otherOrCombination
- glass
- bricks

«codeList» CurrentUseValue

«codeList»

- omnivorous
- vegetarian
- vegan
- other unknown

- otherOrCombination process
 - . shading

 - spaceCooling spaceHeating

«codeList»

FoodEndUseValue

alimentation

commerce

- unknown

cooking

lighting

«codeList» EnergyCarrierValue

- electricity
- coal
- naturalGas
- chilledAir
- chilledWater
- fuelOil
- hotAir
- steam hotWater
- woodChips
- hydrogen propane
- woodPallets
- other
- unknown

«codeList» EnergyEndUseValue

- cooking
- domestic Hot Water
- electricalAppliances
- lighting
- otherOrCombination spaceCooling
- spaceHeating
- ventilation
- process
- construction unknown

«codeList» EnergySourceValue

- photovoltaicPanels
- powerGrid
- districtHeating
- solarThermalPanels
- heatPump
- wind

DietTypeValue

«codeList»

EnergyTypeValue

actual

primary

secondary

net

final

useful

ventilation

«codeList»

DeviceOperationTypeValue

domesticHotWater

electricalAppliances

- «codeList» FoodTypeValue
- greeneries
- meat cereals
- cheese
- milk
- wine beer

unknown

«codeList» FunctionAreaCodeValue

«codeList» FunctionAreaTypeValue

- neighbourhood
- district
- city
- region
- state country
- censusArea
- gridCell other unknown

«codeList» FunctionInNetworkValue

- producing
- consuming storage
- other unknown

«codeList»

- HeatSourceTypeValue
- ambientAir
- aquifer
- horizontalGroundCollector
- verticalGroundCollector unknown

«codeList» HeightTypeValue

- bottomOfConstruction
- entrancePoint
- generalEave
- highestEave
- highestPoint highestRoofEdge
- lowestFloorAboveGround
- topOfConstruction

«codeList» IncomeLevelValue

- very low
- low middle
- high very high

unknown

«codeList»

- no formal education
- primary school
- secondary school
- postGraduate
- unknown

exhaustAir

generalRoof generalRoofEdge

- IowestEave
- IowestRoofEdge
- topThermalBoundary bottomThermalBoundary

InstructionLevelValue

«codeList» OccupantsTypeValue

- patients
- residents
- students
- visitors
- workers
- otherOrCombination
- unknown

NetworkTypeValue

- districtCooling
- wasteWater
- electicalGrid

«codeList» OtherResourceEndUseValue

«codeList» OtherResourceTypeValue

«codeList» MediumTypeValue

- steam
- water
- unknown

«codelist»

- data
- gas
- districtHeating

- other
- unknown

«codeList» OwnershipTypeValue

- corporation
- government
- nonOccupantPrivateOwner
- nonProfitOrganisation
- occupantPrivateOwner
- otherOrCombination
- property Management Company
- unknown

«codelist» RefurbishmentMeasureTypeValue

- installedSolarPanels
- installedPVPanels
- installedHeatPump
- changedBoiler
- insulatedWholeThermalHull
- installedFloorHeating
- changedWindows
- changedDoors insulatedRoof
- insulatedExteriorWalls
- insulated Ground Floor
- other
- unknown

«codeList» RelationTypeValue

- adjacentTo
- installedOn
- sharedWith

«codeList» ScheduleTypeValue

- hour
- dav
- week
- month season
- vear
- typicalDay
- typicalWeek
- typicalMonth
- typicalSeason
- typicalYear
- monday
- tuesday wednesday
- thursday
- friday
- saturday
- sunday
- weekDay weekendDay
- beerDay
- holiday
- january february
- march april
- may
- june
- july
- august
- september october
- november
- december
- spring summer
- autumn winter
- other

- «codeList» ResourceOperationTypeValue
- demands
- hasBalanceOf
- produces
- stores

«codeList» SensorConnectionTypeValue

«codeList» ShadingDeviceTypeValue

- curtain
- shutter
- blind
- other unknown
- «codeList» «codeList» SuitabilityReasonValue

UrbanSpaceEndUseValue

«codeList» UrbanSpaceTypeValue

«codeList»

SolarCollectorTypeValue

evacuatedTubeCollector

flatPlaneCollector

«codeList» VolumeTypeValue

- netVolume
- grossVolume

unknown

- energyReferenceVolume
- heatedVolume
- cooledVolume

«codeList» WasteTypeValue

- organic
- plastic
- glass paper
- metal
- unknown
- water otherOrCombination

«codeList» Waste End Use Value

- incineration
- landFilling recycling
- other unknown
- «codeList» WaterEndUseValue
- drinking
- washing
- processing otherOrCombination
- unknown

«codeList» WaterTypeValue

- drinkWater
- wasteWater
- rainWater
- otherOrCombination unknown

«codeList» WeatherDataTypeValue

- airTemperature
- humidity windSpeed
- windDirection
- cloudiness globalSolarIrradiance
- directSolarIrradiance
- diffuseSolarIrradiance terrestrialEmission
- downward Terrestrial RadiationdaylightIlluminance
- shadowingFactor precipitation

«codeList» WeatherValueTypeValue

- absolute maximum
- average maximum
- average
- average minimum absolute minimum
- unknown

Changelog

Version 2.0 beta 7

2025-06-25

Schedules package:

- Class ScheduleLibrary
 - Changed relation type of *libraryMember* to composition

Layered Construction package:

- Class LayeredConstructionLibrary
 - Changed relation type of libraryMember to composition
- Class LayeredConstruction
 - Added property gValue
- Class MaterialLibrary
 - Changed relation type of *libraryMember* to composition

2025-05-30

Schedules package:

- Class AtomicSchedule
 - Changed multiplicity of relation *timeSeries* to [0..1]
 - Added property constantValue

2025-05-13

Building physics package:

- Class ThermalZone
 - Changed relation type of thermalBoundary to composition

2025-05-07

Core package:

- Class ADE CityObject
 - Changed relation type of *device* to aggregation
 - Changed relation type of weatherData to composition
- Class AbstractThermalZone
 - Changed relation type of usageZone to association
- Class AbstractUsageZone
 - Changed relation type of building Unit to association
- Class AbstractResource
 - Made relation to **AbstractTimeSeries** explicit and set to composition
- Class DeviceOperation
 - Made relation to **AbstractSchedule** explicit and set to aggregation
- Class WeatherData
 - Made relation to **AbstractTimeSeries** explicit and set to composition

Occupancy package:

- Class UsageZone
 - Changed relation type of occupiedBy to aggregation
 - Made all relations to **AbstractSchedule** explicit and set to aggregation
- Class BuildingUnit
 - Changed relation type of *occupiedBy* to aggregation
- Class Occupants
 - Made relation to AbstractSchedule explicit and set to aggregation

Layered Construction package:

- Class LaveredConstruction
 - Changed relation type of *layer* to composition
- Class Layer
 - Changed relation type of *material* to aggregation

Schedules package:

- Class ScheduleComponent
 - Changed relation type of *scheduleComponentMember* to aggregation

2025-05-01

Core package:

- Class ADE AbstractSchedule
 - Moved from package Schedules to Core
- Class ADE AbstractTimeSeries
 - Moved from package Time Series to Core

Occupancy package:

- Class Occupants:
 - Added property averageDietType
 - Added property averageIncomeLevel
 - Added property averageInstructionLevel

CodeLists package:

- Added class DietTypeValue
- Added class InstructionLevelValue
- Added class IncomeLevelValue

2025-04-23

CodeLists package:

- Added values to class AreaTypeValue
- Renamed class HeightReferenceValue to HeightTypeValue
- Added class SuitabilityReasonValue
- Added class UrbanSpaceTypeValue
- Added class **UrbanSpaceEndUseValue**

DataTypes package:

• Added class Suitability

Core package:

- Class ADE _CityObject
 - Added property suitability
- Class ADE _AbstractBuilding
 - Renamed property bdgFloorArea to bdgArea
 - Renamed property bdgHeightAboveGround to bdgHeight
- Class AbstractBuildingPartition
 - Renamed property floorArea to area

Resources package:

Added class UrbanSpace

2025-04-12

Core package:

• Added class AbstractLibrary

Layered Construction package:

- Added class LayeredConstructionLibrary
- Added class MaterialLibrary

Schedules package:

• Added class ScheduleLibrary

CodeLists package:

• Class FunctionInNetwork renamed to FunctionInNetworkValue

Version 2.0 beta 6

2025-02-06

DataTypes package:

- Dropped class HeatExchangeType
- Dropped class OpticalProperties

Core package:

- Class ADE _CityObject:
 - Renamed property from operationSchedule to deviceOperation
- Class AbstractDevice:
 - Changed type of property heatDissipation to gml:Measure
 - Added property heatDissipationConvectiveFraction
 - Added property heatDissipationLatentFraction
 - Added property heatDissipationRadiantFraction

Occupancy package:

- Class UsageZone:
 - Renamed property averageInternalGains to internalGains and changed type to gml:Measure
 - Added property internalGainsConvectiveFraction
 - Added property internal Gains Latent Fraction
 - Added property internal Gains Radiant Fraction
- Class Occupants:
 - Changed type of property heatDissipation to gml:Measure
 - Added property *heatDissipationConvectiveFraction*
 - Added property heatDissipationLatentFraction
 - Added property heatDissipationRadiantFraction

Layered Construction package:

- Class **LayeredConstruction**:
 - Dropped property optical Properties
 - Added property glazingRatio
 - Added property emissivity
 - Added property reflectance
 - Added property transmittance
- Class Layer:
 - Changed multiplicity of property thickness to [1]
- Class AbstractMaterial:
 - Added property libraryCode

Version 2.0 beta 5	

Resources package:

No changes since beta 4

Weather Station package:

No changes since beta 4

2025-01-30

Packages

- Created TimeSeries package and moved all related classes into it
- Created Schedule package and moved all related classes into it
- Dropped Supporting classes package

CodeLists package:

• Class CertificateTypeValue renamed to EnergyPerformanceCertificateTypeValue

2025-01-28

CodeLists package:

• Added class ScheduleTypeValue

Enumerations package:

• Dropped class DayTypeValue

Supporting classes package:

- Dropped class TimeSeriesSchedule
- Dropped class DailyPatternSchedule
- Dropped class PeriodOfYear
- Dropped class DailySchedule
- Added class AtomicSchedule
- Added class CompositeSchedule
- Added class ScheduleComponent
- Class AbstractSchedule:
 - Added properties type, startTime, startDay, startMonth, startYear, temporalExtent

2025-01-22

Devices package:

- Class AbstractSolarCollector:
 - Added properties azimuth and inclination
 - Dropped property *surfaceGeometry*
 - Added properties lod2MultiSurface and lod3MultiSurface

2025-01-13

CodeLists package:

- Dropped class ThermalBoundaryTypeValue
- Added class ShadingDeviceTypeValue
- Added class WeatherValueTypeValue

DataTypes package:

- Moved class PeriodOfYear from package DataTypes to Supporting classes
- Moved class DailySchedule from package DataTypes to Supporting classes
- Class AbstractQualifiedAttribute:
 - Added properties source and value
- Classes QualifiedHeight, QualifiedArea, QualifiedVolume:
 - Dropped property value

Supporting classes package:

Class AbstractTimeSeries:

- Moved back from package Core to Supporting classes
- Changed multiplicity of property acquisitionMethod to [1]
- Changed multiplicity of property *interpolationType* to [1]
- ClassTypicalValuesTimeSeries:
 - Added properties startTime, startDay, startMonth
- Class TypicalValuesTimeSeriesFile:
 - Added properties startTime, startDay, startMonth
- Added class DualValueSchedule:
- Class PeriodOfYear:
 - Changed stereotype from dataType to featureType
 - Added properties startDay, startMonth, endDay, endMonth
 - Dropped property period
- Class DailvSchedule:
 - Changed stereotype from dataType to featureType
 - Added property repetition
 - Renamed property from schedule to timeSeries

Layered Construction package:

- Added class ReverseLayeredConstruction
- Dropped class LayerComponent
- Class Layer:
 - Removed property layerComponent
 - Added property thickness
 - Added property material
- Class SolidMaterial:
 - Renamed property from *specificHeat* to *specificHeatCapacity*
 - (Re)added and renamed property from conductivity to thermalConductivity
 - (Re)added property *embodiedEnergy*
 - (Re)added property embodiedCarbon
 - (Re)added property porosity

Core package:

- Class **AbstractDevice**:
 - Class is renamed from **AbstractEnergySystem** to **AbstractDevice**
 - Added property heatDissipation
 - Added property operationSchedule
 - Added property efficienctIndicator
 - Added property installedPower
 - Added property *nominalEfficiency*
- Class AbstractTimeSeries:
 - Moved back from package Core to Supporting classes
- Class (ADE) _CityObject:
 - Renamed property from energySystem to device
- Class OperationSchedule:
 - Moved from package Devices to Core
- Class **WeatherData**:
 - Renamed property from timeseries to timeDependentValues
 - Renamed property from singleValue to yearlyValue
 - Renamed property from singleValueType to valueType
 - Changed type of property valueType from CharacterString to CodeList
- Added class AbstractBuildingPartition
- $\bullet \quad Classes \ \textbf{AbstractBuildingUnit}, \ \textbf{AbstractUsageZone}, \ \textbf{AbstractThermalZone}$
 - Changed parent class

Building physics package:

- Dropped class ThermalBoundary
- Dropped class ThermalOpening
- Class ThermalZone
 - Removed property *floorArea* (now inherited via **AbstractBuildingPartition**)

- Removed property volume (now inherited via AbstractBuildingPartition)
- Removed property *volumeGeometry* (now inherited via **AbstractBuildingPartition**)
- Removed property boundedBy
- Added property heatCapacity
- Added property coincidesWithLod2Hull
- Added property coincidesWithLod3Hull
- Added property *thermalBoundary*
- Added class PartyWallSurface
- Added class **BasementCeilingSurface**
- Added class IntermediateFloorSurface
- Added class AtticFloorSurface
- Class (ADE) _BoundarySurface:
 - Renamed property from bdgBdrySrfWindowToWallRatio to bdgBdrySrfOpeningToSurfaceRatio
 - Renamed property from bdgBdrySrfArea to bdgBdryTotalSurfaceArea
 - Added property bdgBdryOpaqueSurfaceArea
 - Added property bdgBdrySrfThickness
 - Added property bdgBdrySrfHeatCapacity

Occupancy package:

- Dropped class AbstractFacilities
- Dropped class **DHWFacilities**
- Dropped class LightingFacilities
- Dropped class **ElectricalAppliances**
- Dropped class GenericFacilities
- Class BuildingUnit:
 - Removed property *floorArea* (now inherited via **AbstractBuildingPartition**)
 - Removed property *volume* (now inherited via **AbstractBuildingPartition**)
 - Removed property equippedWith
- Class UsageZone:
 - Removed property *floorArea* (now inherited via **AbstractBuildingPartition**)
 - Removed property *volume* (now inherited via **AbstractBuildingPartition**)
 - Removed property *volumeGeometry* (now inherited via **AbstractBuildingPartition**)
 - Removed property equippedWith

Devices package:

The former EnergySystems package is renamed to Devices package

- Class OperationSchedule:
 - Moved from package Devices to Core
- Dropped class AbstractEnergyConversionSystem
 - Now all subclasses are derived directly from AbstractDevice
- Dropped class AbstractStorageSystem
 - Now all subclasses are derived directly from AbstractDevice
- Class **GenericDevice**:
 - Renamed from class **GenericEnergyConversionSystem**
- Class ElectricalStorageDevice:
 - Renamed from class PowerStorageSystem
- Class **ThermalStorageDevice**:
 - Renamed from class ThermalStorageSystem
- Class AbstractSolarCollector:
 - Renamed from class AbstractSolarEnergySystem
- Class **PhotovoltaicThermalCollector**:
 - Renamed from class PhotovoltaicThermalSystem
- Class PhotovoltaicCollector:
 - Renamed from class **PhotovoltaicSystem**
- Class SolarThermalCollector:
 - Renamed from class SolarThermalSystem
- Class GenericSolarCollector:
 - Renamed from class GenericSolarEnergySystem
- Added class LightingDevice

- Added class GenericElectricalDevice
- Added class MovableShadingDevice

Urban Function Areas package:

- Class UrbanFunctionArea:
 - Removed property rank

Version 2.0 beta 4

2024-09-25

- Codelist ThermalBoundaryTypeValue
 - Renamed outerWall to exteriorWall
 - Renamed intermediaryFloor to intermediateFloor

2024-09-20

- Minor edits to the layout of the UML diagrams
- Polished Codelist ThermalBoundaryTypeValue

2024-08-12

- Class ADE CityObject:
 - Renamed association connectedTo to utilityNetworkConnection
 - Remodelled association class CityObjectRelation
- Class AbstractTimeSeries:
 - Moved to Core module
- Class WeatherData:
 - renamed property valuesList to timeSeries
 - made the association to **AbstractTimeSeries** explicit
- Added some values to codelist **RelationTypeValue**
- Class **TimeSeriesSchedule**:
 - Changed association to **AbstractTimeSeries** to Composition
- Class **DailySchedule**:
 - Changed association to AbstractTimeSeries to Composition
- Class SensorConnection:
 - Changed type of uom to UnitOfMeasure
 - Renamed linkTosensortDescription to linkToSensorDescription
- Class AbstractSolarEnergySystem:
 - Removed association *installedOn* (now taken over by **CityObjectRelation**)
- Class Energy:
 - Changed multiplicity of *EnergyCarrier* to [0..1]
- Class Waste:
 - Changed multiplicity of isDanegerous and isRecyclable to [0..1]

