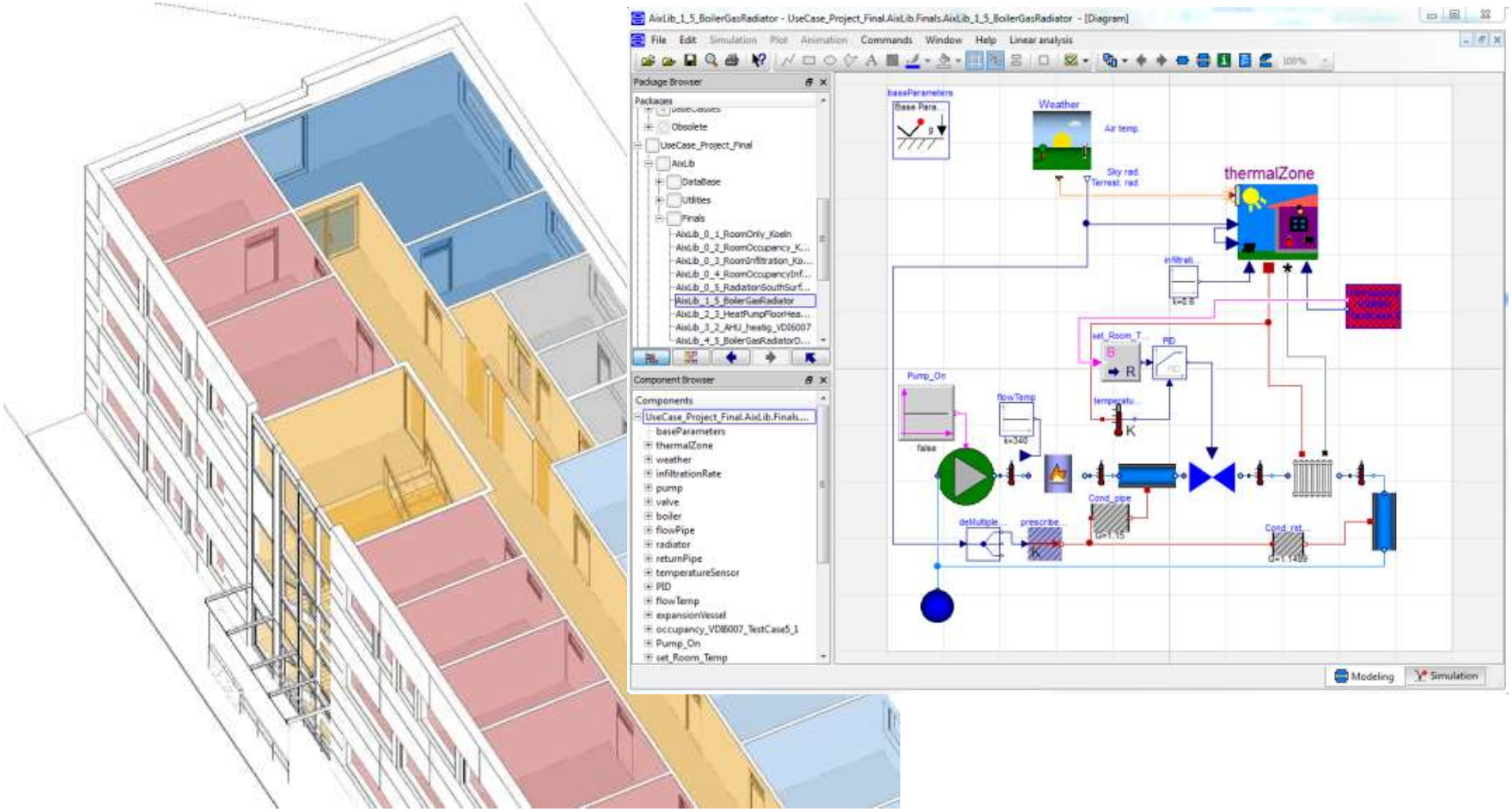
IBPSA Project 1 | Expert Meeting
BIM to X

Christoph van Treeck

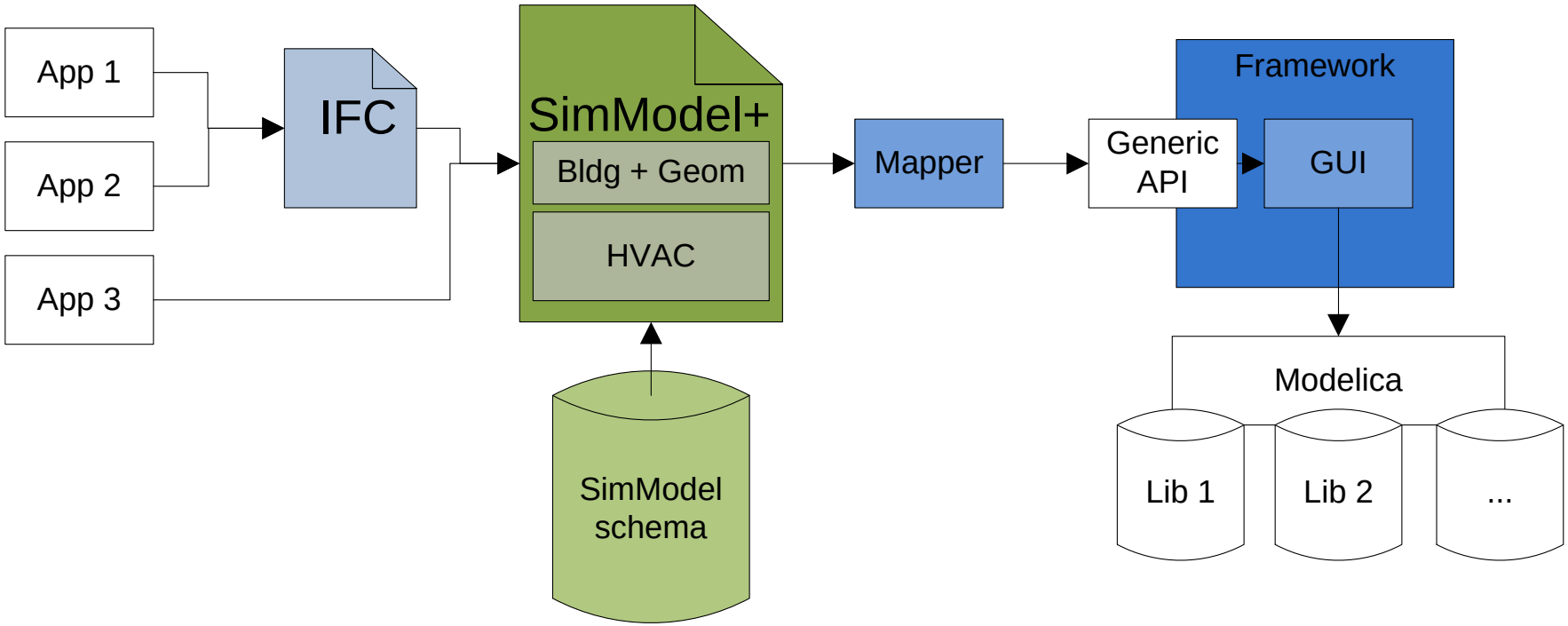
Zoning and Building Performance Simulation

Building Performance Simulation



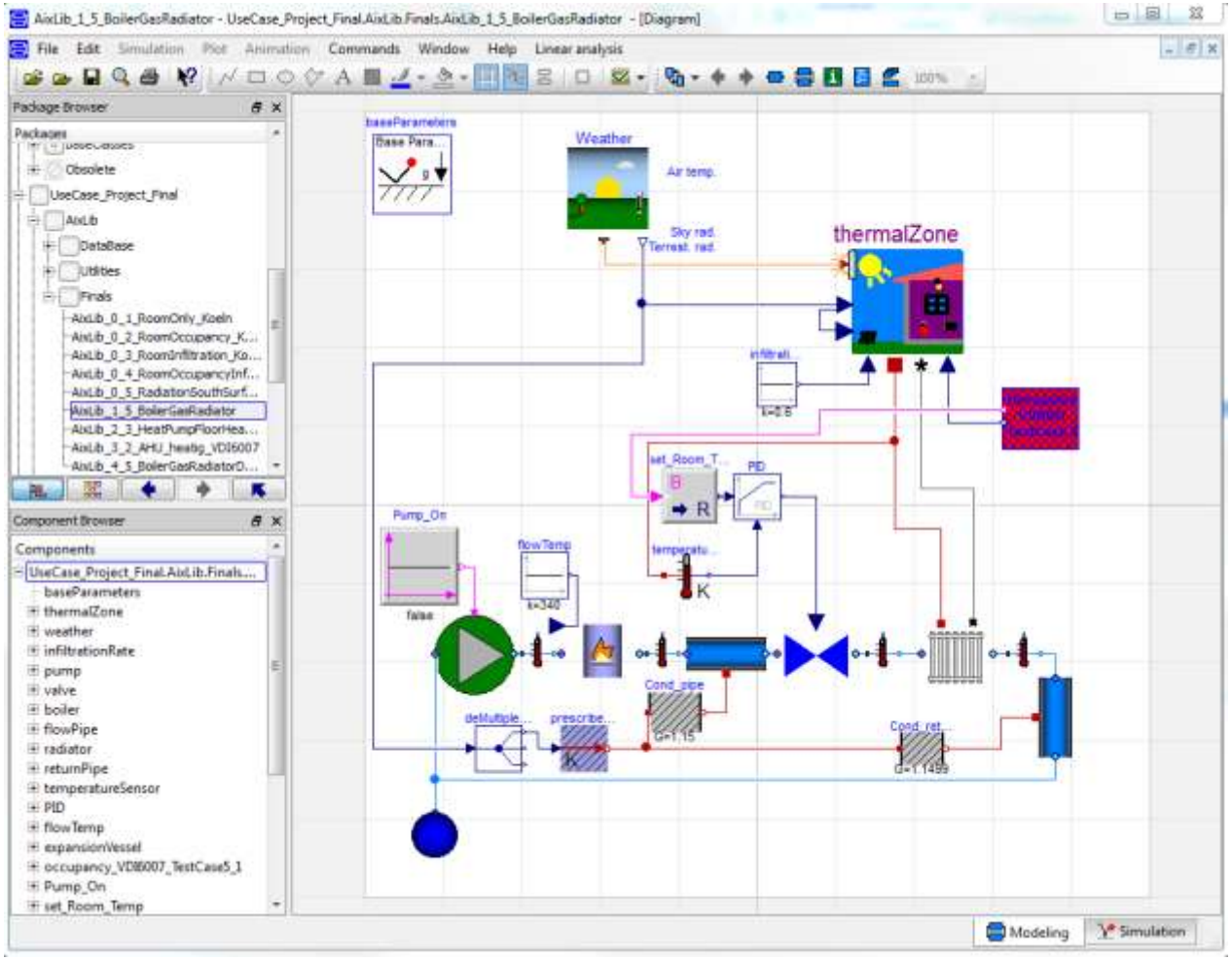
Where do we start from?

Transformation process as a whole



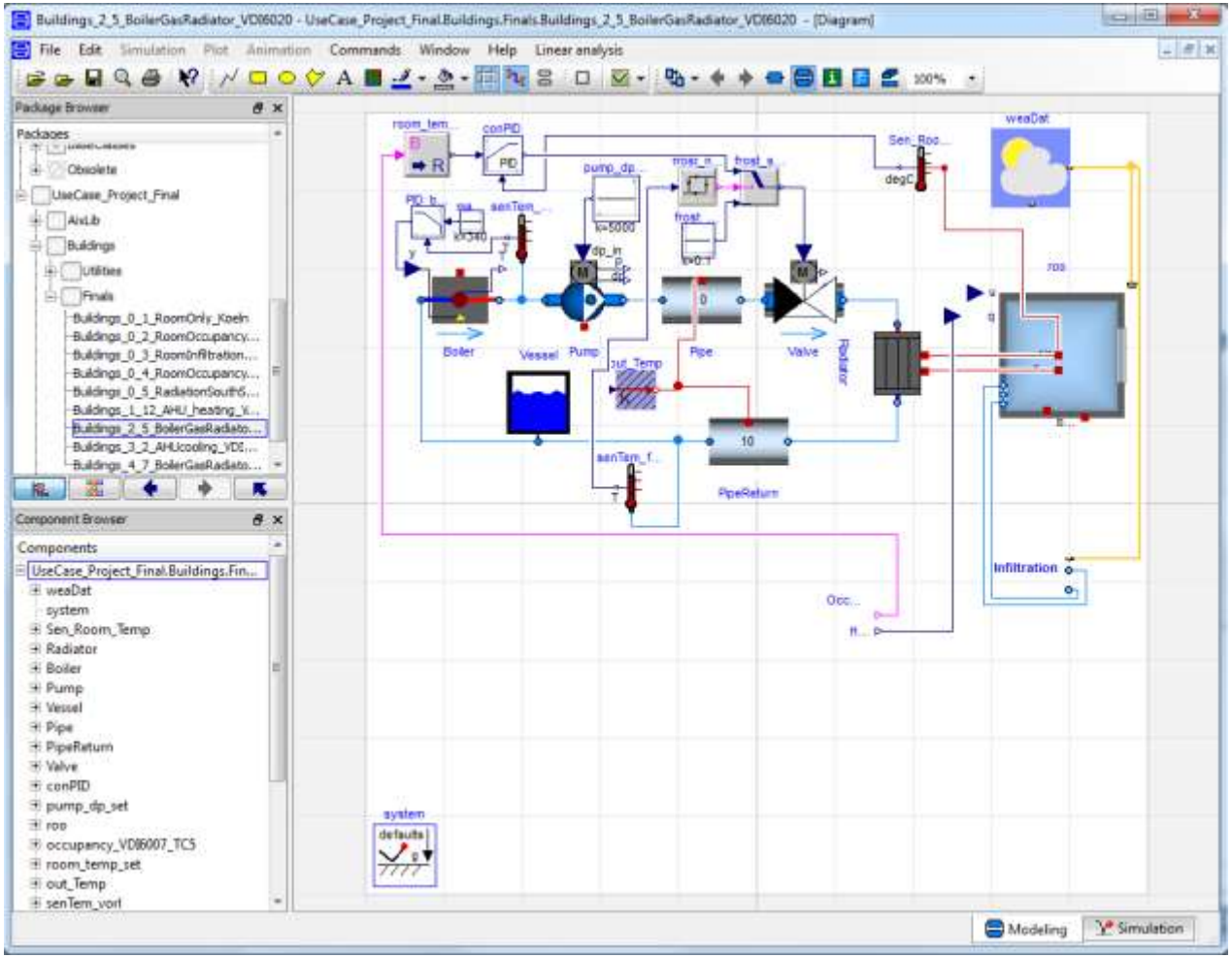
(Thorade, Rädler, Remmen, Maile, Wimmer,
Cao, Lauster, Nytsch-Geusen, Müller, van Treeck 2015)

Example | Use Case 1.1 Boiler & Gas Radiator Library: **AixLib** (RWTH Aachen)

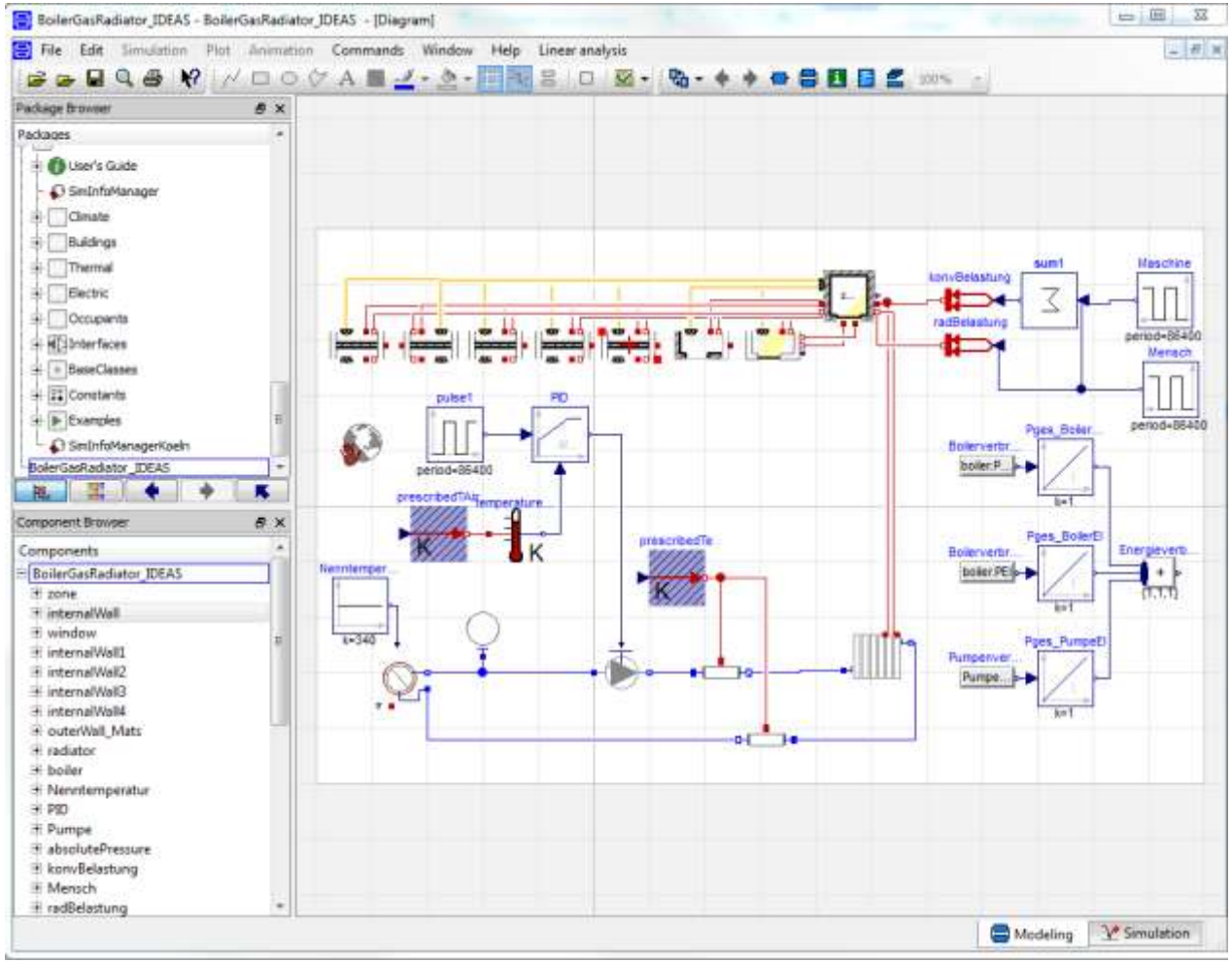


Example | Use Case 1.1 Boiler & Gas Radiator

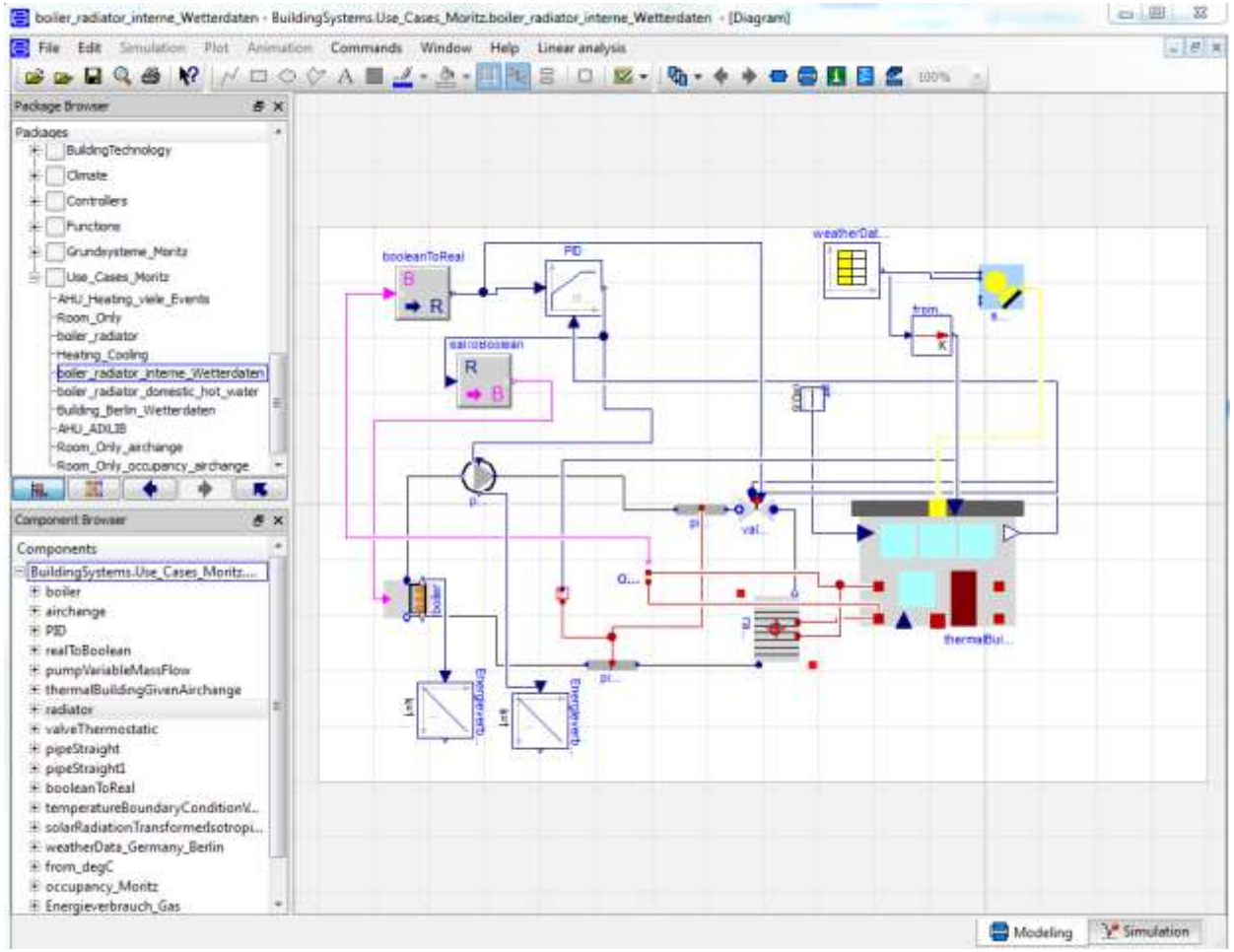
Library: **Buildings** (LBNL Berkeley)



Example | Use Case 1.1 Boiler & Gas Radiator Library: **IDEAS** (KU Leuven, Belgien)



Example | Use Case 1.1 Boiler & Gas Radiator Library: **BuildingSystems** (UDK Berlin)



Supported use cases

Use case	BIM/CAD	ifcXML	SimXML	AixLib	Buildings	BuildingSystem	IDEAS
1.1 Boiler							
1.2 Boiler							
2.1 Heat Pump							
2.2 Heat Pump							
3.1 CHP							
4.1 AHU							
4.2 AHU							
5 MultiZone							
RoofTop							

Legend		
Completed	Not yet completed	Not yet possible

Some core observations

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Information processing between BIM and BPS/FM/FDD...

Workflow problem:

- CAD-integrated calculation and dimensioning requires fairly detailed 3D models; such models are not available in early / preliminary design

Classification problem:

- absence of common HVAC classification schemes; country-specific solutions

Data exchange problem:

- HVAC wiring diagrams cannot be exchanged with common software; IFC, however, is capable of exchanging such HVAC wiring schemata (Simergy)
- Standard not available for digital function specifications exchange

Communication problem:

- different languages between building services engineering, asset management and automation and controls domains

Reference measure problem:

- different tasks require different surface area definitions

Model structure problem:

- structural HVAC elements (such as conduit track spaces) not available / not adopted

A pragmatic workplan

A pragmatic workplan

	Work package	Content
1	Classification and process definitions	
		Common BIM/HVAC classification scheme
		Continuation of IDM/MVD devlopments of Annex 60
2	Geometry processing	
		Advanced space boundary algorithms for model topology analysis and multi-scale simulation model generation
		Update exchange with E+ (such as curved geometry)
3	HVAC model processing	
		Model generation starting from system layout