



UML diagrams

Last updated on 28 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)

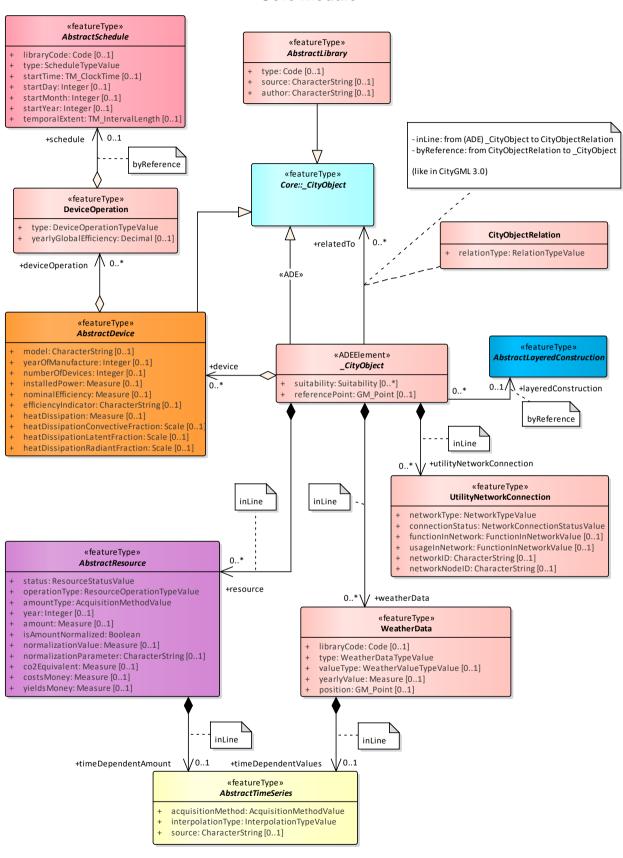
Particular gratitude is due to Daniele Gasparini for designing the Energy ADE 2.0 logo.

Contents

Overview of the packages	······································
Core module	4
Building physics module	3
Occupancy module	9
Devices module	11
Weather station module	
Resources module	
Layered construction module	16
Schedules module	
Time series module	
Supporting classes: DataTypes	
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) **Urban Function Areas** Weather Station «leaf» Building Physics «leaf» «leaf» Core Time Series **Layered Construction** «leaf» «leaf» Occupancy Schedules Devices «leaf» Resources «leaf» «leaf» «leaf» CodeLists **Enumerations** DataTypes

Core module



«codeList» CodeLists:: AcquisitionMethodValue

- measurement
- simulation
- calibratedSimulation
- estimation
- unknown

«codeList» CodeLists:: **DeviceOperationTypeValue**

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

«codeList»

CodeLists::

RelationTypeValue

adjacentTo

installedOn

sharedWith

- ventilation
- unknown

«codeList» CodeLists:: FunctionInNetworkValue

«codeList»

CodeLists::

ResourceOperationTypeValue

- producing
- consuming
- storage
- other
- unknown

demands

produces

stores

hasBalanceOf

has

«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

- CodeLists:: NetworkTypeValue

«codeList»

- gas
- districtHeating
- districtCooling
- wasteWater
- electicalGrid
- other
- unknown

«codeList»

CodeLists:: WeatherValueTypeValue

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

«codeList» CodeLists::WeatherDataTypeValue

- airTemperature
- humidity
- windSpeed
- windDirection
- cloudiness
- globalSolarIrradiance directSolarIrradiance
- diffuseSolarIrradiance
- terrestrialEmission downwardTerrestrialRadiation

«enumeration»

Enumerations::

InterpolationTypeValue

averageInPrecedingInterval

averageInSucceedingInterval

constantInPrecedingInterval

constantInSucceedingInterval

davlightIlluminance

continuous discontinuous instantaneousTotal maximumInPrecedingInterval maximumInSucceedingInterval minimumInPrecedingInterval minimumInSucceedingInterval

- shadowingFactor
- precipitation

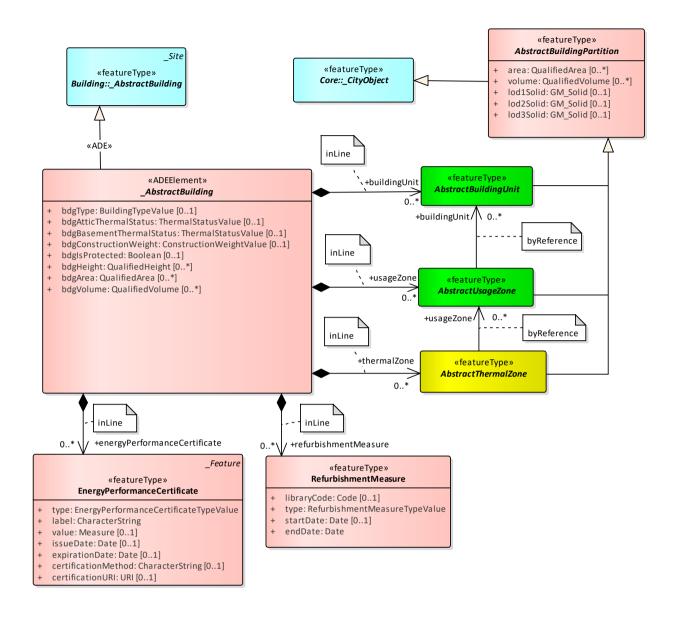
«enumeration» Enumerations:: NetworkConnectionStatusValue

connected disconnectedButConnectable disconnected And Not Connectableunknown

«enumeration» Enumerations:: ResourceStatusValue

actual potential unknown

precedingTotal succeedingTotal



«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 isOnlyCooled isHeatedAndCooled is Neither Heated Nor Cooledunknown

«codeList» CodeLists:: ConstructionWeightValue

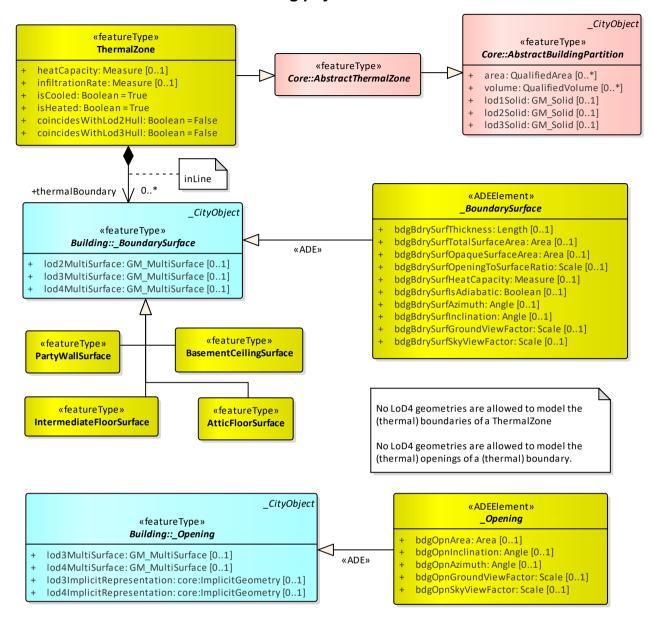
- veryLight
- light
- medium
- heavy
- unknown

«codeList» CodeLists:: **EnergyPerformanceCertificateTypeValue**

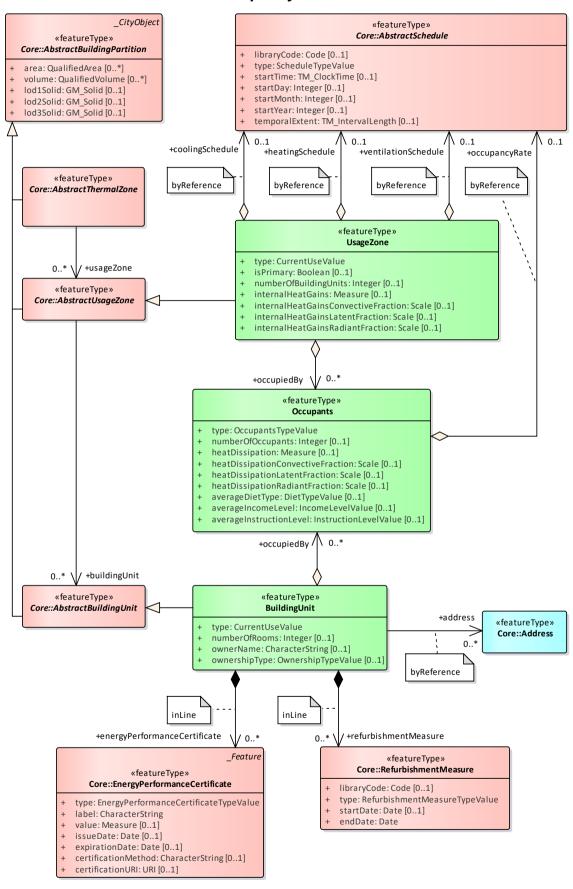
«codeList» CodeLists:: RefurbishmentMeasureTypeValue

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

Building physics module



Occupancy module



«codeList» CodeLists::CurrentUseValue

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

«codeList» CodeLists::IncomeLevelValue

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

«codeList» CodeLists:: InstructionLevelValue

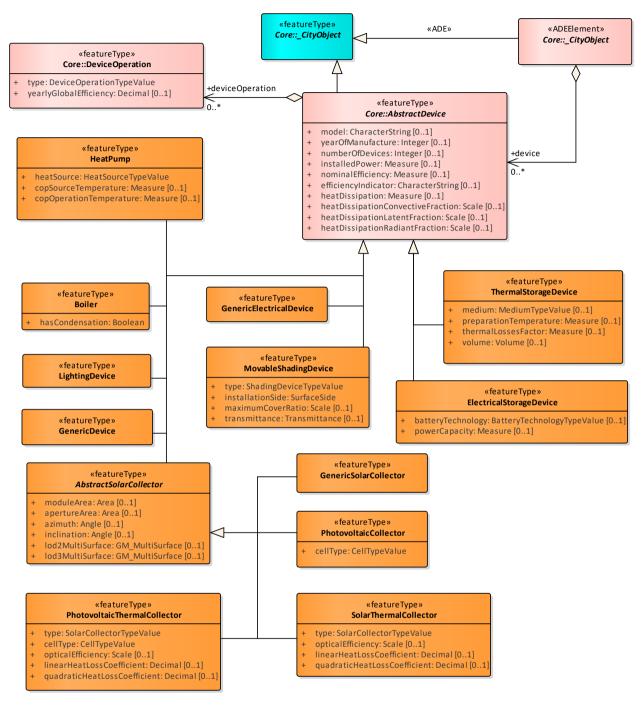
- + no formal education
- + primary school
- + secondary school
- + university
- + postGraduate
- + unknown

«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

- electricalAppliances lighting otherOrCombination
- process
- shading
- spaceCooling
- spaceHeating ventilation
- unknown

«codeList» CodeLists:: SolarCollectorTypeValue

- flatPlaneCollector
- evacuated Tube Collectorunknown

«enumeration» Enumerations:: SurfaceSide

«codeList»

CodeLists::

HeatSourceTypeValue

exhaustAir horizontalGroundCollector

verticalGroundCollector

ambientAir

aquifer

unknown

inside outside

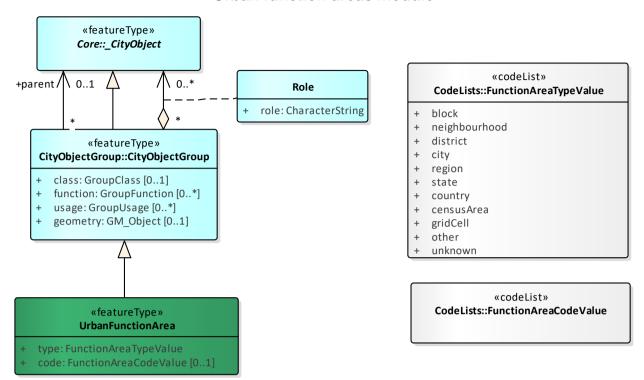
«codeList» CodeLists::MediumTypeValue

- steam water
- unknown

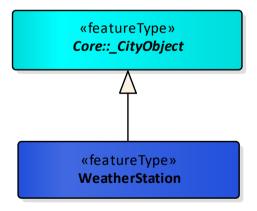
«codeList» CodeLists:: ShadingDeviceTypeValue

- curtain
- shutter
- blind
- other
- unknown

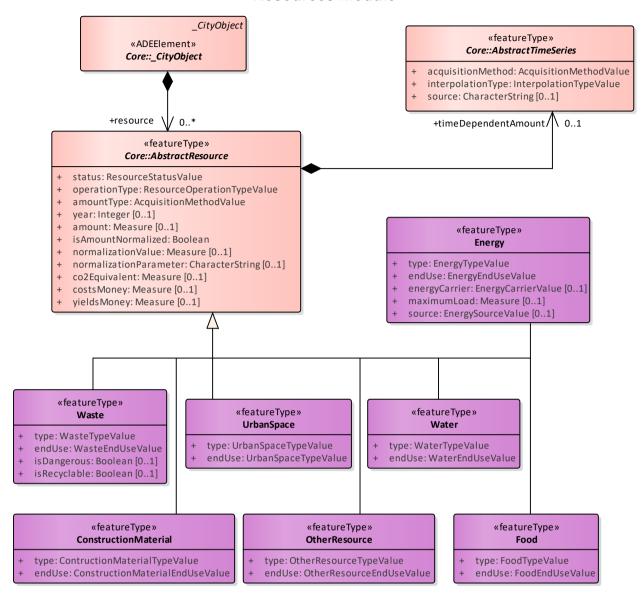
Urban function areas module



Weather station module



Resources module



«codeList» CodeLists:: ConstructionMaterialEndUseValue

- 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
- domesticHotWater
- 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

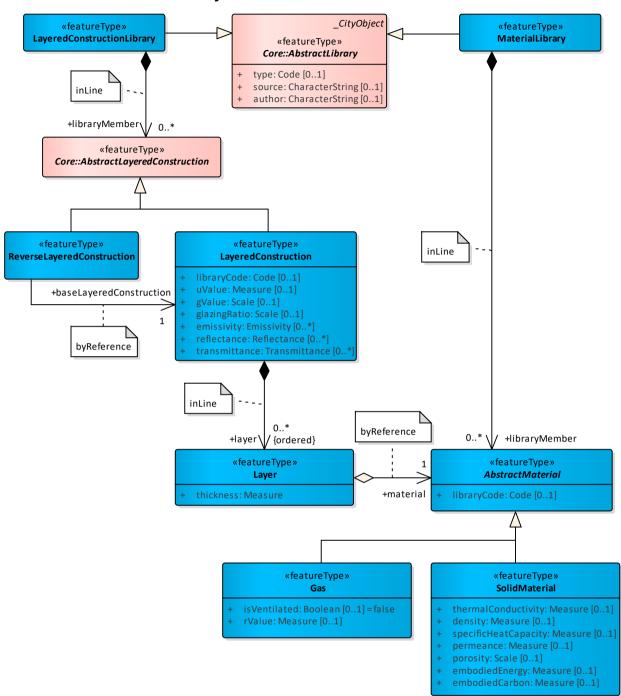
actual potential unknown

«enumeration» Enumerations:: InterpolationTypeValue

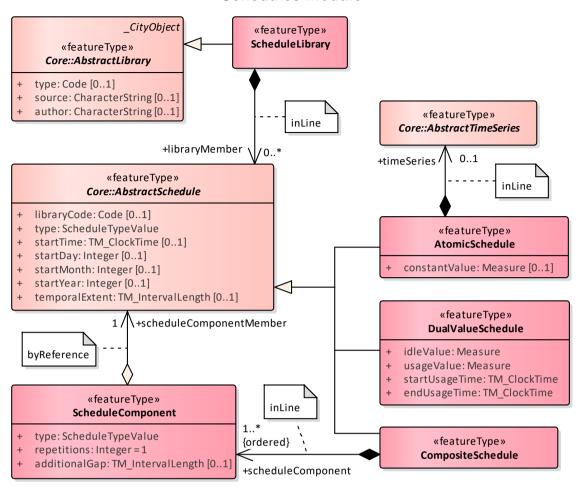
averageInPrecedingInterval averageInSucceedingInterval constant In Preceding Intervalconstant In Succeeding Intervalcontinuous discontinuous instantaneous TotalmaximumInPrecedingInterval maximumInSucceedingInterval minimumInPrecedingInterval minimum In Succeeding Interval

preceding TotalsucceedingTotal

Layered construction module



Schedules module



Time series module

«featureType» Core::AbstractTimeSeries

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

«featureType» «featureType» TypicalValuesTimeSeries RegularTimeSeries startTime: TM ClockTime [0..1] temporalExtent: TM Period startDay: Integer [0..1] timeInterval: TM IntervalLength startMonth: Integer [0..1] valuesList: MeasureList temporalExtent: TM IntervalLength timeInterval: TM_IntervalLength valuesList: MeasureList «featureType» «featureType» RegularTimeSeriesFile TypicalValuesTimeSeriesFile uom: UnitOfMeasure startTime: TM_ClockTime [0..1] fileURI: URI startDay: Integer [0..1] temporalExtent: TM_Period startMonth: Integer [0..1] timeInterval: TM IntervalLength uom: UnitOfMeasure numberOfHeaderLines: Integer [0..1] = 0 fileURI: URI temporalExtent: TM_IntervalLength fieldSeparator: CharacterString recordSeparator: CharacterString [0..1] = \n timeInterval: TM IntervalLength decimalSymbol: Character [0..1] = . numberOfHeaderLines: Integer [0..1] = 0 valueColumnNumber: Integer [0..1] = 1 fieldSeparator: CharacterString recordSeparator: CharacterString [0..1] = \n decimalSymbol: Character [0..1] = .

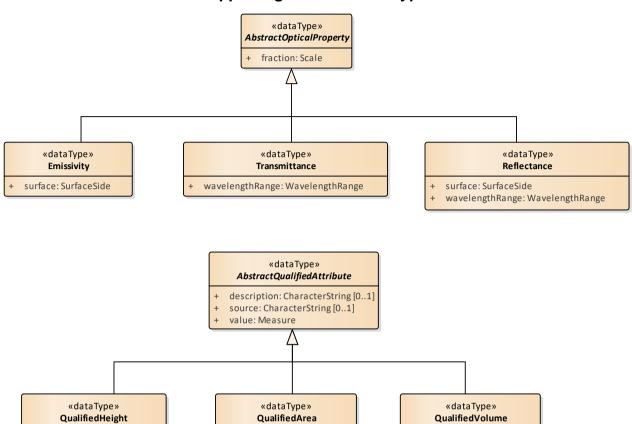
«featureType» SensorConnection

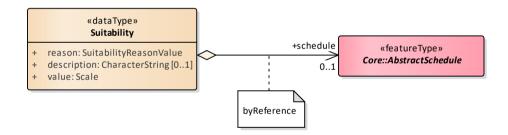
- + temporalExtent: TM_IntervalLength
- + connectionType: SensorConnectionTypeValue
- + observationProperty: CharacterString
- + uom: UnitOfMeasure [0..1]
- + sensorID: CharacterString [0..1]
- + sensorName: CharacterString [0..1]
- + observationID: CharacterString [0..1]
- + datastreamID: CharacterString [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]

valueColumnNumber: Integer [0..1] = 1

«codeList»
CodeLists::
AuthenticationTypeValue

Supporting classes: DataTypes





type: AreaTypeValue

type: VolumeTypeValue

type: HeightTypeValue

Supporting classes: Enumerations

«enumeration» InterpolationTypeValue

averageInPrecedingInterval averageInSucceedingInterval constantInPrecedingInterval constantInSucceedingInterval continuous discontinuous instantaneousTotal maximumInPrecedingInterval maximumInPrecedingInterval minimumInSucceedingInterval 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

BatteryTechnologyTypeValue

«codeList»

«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»

ConstructionMaterialEndUseValue

- construction
- refurbishment
- otherOrCombination
- unknown

«codeList» ConstructionWeightValue

- veryLight
- light
- medium
- heavy

unknown

«codeList» ContructionMaterialTypeValue

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

«codeList» CurrentUseValue

«codeList»

- vegetarian
- vegan other
- unknown

«codeList» **DeviceOperationTypeValue**

- cooking
- domesticHotWater
- lighting
- otherOrCombination

«codeList»

FoodEndUseValue

alimentation

commerce

- process
- spaceCooling
- spaceHeating
- ventilation
- unknown

«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

- omnivorous

electricalAppliances

- shading

«codeList» FoodTypeValue

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

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 exhaustAir
- horizontalGroundCollector
- verticalGroundCollector

«codeList» HeightTypeValue

- bottomOfConstruction
- entrancePoint
- generalEave generalRoof
- generalRoofEdge
- highestEave highestPoint
- lowestFloorAboveGround
- IowestRoofEdge topOfConstruction
- bottomThermalBoundary

«codeList» IncomeLevelValue

- very low
- low middle
- high very high unknown

«codeList» InstructionLevelValue

- no formal education
- primary school
- postGraduate
- unknown

unknown

- topThermalBoundary

«codeList» OccupantsTypeValue

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

NetworkTypeValue

- districtCooling
- wasteWater
- electicalGrid

- unknown

«codeList» OtherResourceEndUseValue

«codeList» OtherResourceTypeValue

«codeList» MediumTypeValue

- steam
- water
- unknown

«codelist»

- data
- gas
- districtHeating

- other

«codelist» OwnershipTypeValue

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

«codeList» RefurbishmentMeasureTypeValue

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

«codelist» RelationTypeValue

- adjacentTo
- installedOn
- sharedWith

«codeList» ScheduleTypeValue

- hour
- dav
- 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» Resource Operation Type Value
- demands
- hasBalanceOf
- produces
- stores

«codeList» SensorConnectionTypeValue

«codeList» ShadingDeviceTypeValue

- curtain
- shutter
- blind
- other unknown

«codeList» SuitabilityRe as on Value

«codeList» UrbanSpaceEndUseValue

«codeList» **UrbanSpaceTypeValue**

«codeList»

«codeList»

SolarCollectorTypeValue

evacuatedTubeCollector

flatPlaneCollector

VolumeTypeValue

unknown

- netVolume
- grossVolume energyReferenceVolume
- heatedVolume
- cooledVolume

«codeList» WasteTypeValue

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

«codeList» Waste End Use Value

- incineration
- landFilling recycling
- other unknown

«codeList» WaterEndUseValue

- drinking
- washing
- processing otherOrCombination
- unknown

«codeList» WaterTypeValue

- drinkWater
- wasteWater

unknown

rainWater otherOrCombination

«codeList» WeatherDataTypeValue

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

«codeList» WeatherValueTypeValue

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

22

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 internal Gains Convective Fraction
 - Added property internal Gains Latent Fraction
 - Added property internalGainsRadiantFraction
- 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 Electrical Appliances
- 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]

