

# ADE Energy SimStadt Project

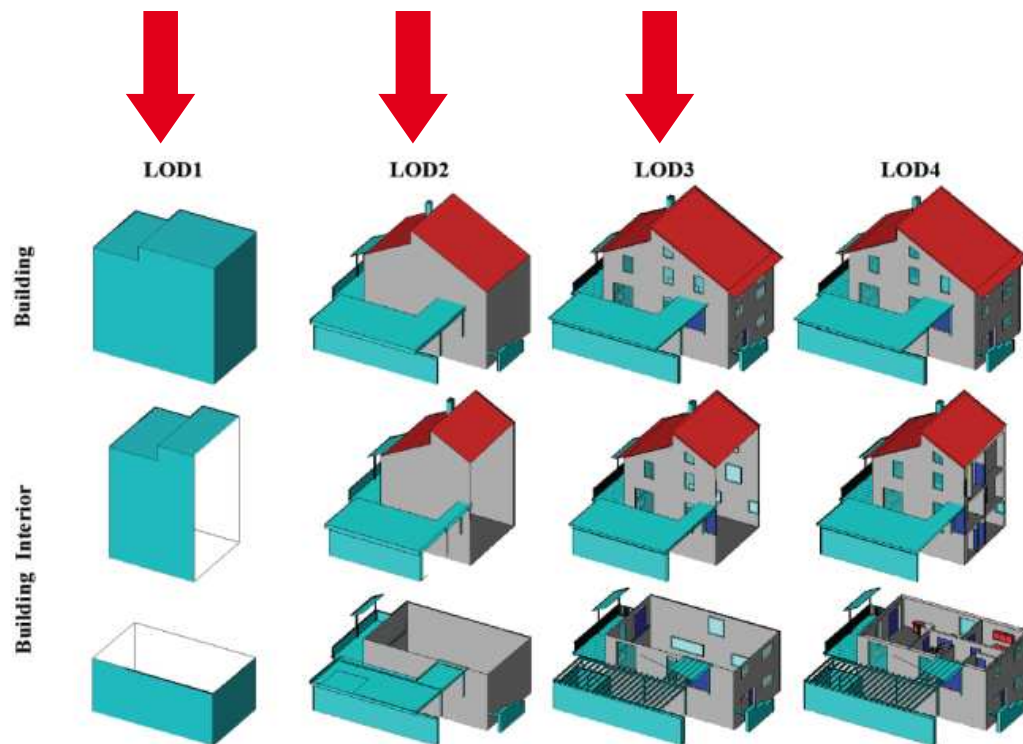
# Objectives

- Calculate building energy demand
  - heating, cooling und DHW
- Evaluate renewables and refurbishment potentials
- Simulate hourly heating and cooling loads
  - Size the individual/centralised HVAC systems over peak load
  - Simulate District Heating System

## 1 Building model for:

- Static heating/cooling simulation (DIN 18599)
- Simplified dynamic building simulation (CitySim Solver and Insel)

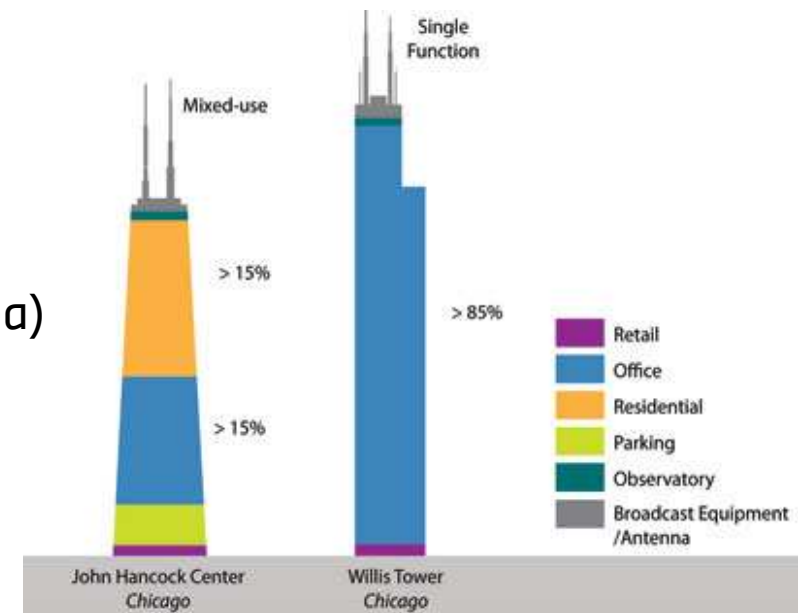
# Geometrical Building Model



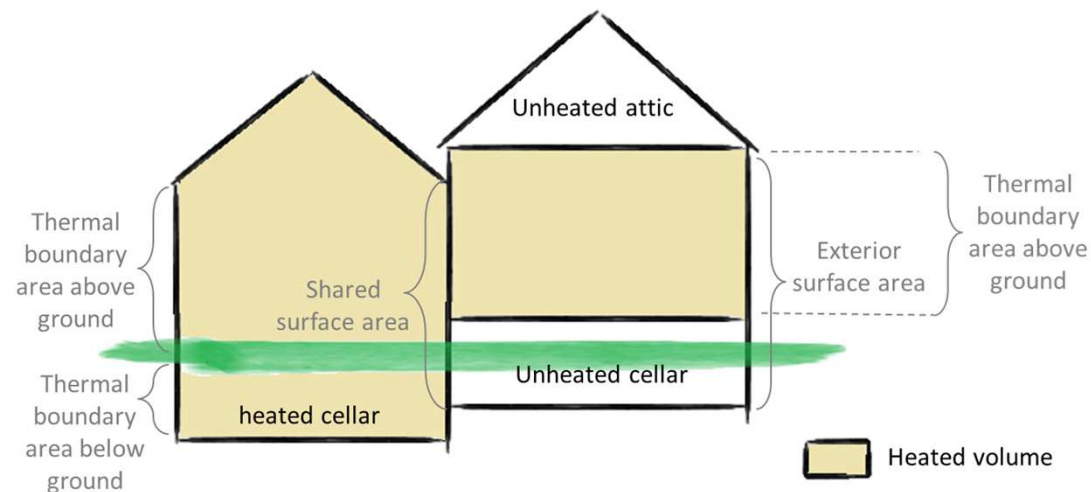
- Monozone building model
- Building Shell = thin surface (= outside boundary surface)
- Window positions generally unknown (only windowRatio)
- Possibly different wall and window types per building

# Geometrical Building Model

- Possibly different usage zones
  - Zone = abstract objects  
(no geometry information except zone Area)
  - Averaging of  $T_{set}$ ,  $airChangeRate$ ,  $InternGains$  at building level



- 3D building geometry  $\neq$  thermal building model



# Geometrical Building Model

## Building Model in LoD3+4

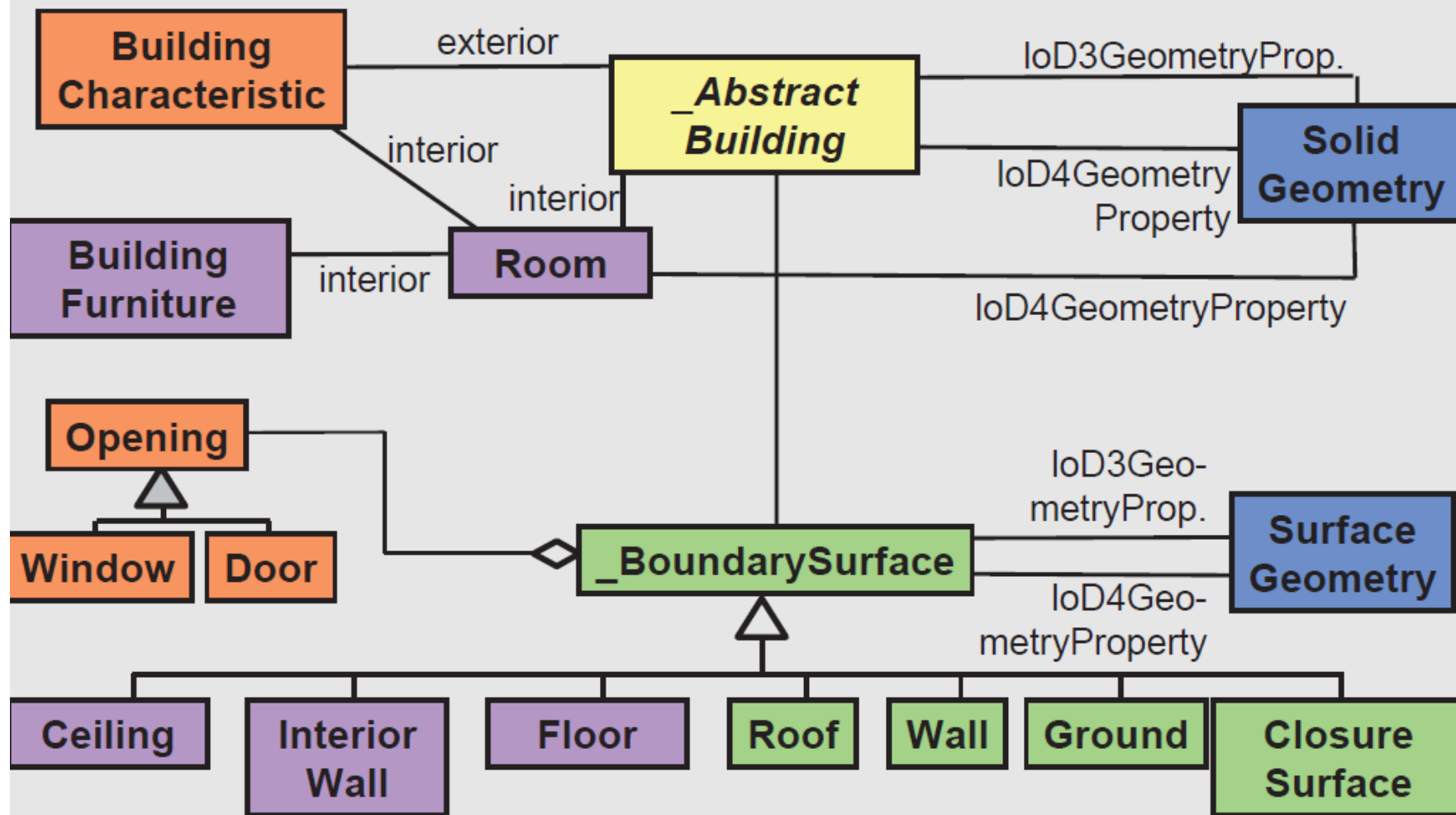
LoD1

LoD2

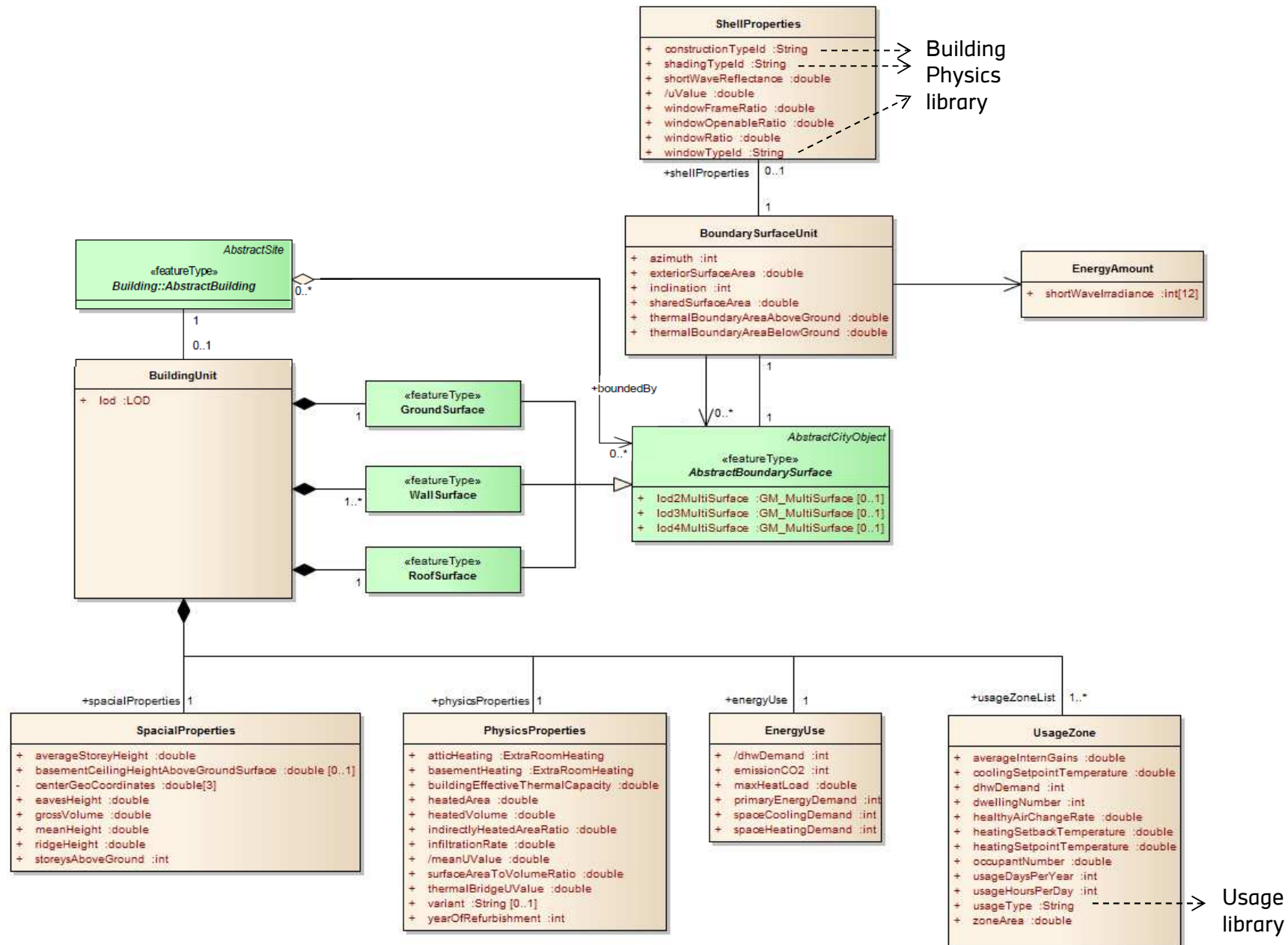
LoD3

LoD4

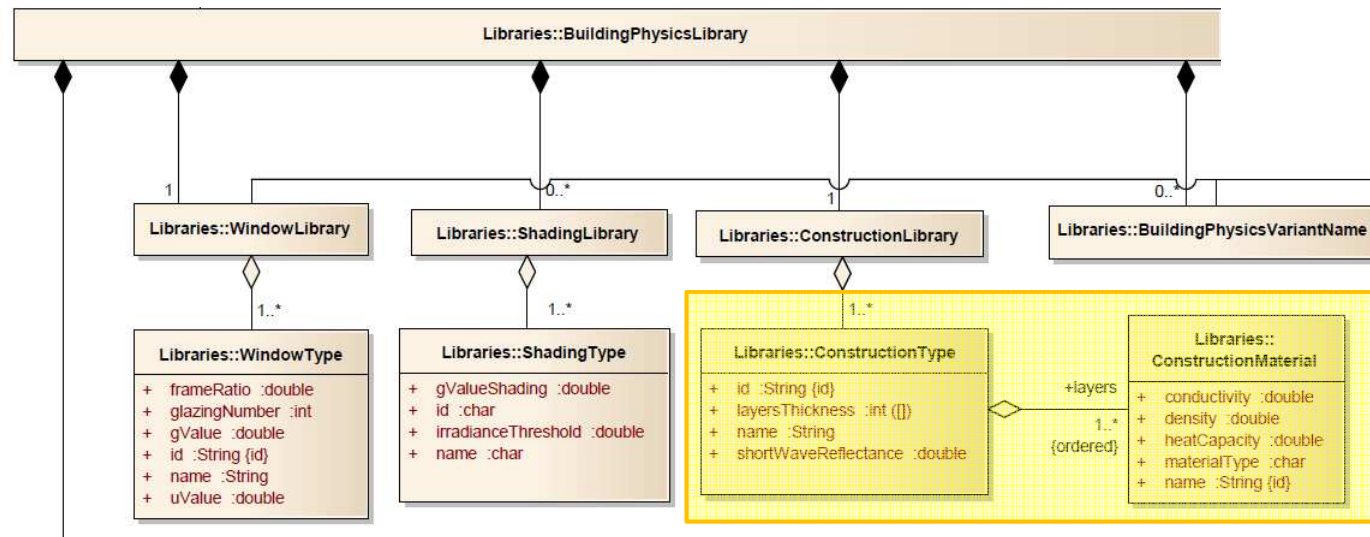
Department of Geoinformation Science



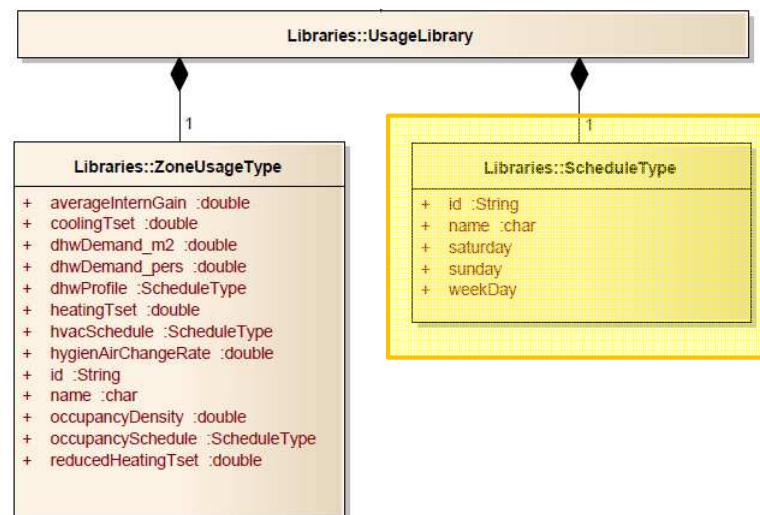
# Building Data Model – ADE Energy



# Building Energy Libraries



Building Physics  
and usage libraries  
in xml Files

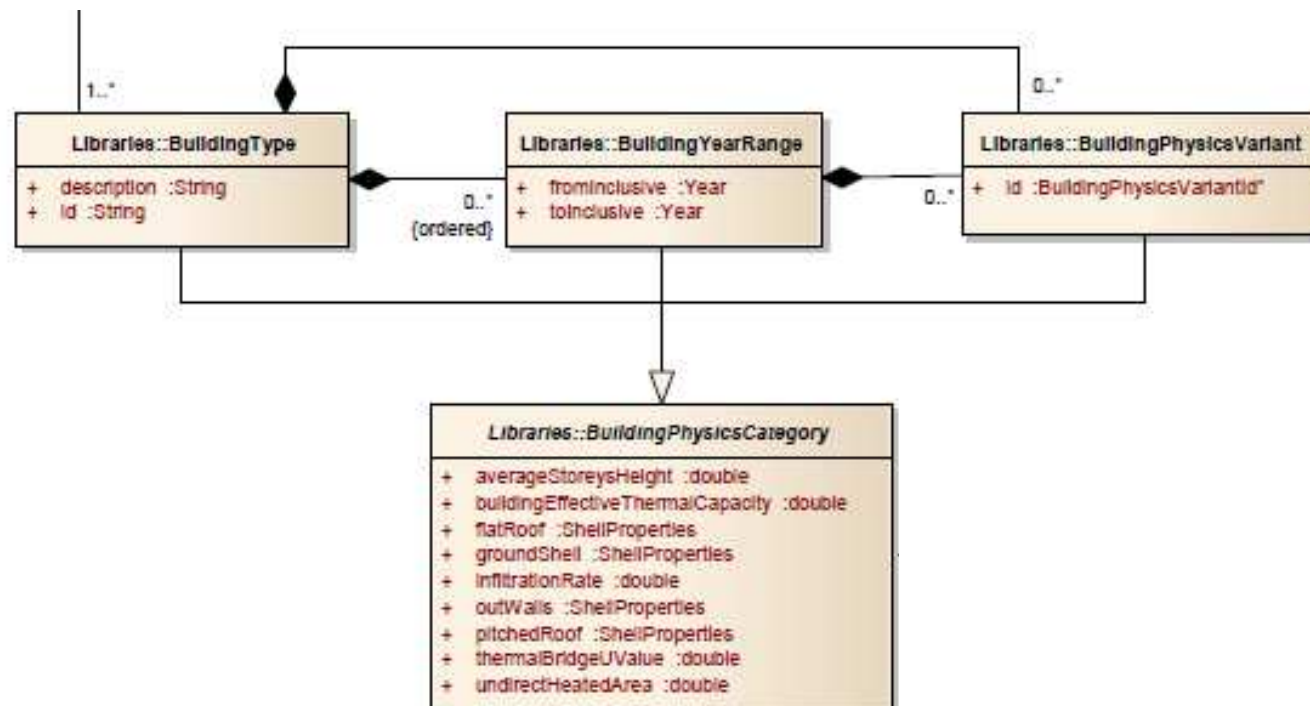


# Building Energy Libraries

Building Physics Category (source: IWU, Tabula, energy audits...)

defined by 3 keys:

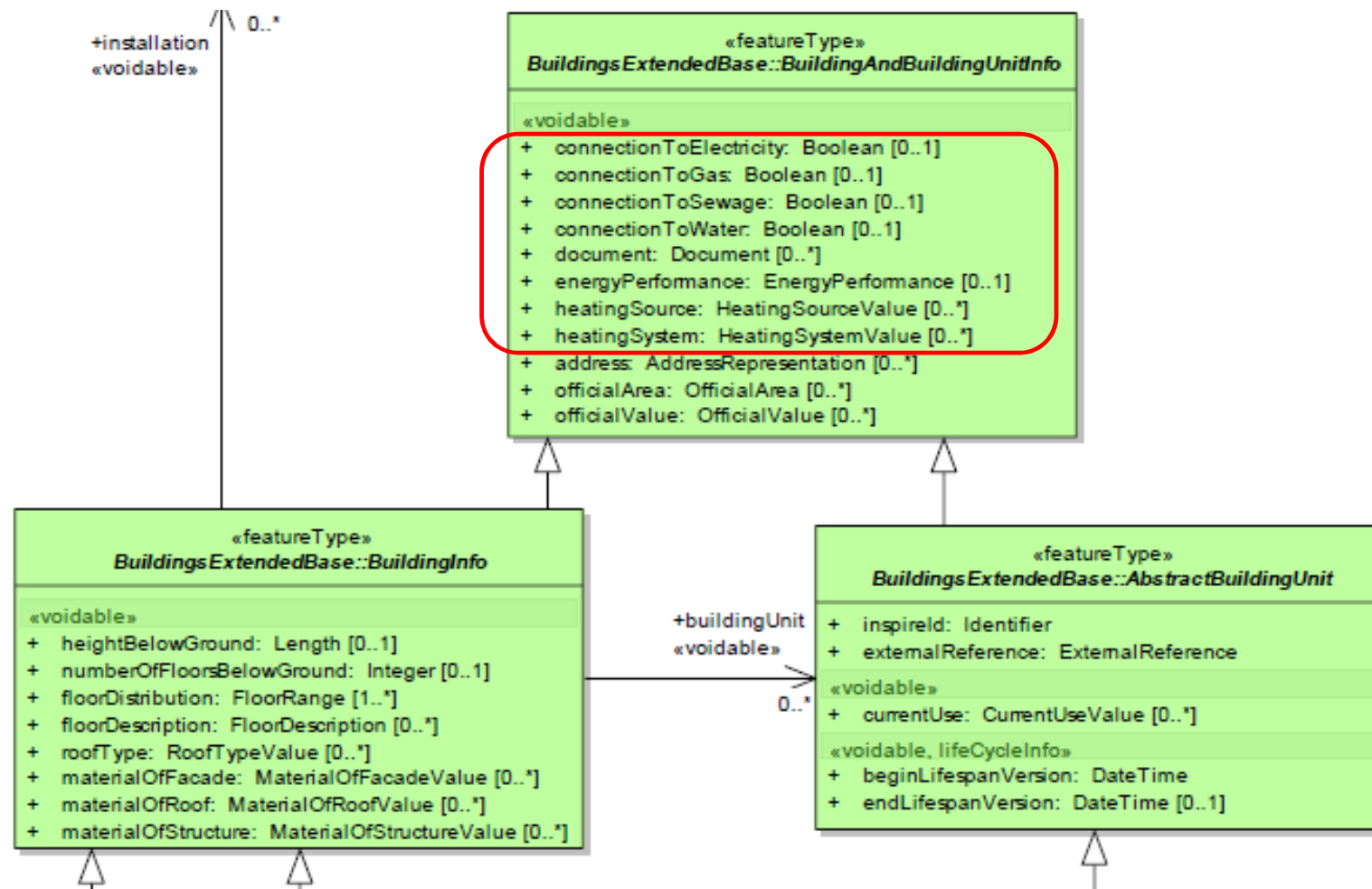
1. Building type (SFH, MFH, office buildings...)
2. Building year range
3. Building physics variant (half-timbering, light/standard refurbishment...)





## Next developments...

- Energy systems and energy carriers
- Connection to urban energy infrastructures



Inspire – main feature types of <Buildings Extended3D>