

Energy ADE Core and Construction Modules

Activities, Request of changes for the
Energy ADE v0.6



Working Group Organization

- ADE Energy modules **ADE Core** and **Construction** present many dependencies and need common modelling decisions.
 - Merge both **WG ADE Core** and **Construction** in a **WG Building Physics**
- 7 active participants. New participants are very welcome

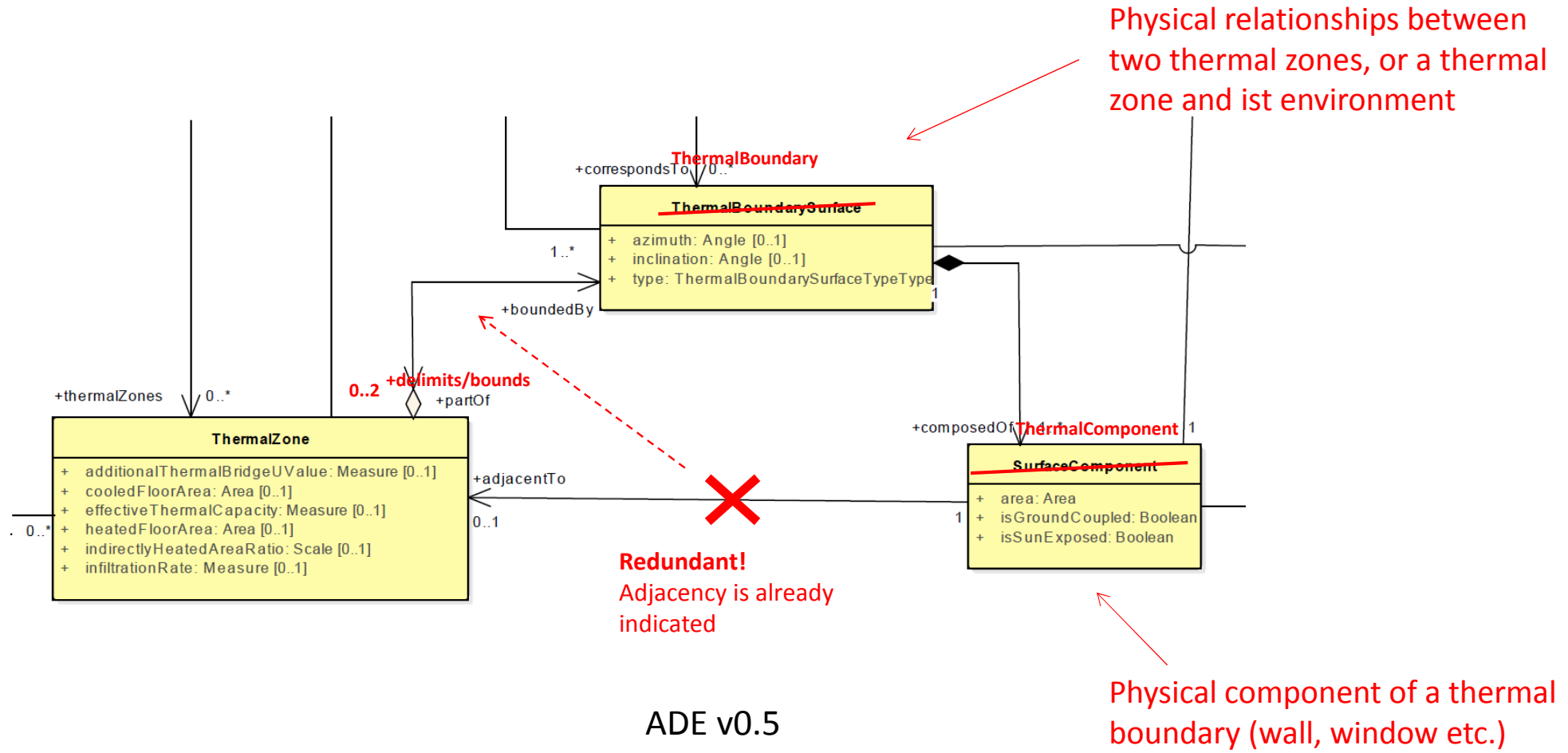
Activities over the last 6 months

- 2 online-conferences
- Class/Parameter documentation of ADE v0.5 nearly finished
- Considerable activity on GitHub
 - 15 opened issues
 - 10 Requests of change for ADE v0.6

General feedbacks on ADE v0.5

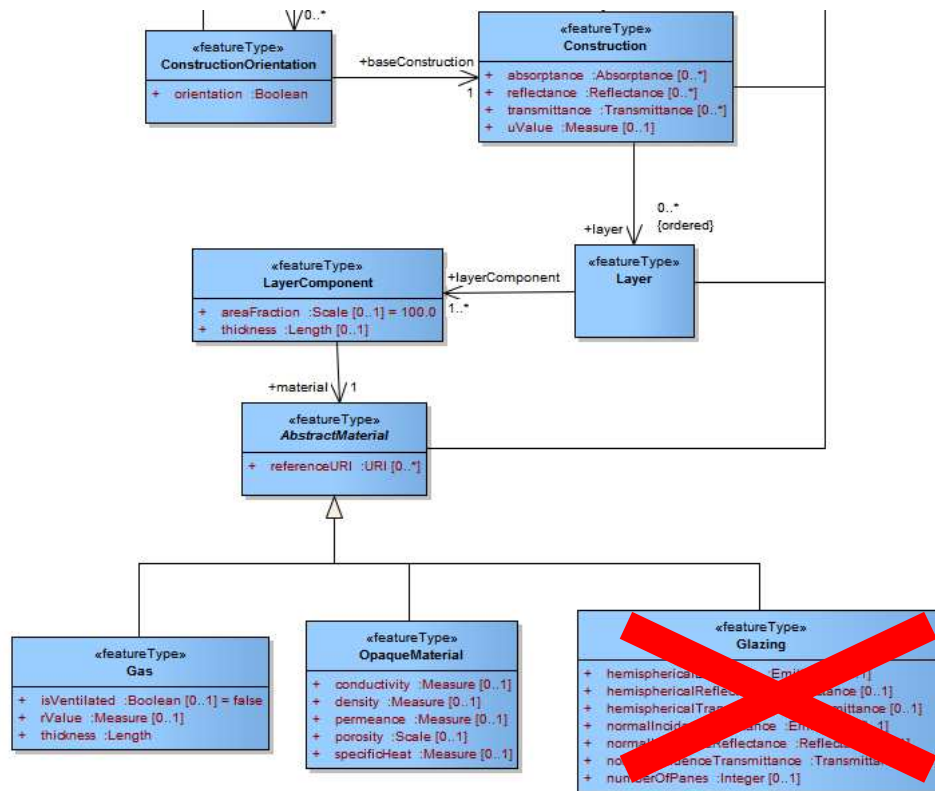
- Some clarifications are required (thermal surface boundaries, surface component, glazing etc.)
- Some features are missing (for solar-related studies)
- Some attributes are too restrictive (optical properties, refurbishment measures, reference heated floor area)

Issue#50/#51 Thermal Zone boundary concept



Issue#38/#57

Materials and Optical properties



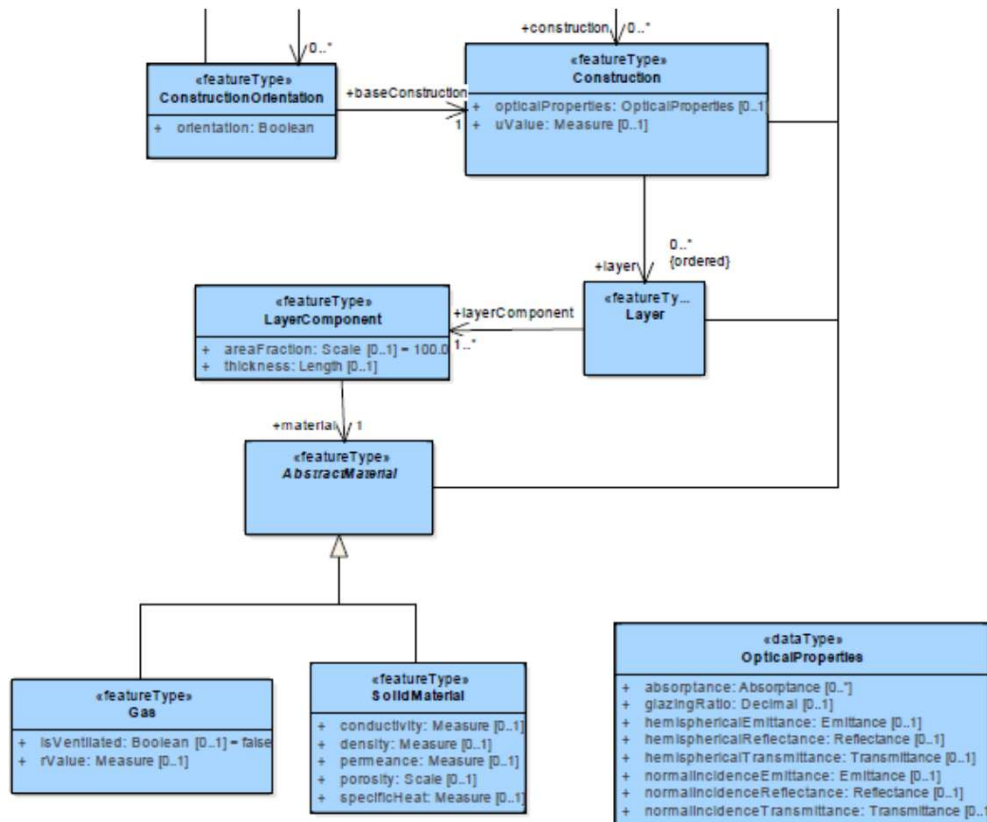
ADE v0.5

In ADE v0.5

- Optical properties spread off in different objects
- Materials categorized in Gas, OpaqueMaterial and Glazing (constituted of panes and gas layers)

Issue#38/#57

Materials and Optical properties



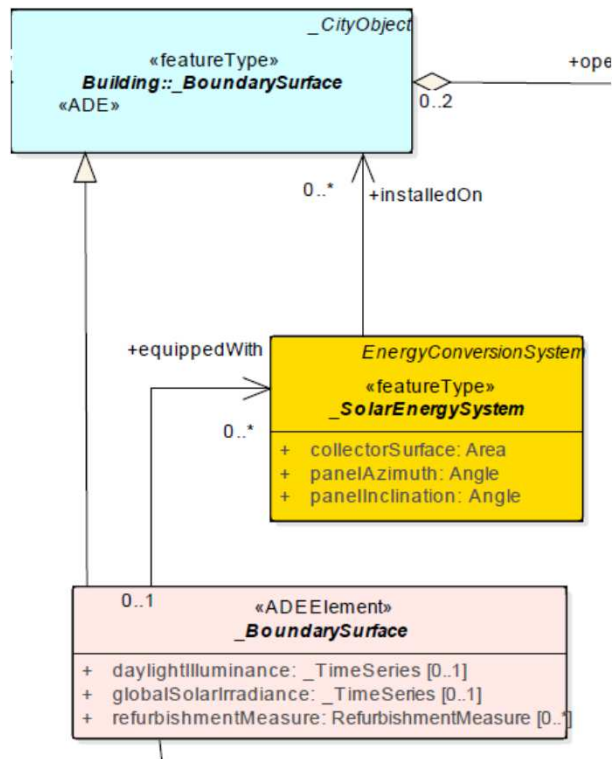
ADE v0.5

Proposition ADE v0.6

- Introduction of Object **OpticalProperties**
- Material categorized in Gas (neglected inertia) and SolidMaterial (with inertia)

Issue#52

Solar-related attributes



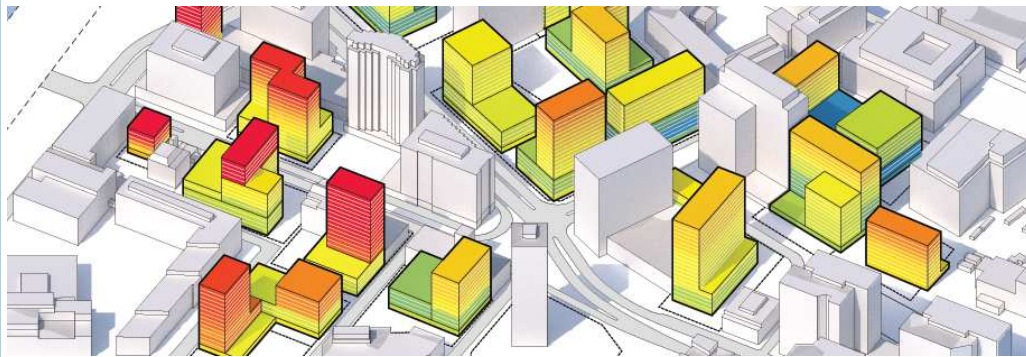
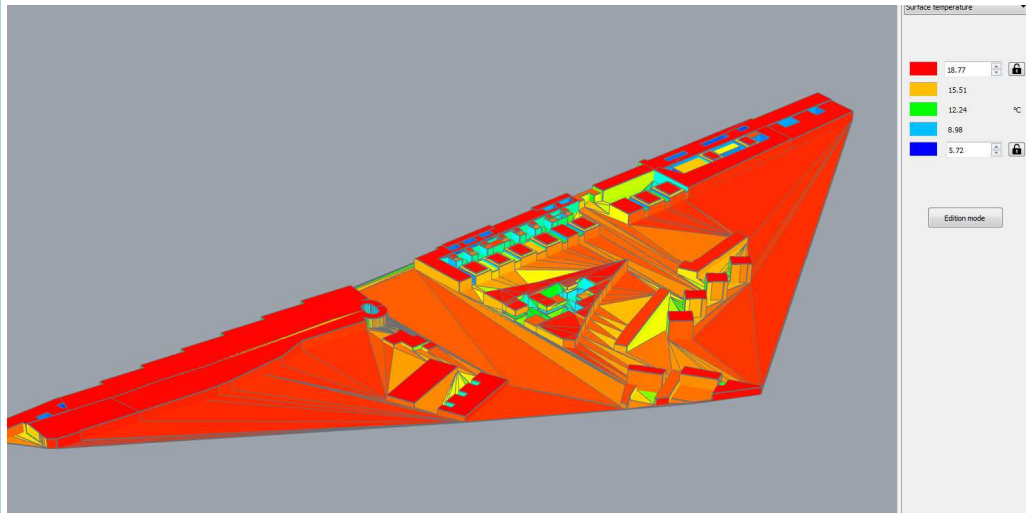
ADE v0.6

Proposition ADE v0.6

- Introduction of the time series **daylightIlluminance** and **globalSolarIrradiance** in **BoundarySurface**

Issue#52

Solar-related attributes



- **Use of globalSolarIrradiance**
 - Solar gains for heating/cooling demand simulation
 - Solar potential study
 - Calculation of solar system generation
- **Use of daylightIlluminance**
 - Outside daylighting analyse
 - Inside daylighting analyse

Issue#42

Refurbishment measures

ADE v0.5

- Attribute **RefurbishmentClass** and **yearOfRefurbishment** in **Abstract Building**

Proposition ADE v0.6

- Introduction of Object **RefurbishmentMeasures...**
- ... optionally associated with **AbstractBuilding**, **BoundarySurface**, **Opening** and **EnergyConversionSystem**
- With attributes **DateOfReburbishment** and **LevelOfRefurbishment**

Issue#47

Building Floor Area

ADE v0.5

- different Floor areas are used in AbstractBuilding (**referenceHeatedFloorArea**) and in ThermalZone (**heatedFloorArea**, **cooledFloorArea**).

Proposition ADE v0.6

- Introduction of Object **FloorArea**...
- ... optionally multi-associated with **AbstractBuilding**, **ThermalZone**, **UsageZone** and **BuildingUnit**
- With attributes **type** (codeList OfficialArea) and **measure**

Issue#46

Energy Performance Certifications

ADE v0.5

- One attribute
EnergyPerformanceCertification
(URI) in AbstractBuilding

Proposition ADE v0.6

- Introduction of new class
EnergyPerformanceCertification
- ... optionally multi-associated with
AbstractBuilding...
- With attributes
 - certificationName (e.g. LEED, EnEV2014)
 - certificationRating (e.g. Gold, B, 100)
 - certificationId (e.g. 0389038)

Open Issue#45

Cultural heritage / Historic buildings

ADE v0.5

- A simple Boolean attribute **landmarked** allow to precise if a building is protected or not...
- ...for the development of refurbishment planning strategies

Issue

- different degrees of protection (cultural heritage, historic buildings)...
- ... in different countries with different related legislation (ensemble Denkmalschutz)
- Hierarchical code list??

Open Issue#56

Building Key Performance Indicators (KPI)

Issue

- KPIs are important for multi-criteria analyse and comparison
- KPIs for building energy efficiency:
 - Surface area to volume ratio (index of compactness)
 - Mean U-Value (envelope insulation level)
 - Specific primary energy demand (global efficiency of the building)
- Plan: develop of a General Indicator Model, superposed on the Energy ADE, generalized for all kind of KPIs